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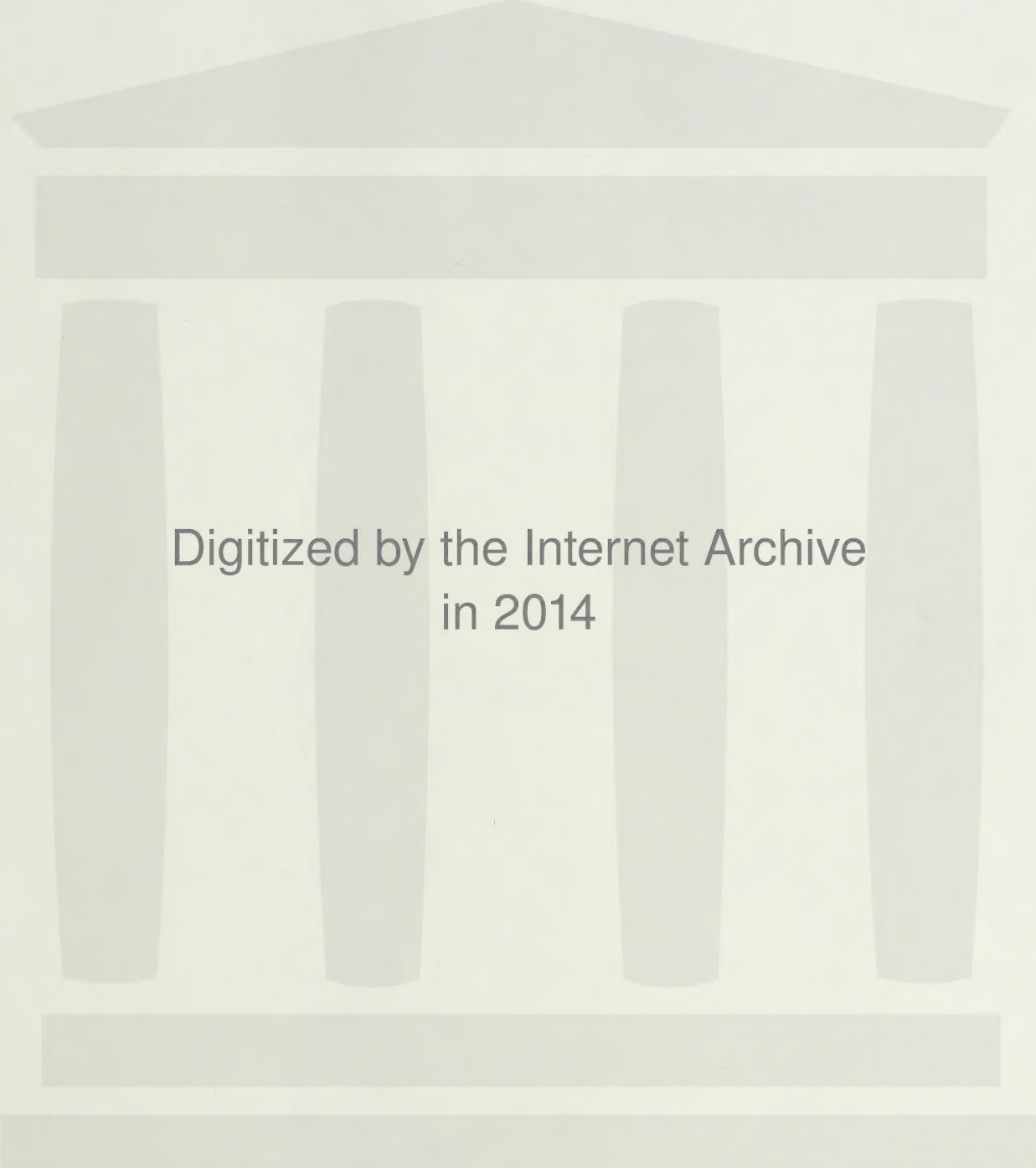
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“THE BOOK OF CATALOGUES”

“SWEET’S”

CATALOGUE OF BUILDING CONSTRUCTION

FOR THE YEAR

1910

WITH AN INTRODUCTION AND
CROSS-INDEX

AND A CHECKING-LIST FOR SPECIFICATIONS AND ESTIMATES

DEvised, COMPILED AND EDITED BY THE ARCHITECTURAL RECORD

THE ARCHITECTURAL RECORD CO

11-15 East 24th St., New York

..

Monadnock Building,

1910

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"SWEET'S" are urged to notify the publishers of any change of address or of firm name, in order that our lists may be kept in perfect condition.

Attention is especially directed to the Checking-List at the end of this volume. It is felt by the publishers that this new feature of "SWEET'S" will be of great value in preparing specifications.

The Engineering Trade Information Bureau conducted in connection with "SWEET'S" has been greatly increased in scope during the past year. We invite users of "SWEET'S" to write us for any information that may be needed concerning any class or make of building material or equipment. We have detailed information concerning the products of five thousand building trade firms, which we will gladly furnish to all of our users of "SWEET'S." The service is free to Architects, Contractors, Engineers, and others who wish to control or influence the selection of building-trade products.

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REMOTE STORAGE

PREFACE TO THE FOURTH ANNUAL EDITION

THE purposes of "SWEET'S" and the part that it plays in the economy of building construction are now so well known and recognized that words on the subject are superfluous. Architects, Contractors, Engineers, and others interested in building, in every part of the country, use "SWEET'S" as an integral part of their daily work.

As evidence of this we may be pardoned from mentioning that, in answer to inquiries, architects alone recently certified that they had specified in the last twelve months, direct from the pages of "SWEET'S," *more than one hundred millions of dollars'* worth of building material. Additional figures piled on to this sum would hardly make a clearer demonstration of the great usefulness of "SWEET'S" in actual practice.

This new edition of "SWEET'S" will be found an improvement on its predecessors. We have striven editorially to bring our work, in all matters of detail, within the requirements of the Architect and those allied with him in the work of construction. This obviously necessary improvement has not been as easily effected as one might think, because of the lingering prejudices of building material firms in relation to the catalogue matter which they issue to their customers.

It is easy to lay down the dictum that the catalogue, no matter how well written or gotten up, misses its main point and purpose if it does not suit and meet the requirements of the user—not the individual who produces it. In other words, a catalogue must be judged by its usefulness. Not all, however, are agreed as to the real substance of this "usefulness." A firm, for instance, that is selling goods to architects and also to agencies and local tradesmen shows, in some cases, a distinct disinclination to differentiate, and prefers to produce a sort of "general service" catalogue that will hit all nails on the head, rather than serve the Architect with the information he needs. Occasionally this may be advisable, but there are many instances where the scheme cannot be made to work well, and as a result the Architect is loaded up with irrelevant and professionally irreverent details that lie outside his practice and have no earthly interest to him. A catalogue is so important an adjunct to the sales department of a firm that it would seem to be good business to discriminate and produce for each big class of trade the kind of catalogue it needs.

There is some difficulty, moreover, in getting some building material firms to recognize that the Architect is a highly specialized worker, and the "trade" talk that goes very well with the tradesman is not so satisfactory for the professional man.

Again, pretty pictures mean nothing to an Architect, or next to nothing. Photographs of externals signify very little to the mind that is seeking to understand the construction and the working details of characteristic parts. Glowing rhetoric about merchandise is weak to the scientific mind. A specification may lead to a poetic result, but it cannot be composed on the principles of prosody.

It would be so easy for building material firms to discover whether the average catalogue is insufficient, by giving a little study to the average specification of the average architect. A glance at the details, measurements, etc., etc., that enter into a specification would reveal to the dullest the nature of the material that should be embodied in a catalogue.

"SWEET'S" has been fighting along these lines, to produce for its readers a real working catalogue. We are glad to say the propriety of the operation is rapidly gaining ground. This year we have more converts to the commonsense method than ever before. There are more adequate catalogues in this year's "SWEET'S" than we have yet been permitted to produce. This is largely due to the fact that "experience

teaches," and the firms who have used "SWEET'S" *right* have discovered the advantages of adhering to the sound principle of action.

"SWEET'S" this year is also more comprehensive. A greater percentage of the Architect's requirements is covered by the printed pages. This is largely due to the fact that architects and others who have made "SWEET'S" a working part of their office machinery insist more strongly than ever with building material firms that their catalogues should appear in "SWEET'S" so that architects' offices be free in this manner from the annoyance of the promiscuous catalogue, which can rarely be found when it is wanted; and, if found, presents a mass of reading matter to be waded through, instead of facts that can be easily reached by means of proper indexing and logical presentation.

Our friends who desire to see "SWEET'S" further improved in usefulness cannot do better service for our editorial work than by continuing these recommendations on behalf of our system. All interests coincide at this point. By it the Architect obtains the information he needs, in the handiest possible form; the building material firm secures for its catalogue real usefulness in consultation; the publishers of "SWEET'S" are enabled to produce a more complete and comprehensive service for the profession and their other clients.

In conclusion, we have to thank the great number of friends who have assisted us in our work, not only by their support, but by their recommendations, suggestions and criticisms, and trust that all users of "SWEET'S" will understand how absolutely ready we are to receive their comments and propositions for betterment, none of which will be lightly disregarded.

Editor of "SWEET'S."

GENERAL INDEX

Names of firms (main entry) in full face; cities in CAPITALS; trade names of products in *italics*; general titles of products in roman lower case. Specification forms are indexed under the products to which they relate, and are also grouped under the title "Specifications."

NOTE—This Index relates to the *contents of the book only*, and does not undertake to include items which might be inferred but do not actually appear in its pages. A large number of the firms here represented manufacture or furnish articles which they do not mention; but it is not the province of the indexer to include their names among those under a given product, if the latter is not specifically named, as a "Product," in their pages. In such cases they will be found adequately indexed under the more general titles covering their line of manufacture. For example, many manufacturers indexed under "Brick" doubtless furnish paving brick; yet, under "Brick, Paving," will be found only the few who specially mention it. The same principle applies to various items of Hardware, Paints, Heating Apparatus, and numerous other products throughout the volume.

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Atlas Portland Cement, 158-59.
Atlas Portland Cement Co., 158-59.
Atlas Scaffold Clamps, 592.
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Attix Flexible Tube and Wire, 1162-63.
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 Troy Laundry Machinery Co., Ltd., 1088-89.
 AUGUSTA, GA.
 American Machine Co. (Elevators, Moore-Edenfield Electric & Mfg. Co., Agts.), 948.
 Sibley-Menge Press Brick Co. (W. E. Jackson, Agt.), 126-27.
 Aumen Machinery & Supply Co. (Agts. Pittsburgh Gage & Supply Co.), 874.
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 Richards Mfg. Co. (Door Hangers), 588-90; (Spring Hinges), 591.
 Austin & Eddy (Rep. Grant Pulley and Hardware Co.), 565-67.
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Austral Window Balance Co., 541.
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 Berger Mfg. Co., 354-56.
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 Edwards Mfg. Co., 362-63.
 St. Paul Roofing, Cornice & Ornament Co., 372.
 Avars, Charles R. (Agt. Detroit Steel Products Co.), 480-83.
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B Security Enameled Leather Sheathing, 373-75.
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 B. K. Brick Co. (Agts. Atlantic Terra Cotta Co.), 138-39.
B. O. T. Water-Closet and Fixtures, and Patented Lever Low Tank, 780-81.
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 James Spear Stove and Heating Co., 1032-33.
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Baker Patent Safety Sidewalk Lights, 632-33.
Baker Prepared Cement, and Wood-Fibre Plaster, 174-77.
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Baker & Sons, Ltd., Joseph (Agts. Frick Co.), 1096-97.
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 American Machine Co. (Elevators, Southern Elevator Co., Agts.), 948.
 American Sanitary Works (Water-Closets and Specialties, James Robertson Mfg. Co., Agts.), 780-81.
 Anchor Post Iron Works (Dufur & Co., Agts.), 278-81.
 Art Metal Construction Co. (Metal Furniture and Fixtures), 1214-15.
 Asbestos Protected Metal Co. (Metal Roofing), 416-17.
 Ashley House-Sewage Disposal Co., 844-45.
 Brandenberger & Co. (Metallic Store Fronts), 660-61.
 Samuel Cabot, Inc. (Shingle Stains, etc., National Bldg. Supply Co., Agts.), 1316-21.
 Carter White Lead Co., 1315.
 Chamberlin Metal Weather Strip Co., 744-45.
 Chesapeake Iron Works (Structural), 296; (Ornamental), 297.
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 Crocker-Wheeler Co. (Electrical Equipment), 1149.
 Deming Co. (Pumping Machinery, Crook-Horner Co., Agts.), 898-99.
 Eagle White Lead Co., 843.
 Everhard Co. (Brick, Hudson Cement & Supply Co., Agts.), 110-11.
 Faunt Le Roy Elevator Co. (Ornamental Iron Work), 275; (Elevators), 956.
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 George W. Golden (Metal Weather-Strips, F. W. Burgess, Agt.), 747.
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 McShane Bell Foundry Co., 1264-65.
 Merritt & Co. (Metal Lockers, etc., J. H. Herrick, Agt.), 1212.
 Morgan Co. (Doors and Interior Woodwork), 702-03.
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 National Metal Weather Strip Co., Inc. (M. Solmson Fly Screen Co., Agts.), 750-51.
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 Raymond Concrete Pile Co., 34-37.
 Reliance Ball Bearing Door Hanger Co. (Dufur & Co., Agts.), 586-87.
 Wm. F. Remppis Co. (Ornamental Iron Work), 328-29.
 Ruud Mfg. Co. (Gas Water-Heaters), 836-39.
 Sagax Wood Co. (Fire Doors and Shutters, Composition Floors), 708-09.
 Smyser-Royer Co. (Ornamental Metal Work), 334-35.
 Swedish Venetian Blind Co. (J. M. Adams, Agt.), 716-17.
 Triumph Ice Machine Co., 1116-17.
 Vaile & Young (Skylights), 456-57.
 Warsaw Elevator Co., 976-77.
 Wood-Mosaic Co. (Flooring, J. M. Adams, Agt.), 738-40.
 York Safe and Lock Co., 1238-39.
 Youngstown Iron & Steel Roofing Co. (Maryland Lime & Cement Co., Agts.), 218-21.
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 Architects Standard Bronze Co., 282-83.
 Edwards Mfg. Co., 362-63.
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 Coe Brass Mfg. Co., 468-69.
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 Kinnear Mfg. Co., 492-99.
 Bars, Reinforcing.
 American Concrete Co., 6-7.
 Buffalo Steel Co., 188.
 Columbian Concrete Steel Bar Co., 192-93.
 Gabriel Concrete Reinforcement Co., 198-99.
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 Bar-Lock Sidewalk Doors and Coal-Hole Covers, 612-16.
 Barber Asphalt Paving Co., 393-95.
 Bardsley, Joseph, 542-43.
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 J. M. Kohler Sons Co., 804-05.
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 H. Mueller Mfg. Co., 860.
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 Republic Mfg. Co., 814-15.
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 Pittsburgh Gage & Supply Co. (Oil, Steam and Water Equipments, Albert Pipe & Supply Co., Agts.), 874.
 Bay State Brick, Cement and Enamel Coatings, 1354-55.
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 Hunt Metal Corner Co., 570-71.
 V. H. Kriegshaber, 116-17.
 Sharon Steel Hoop Co., 600.
 St. Paul Roofing, Cornice & Ornament Co., 372.
 Thorne Hold-Fast Metal Bar Co., 674-75.
 Youngstown Iron & Steel Roofing Co., 218-21.
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 Hunt Metal Corner Co., 570-71.
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- F. P. Smith Wire and Iron Works, 332-33.
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- Armstrong Cork Co. (Cold-Storage Insulation, Factory), 1090-92.

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- Mandel Brothers, 1388-89.

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- Mandel Brothers, 1388-89.

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- Bernstein Mfg. Co., 1258-59.

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- Bedell, Louis R. (Agt. Conkling-Armstrong Terra Cotta Co.), 142-43; (Agt. Reliance Ball Bearing Door Hanger Co.), 586-87.

- Beers Engineering & Equipment Co. (Agts. Pittsburgh Gage and Supply Co.), 874; (Agts. Sanitary Pump Co.), 920-21.

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- Belcher & Loomis Hardware Co. (Rep. Grant Pulley and Hardware Co.), 565-67.

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- Genuine Bangor Slate Co., Inc., 432-35.

- Belknap Hardware & Mfg. Co. (Rep. Grant Pulley and Hardware Co.), 565-67; (Agts. Acorn Brass Mfg. Co.), 1048-49.

Bells, Church, Farm, Schoolhouse, etc.

- M. H. E. Beckley, 1216-17.
 McShane Bell Foundry Co., 1264-65.
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Bells, Fire-Alarm.

- McShane Bell Foundry Co., 1264-65.
 Meneely Bell Co., 1266-67.

Bells, Fog-Signal, Ship, etc.

- McShane Bell Foundry Co., 1264-65.
 Meneely Bell Co., 1266-67.

Bells, Tower-Clock.

- McShane Bell Foundry Co., 1264-65.
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- Bells, Westminster Chime, see Chimes, Westminster.

- Bell Telephone Mfg. Co. (Agts. Western Electric Co.), 1184-87.

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- Morewood Standard Safety Devices Co., 574-75.
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Belt Courses, Brick.

- Philadelphia & Boston Face Brick Co., 120-21.

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- Blue Ridge Marble Co., 72-73.

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- Rubbertex Cloth and Paper Co., 410.

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- Republic Mfg. Co., 814-15.

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- Bennett Co., G. E. (Agts. Steel City Electric Co.), 1182-83.

- Bennett Co., I. A. (Agts. Steel City Electric Co.), 1182-83.

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Benvenue Granite Co., 89.

- Berger Bros. (Agts. J. G. Hetzel Co.), 400-01.

Berger Mfg. Co. (Architectural Sheet Metal Work), 354-56; (Sidewalk Light Construction), 634-35.

- Berger's Classic Ceilings, Prong-Lock Studs and Furring, B. B. Expanded Metal Lath, Metal Lumber, Ferro-Lithic and Multiplex Plates, Metal Imitation or Tile Roofing, Star-Spangled Roofing Tin, Metal Furniture and World Ventilators*, 354-56.

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- Diamond Expansion Bolt Co., 559.

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- Jas. G. Wilson Mfg. Co. (Rolling Doors, etc.), 711-13; (Venetian Blinds and Awnings), 721; (Rolling Partitions), 732.

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- Kohler Brothers (Electrical Engineers and Manufacturers), 1168-69.

- Standard Paint Co. (Preservative Paints), 63; (Building Papers), 377; (Roofing and Insulating Papers), 408-09; (Ruberoid Gesellschaft, M. B. H. Agts.), 63, 377, 408-09.

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Troy Laundry Machinery Co., Ltd., 1088-89.

- Western Electric Co. (Telephon Apparat Fabrik, E. Zweitusch & Co., Agts.), 1184-87.

- Bernstein Detachable Institution Beds, Sterilizers and Hospital Equipment*, 1258-59.

Bernstein Mfg. Co., 1258-59.*Bessemer Rust-Proof Paints*, 1346-47.*Best Brothers Keene's Cement*, 156-57.*Best Tank Heater*, 828-29.**BETHLEHEM, PA.**

- Chapman Slate Co. (Roofing Slate), 430-31.

Bethlehem Foundry & Machine Co., 286-87.

- Bettle, Samuel, Jr. (United States Sales Agent Crittall Mfg. Co., Ltd.), 474-75; (Agt. Detroit Steel Products Co.), 480-83.

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- Bickerstaff, A. H. (Agt. Sibley-Menge Press Brick Co.), 126-27.

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- Trenton Potteries Co., 818-20.

Big Four Prepared, and Cement Plaster, 174-77.

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- N. & G. Taylor Co., 428-29.

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- W. S. Roof & Son (Partition Hangers), 593.

- Bingham Co., W. (Rep. Grant Pulley and Hardware Co.), 565-67.

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- Monarch Engineering Co., 227.

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- American Enameled Brick and Tile Co., 101-07.

- Asbestos Protected Metal Co. (Metal Roofing), 416-17.

- E. T. Burrowes Co. (Screens), 754-55.

- Samuel Cabot, Inc. (Shingle Stains, etc., Moore & Handley Hardware Co., Agts.), 1316-21.

- Columbus Brick and Terra Cotta Co. (Otto E. Fisher, Agt.), 100.

- Crocker-Wheeler Co. (Electrical Equipment), 1149.

- Deming Co. (Pumping Machinery, Moore & Handley Hardware Co., Agts.), 898-99.

Higgin Mfg. Co. (Screens), 758-59.

- Grant Pulley and Hardware Co. (H. P. Chenoweth, Rep.), 565-67.

- Nat. Asso. of Master Sheet Metal Workers, 424-26.

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- Pittsburgh Gage & Supply Co. (Oil, Steam and Water Equipments, Young & Vann Supply Co., Francis-Shepard Co., Agts.), 874.
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- Library Bureau (Metal Furniture), 1224-25.

- Black, John H. (Agt. Columbus Brick and Terra Cotta Co.), 100.

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- M. H. E. Beckley, 1216-17.

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- M. H. E. Beckley, 1216-17.

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- Keenan Structural Slate Co., 796-98.

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- Blake & Co., W. L. (Agts. American Sanitary Works), 780-81.

Blanchard Co., J. F., 466-67.

- Blanchard Co., J. F. (Agts. Ritter Folding Door Co.), 528-29.

Blanco Sinks, 792-93.

- Blankenship, B. (Agt. Champion Metal Weather-Strip and Parting Bead Co.), 746.

Blast Pipe.

- Thos. W. Irwin Mfg. Co., 450-51.

Blinds, Rolling or Sliding.

- Burlington Venetian Blind Co., 714-15.

- Flexifold Door and Shutter Co., 700-01.

- Swedish Venetian Blind Co., 716-17.

- Jas. G. Wilson Mfg. Co., 721.

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- M. H. E. Beckley, 1216-17.

- Burlington Venetian Blind Co., 714-15.

- Swedish Venetian Blind Co., 716-17.

- Jas. G. Wilson Mfg. Co., 721.

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- Morgan Co., 702-03.

- Paine Lumber Co., Ltd., 704-05.

Blocks, Fireproof Building.

- American Concrete Co., 6-7.

- Keystone Fireproofing Co., 226.

- O. W. Ketcham, 144-45.

- Henry Maurer & Son, 228-29.

- National Fireproofing Co., 230-37.

- Stone-Steel Co., 248.

- Temple Cement Stone Co., 154.

- United States Gypsum Co., 244-45.

- Whitestone Marble Co., 272-73.

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- Picton Island Red Granite Co., 96.

- Temple Cement Stone Co., 154.

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- Temple Cement Stone Co., 154.

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- American Concrete Co., 6-7.

- Blood, A. A. (Agt. George W. Golden), 747.

Blowers.

- Acme Ventilating Co., 1050-51.

- American Blower Co., 1052-53.

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 Bluestone.
 G. P. Sherwood & Co., 98.
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Bogenberger Fireproof Windows, 472-73.
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 Cameron Schroth Cameron Co., 1009-11.
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 L. J. Mueller Furnace Co., 1018-20.
 Shirley Radiator and Foundry Co., 1021-23.
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 John Wood Mfg. Co., 840-42.
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 E. B. Badger & Sons Co., 822.
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 D. T. Williams Valve Co., 890-91.
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 Higgin Mfg. Co. (Screens), 758-59.
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Bolles Iron and Wire Works, J. E., 288-89.
 Bolles Iron & Wire Works, J. E. (Agts. Reliance Ball Bearing Door Hanger Co.), 586-87.

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 Bommer Brothers, 544-45.
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 Snead & Co. Iron Works, 1229.
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 Acorn Brass Mfg. Co. (Window Ventilators, etc., H. E. Holbrook & Co., Agts.), 1048-49.
 American Circular Loom Co. (Conduit and Fittings), 1146-48.
 American Enameled Brick and Tile Co., 101-07.
 American Luxfer Prism Co., 617-21.
 American Mason Safety Tread Co., 540.
 American Steel & Wire Co. (Electrical Wires and Cables), 1150-51.

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Anchor Post Iron Works (W. A. Snow Iron Works, Agts.), 278-81.
 Armstrong Cork Co. (Cold-Storage Insulation, Nonpareil Cork Works, Agts.), 1090-92.
 Art Metal Construction Co. (Metal Furniture and Fixtures), 1214-15.
 Asbestos Protected Metal Co. (Metal Roofing), 416-17.
 Atchison Revolving Door Co. (Lombard & Tracy Co., Agts.), 696-97.
 Atlantic Terra Cotta Co., 138-39.
 E. B. Badger & Sons Co. (Fireproof Windows), 404; (Wash Boilers and Sinks), 779; (Hot Water Boilers), 822.
 Barrett Mfg. Co. (Roofing and Sheathing Felts), 373-75.
 Berger Mfg. Co. (Architectural Sheet Metal Work), 354-56; (Sidewalk Light Construction), 634-35.
 J. A. & W. Bird & Co. (Roofing), 396-97.
 Blaisdell Machinery Co., 1290-91.
 S. F. Bowser & Co., Inc. (Oil-Handling Equipment), 1274-75.
 Bridgeport Wood Finishing Co., 1312-13.
 E. T. Burrows Co. (Screens), 754-55.
 Butcher Polish Co. (Floor and Wood Finishes), 1314.
 Samuel Cabot, Inc. (Shingle Stains, etc.), 1316-21.
 Chamberlin Metal Weather Strip Co., 744-45.
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 Columbus Brick and Terra Cotta Co. (Fiske & Co., Agts.), 100.
 Conkling-Armstrong Terra Cotta Co. (Waldo Bros., Agts.), 142-43.
 Crocker-Wheeler Co. (Electrical Equipment), 1149.
 T. De Long Furniture Co. (Interior Finish and Cabinet Work, Office, Bank & Library Co., Agts.), 1376-77.
 Deming Co. (Pumping Machinery, Chas. J. Jager Co., Agts.), 898-99.
 Detroit Steel Products Co. (Wrought-Steel Sash, Smith & Thayer Co., Agts.), 480-83.
 Diamond Expansion Bolt Co., 559.
 Eagle White Lead Co., 843.
 Emmel Co. (Architectural Ornamentation), 1392-93.
 Everhard Co. (Brick, Waldo Brothers, Agts.), 110-11.
 Fort Wayne Electric Works, 1154-55.
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 General Fireproofing Co. (Metal Furniture), 1201.
 Glidden Varnish Co., 1324-25.
 Globe-Wernicke Co. (Steel and Wood Office Furniture), 1218-19.
 B. F. Goodrich Co. (Interlocking Rubber Tiling), 249.
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 Goulds Mfg. Co. (Pumping Machinery), 895.
 Grant Pulley and Hardware Co. (Austin & Eddy, Bay State Hardware Co., Burditt & Williams, Chandler & Barber, J. B. Hunter & Co., Rep.), 565-67.
 R. Guastavino (Timbrel Vaults), 224-25.
 Harris Fire Apparatus Co., 940-41.
 Hart Mfg. Co. (Electrical Equipment), 1164-1165.
 Hennebique Construction Co. (Concrete Reinforcement), 202-3.
 J. G. Hetzel (Roofing Cement, Richards & Co., Agts.), 400-01.
 Higgin Mfg. Co. (Screens), 758-59.
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 Jeffrey Mfg. Co. (Elevators and Conveyors), 962-63.
 Kauffman Heating & Engineering Co. (Herbert A. Joslin, Agt.), 996-97.
 Keasbey & Mattison Co. (Asbestos Roofing, etc.), 402-05; (Pipe and Boiler Covering), 894.
 E. Keeler Co. (Boilers, Tanks, etc., W. N. Sheaff, Agt.), 932-33.
 S. Keighley Metal Ceiling and Mfg. Co., 1208.
 David E. Kennedy, Inc. (Cork Floor Tiling, etc.), 266-67.
 J. B. King & Co. (Hard Wall Plaster, etc., Windsor Cement Co., Agts.), 166.
 Kinnear Mfg. Co. (Steel Rolling Doors, etc.), 492-99.
 Kinnear & Gager Mfg. Co. (Metal-Covered Doors, etc.), 500.
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 Library Bureau (Metal Furniture), 1224-25.
 Louis Lipp Co. (Plumbing Fixtures), 806-07.
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 Lord and Burnham Co. (Greenhouse Construction), 1302-05.
 Lowe Brothers Co. (Paints, etc.), 1332-33.
 John Lucas Co. (Paints, etc.), 1334-35.
 Lunt-Moss Co. (Water-Supply Systems), 910-11.
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 Murphy Iron Works (Smokeless Furnaces), 934-35.
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 National Brass and Copper Tube Co., 862-63.
 National Fire Proofing Co., 230-37.
 National Lead Co. (Lead Pipe), 861; (Technical Paints), 1341.
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 National Roofing Co. (Preservative Paints), 62; (Asphalt Roofing and Paint), 399; (John M. Carrecabe, Agt.), 62, 399.
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 Northampton Portland Cement Co. (Waldo Bros., Distributors for Rhode Island and Connecticut), 168.
 Okonite Co. (Insulated Wires, etc., Pettingell-Andrews Co., Agts.), 1176-77.
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 Philadelphia & Boston Face Brick Co., 120-21.
 Pittsburgh Water Heater Co., 832-35.
 Pittsburgh Gage & Supply Co. (Oil, Steam and Water Equipments, Walter G. Ruggles Co., Agts.), 874.
 Wm. Powell Co. (Steam Specialties), 884-85.
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 T. C. Prouty Co., Ltd. (Fire-Door Fixtures), 501; (Door Hangers), 585.
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 John W. Rapp Co. (Fireproof Doors, etc., E. D. Chandler, Agt.), 514-18.
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 Richards Mfg. Co. (Door Hangers), 588-90; (Spring Hinges), 591.
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 Smith & Thayer Co. (Heaters), 1030-31.
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 Standard Paint Co. (Preservative Paints), 63; (Building Papers), 377; (Roofing and Insulating Papers), 408-09.
 Standard Plate Glass Co. (Plate and Ornamental Glass), 654-55.
 Standard Underground Cable Co., 1180-81.
 Steel City Electric Co. (T. C. Sias, Agt.), 1182-83.
 B. F. Sturtevant Co. (Heating and Ventilating Apparatus), 1034-35.
 Triumph Ice Machine Co., 1116-17.
 Tuttle & Bailey Mfg. Co. (Architectural Bronzes, etc.), 340-41; (Registers, Ventilators, etc.), 1036-37.
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 E. Van Noorden Co. (Skylights, Ventilators, etc.), 458-59.
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 Wood-Mosaic Co. (Flooring, R. T. Adams & Co., Agts.), 738-40.
 Wright Wire Co. (Wire Work), 352-53.
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 Standard Underground Cable Co., 1180-81.
 Steel City Electric Co., 1182-83.
 Boxes, Express Messenger.
 York Safe and Lock Co., 1238-39.
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Bradford Pressed Brick Co., 108-09.
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 Philadelphia & Boston Face Brick Co., 120-21.
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 Hydraulic-Press Brick Co., 113-15.
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 William Bayley Co., 284-85.
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 Grinden Art Metal Co. (Fireproof Doors, Trim, etc.), 488-89.
 Hecla Iron Works (Ornamental Metal Work), 310-11.
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St. Paul Roofing, Cornice & Ornament Co., 372.

Central Electric Co. (Agts. Okonite Co.), 1176-77.

Central Insulation Supply Co. (Agts. Reliance Ball Bearing Door Hanger Co.), 586-87.

Central Paint & Roofing Co. (Agts. National Roofing Co.), 399-62.

Century Lumber Co. (Agts. H. W. Covert Co.), 982-83.

Century Shingles or Slates, 402-05.

Century Steam and Water Boilers, 1002-08.

Ceramic Tiles, see under Mosaics.

Ceresit Cement Waterproofing, 48-49.

Ceresit Waterproofing Co., 48-49.

Certificate Peach Bottom Slate, 442.

Cesspools, Boxes for.

Philip Braender, 846-47.

Watertite Drain Co., 872-73.

Anticlog, 872-73.

Braender, 846-47.

Hub, 872-73.

Morgan, 872-73.

Rockefeller, 872-73.

Subway, 872-73.

Wescott, 872-73.

Cesspool Plates.

F. P. Smith Wire and Iron Works, 332-33.

Watertite Drain Co., 872-73.

Chains, Reinforcing and Bonding.

Oneida Community, Ltd., 205.

Eureka, 205.

Niagara, 205.

Chains, Steel.

Jeffrey Mfg. Co., 962-63.

Oneida Community, Ltd., 578-79.

American, 578-79.

Community Galvanized, 578-79.

Jeffrey, 962-63.

Niagara, 578-79.

Weldless, 578-79.

Chairs, see under Furniture.

Chamberlin Metal Weather-Strip, 744-45.

Chamberlin Metal Weather Strip Co., 744-45.

Chambers, Smoke.

H. W. Covert Co., 982-83.

Champion Metal Shingles, 364-65.

Champion Metal Weather-Strip, 706-07, 746.

Champion Metal Weather-Strip and Parting-Bead Co., 746.

Champion & Pascual (Agts. Frick Co.), 1096-97.

Chandeliers, Metal.

Architects Standard Bronze Co., 282-83.

Chandler, E. D. (Agt. John W. Rapp Co.), 514-

518.

Chandler & Barber (Rep. Grant Pulley and

Hardware Co.), 565-67.

Chandler & Co. (Agts. Columbus Brick and

Terra Cotta Co.), 100.

Channels, Metal.

Buffalo Steel Co., 188.

Coe Brass Mfg. Co., 468-69.

Union Foundry Works, 344-45.

CHANUTE, KAN.

Hydraulic-Press Brick Co. (Works), 113-15.
CHAPMAN QUARRIES, PA.
 Chapman Slate Co. (Roofing Slate, Quarries), 430-31.

Chapman Slate Co., 430-31.

Charcoal, Filtering.

Loomis-Manning Filter Co., 907-09.

Charcoal Hammered Bloom Galvanized Sheets, 412-15.

CHARLESTON, S. C.

Asbestos Protected Metal Co. (Metal Roofing), 416-17.

Columbus Brick and Terra Cotta Co. (Carolina Portland Cement Co., Agts.), 100.

Pittsburgh Gage & Supply Co. (Oil, Steam and Water Equipments, Cameron & Barkley Co., Agts.), 874.

CHARLESTON, W. VA.

Jeffrey Mfg. Co. (Elevators and Conveyors), 962-63.

E. Keeler Co. (Boilers, Tanks, etc., Charleston Mine and Mill Supply Co., Agts.), 932-33.

Pittsburgh Gage & Supply Co. (Oil, Steam and Water Equipments, George Morrow, Agt.), 874.

Charleston Mine and Mill Supply Co. (Agts. E. Keeler Co.), 932-33.

CHARLESTOWN, W. VA.

General Electric Co., 1156-61.

CHARLOTTE, N. C.

E. T. Burrowes Co. (Screens), 754-55.

Chesapeake Iron Works (Structural), 296; (Ornamental), 297.

Columbus Brick and Terra Cotta Co. (Charlotte Brick Co., Agts.), 100.

Crocker-Wheeler Co. (Electrical Equipment), 1149.

General Electric Co., 1156-61.

Higgin Mfg. Co. (Screens), 758-59.

F. W. Wakefield Brass Co. (Lighting Fixtures), 1140-41.

Charlotte Brick Co. (Agts. Columbus Brick and Terra Cotta Co.), 100.

Charter Gas Engine Co., 926-27.

Charter Gas, Gasoline, Distillate, Alcohol, Kerosene and Naphtha Engines, Special Pumping Dynamos, and Boat Engines, 926-27.

Chatfield & Woods Co. (Metal Paints), 39; (Roofing Material), 398.

CHATTANOOGA, TENN.

American Enameled Brick and Tile Co., 101-107.

Cahill Iron Works (Plumbing Fixtures), 784-85.

Chattanooga Iron and Wire Works, 294-95.

Chattanooga Roofing and Foundry Co. (Sheet Metal Work), 360-61.

Columbus Brick and Terra Cotta Co. (Sloan & Co., Agts.), 100.

Sibley-Menge Press Brick Co. (Sloan & Co., Agts.), 126-27.

Wheeling Corrugating Co. (Sheet Metal Work), 370-71.

Chattanooga Architectural Metal Work, 294-95.

Chattanooga Iron and Wire Works, 294-95.

Chattanooga Kitchen Sinks, 784-85.

Chattanooga Roofing and Foundry Co., 360-61.

Chautauqua Radiators, 1044-46.

Chenoweth, H. P. (Rep. Grant Pulley and Hardware Co.), 565-67.

Cherokee Marble, 74-75.

Cherry, Inc., P. L. (Agts. Atlantic Terra Cotta Co.), 138-39.

Chesapeake Iron Works (Structural), 296; (Ornamental), 297.

Chester, C. (Agt. George W. Golden), 747.

CHESTER, PA.

Cellu Enamel Co., 1260-61.

Keystone Plaster Co. (Mill), 165.

Stevenson Co. (Refrigerator Doors), 1122.

Chests, Medicine, see Cabinets, Medicine.

CHEYENNE, WYO.

Chamberlin Metal Weather Strip Co., 744-45.

CHICAGO, ILL.

A. P. W. Paper Co., 854-55.

Acme Ventilating Co., 1050-51.

Acorn Brass Mfg. Co. (Window Ventilators, etc.), 1048-49.

Adams & Elting Co. (Paints and Stains), 1310-11.

W. D. Allen Mfg. Co. (Hose Racks, etc.), 938-39.

Allith Mfg. Co. (Structural Hardware), 536-537.

American Blower Co. (Heating and Ventilating Apparatus and Steam Engines), 1052-53.

American Circular Loom Co. (Conduit and Fittings, Thomas G. Grier, Agt.), 1146-48.

American Compound Door Co., 692-93.

American Enameled Brick and Tile Co., 101-107.

American Ironing Machine Co., 1072-73.

American Laundry Machinery Mfg. Co., 1074-75.

American Luxfer Prism Co., 617-21.

American Mason Safety Tread Co., 540.

American Revolving Door Co., Inc., 694-95.

American Sheet and Tin Plate Co. (Metal Roofing, W. H. Eaton, Agt.), 412-15.

American Steel & Wire Co. (Wire Rope), 14-15; (Concrete Reinforcement), 182-85;

(Electrical Wires and Cables, Frank Baackes, Dennis A. Merriman, and George F. Rummel, Sales Agts.), 1150-51.

American 3-Way Prism Co., 622-31.

Anchor Post Iron Works (E. R. Landon Iron & Wire Works, Agts.), 278-81.

Antakwa Co. (Damp-Resisting Paints), 42-43.

Armstrong Cork Co. (Cold-Storage Insulation), 1090-92.

Art Metal Construction Co. (Metal Furniture and Fixtures), 1214-15.

Asbestos Protected Metal Co. (Metal Roofing), 416-17.

Ashley House-Sewage Disposal Co., 844-45.

Atchison Revolving Door Co. (Ross E. Stewart, Agt.), 696-97.

Athey Sanitary Equipment Co. (Cloth-Lined Weather-Strips), 742-43.

Barber Asphalt Paving Co. (Asphalt Roofing), 393-95.

Barrett Mfg. Co. (Roofing and Sheathing Felts), 373-75.

Beardslee Chandelier Mfg. Co., 1124-25.

M. H. E. Beckley (Blackboards), 1216-17.

Benjamin Electric Mfg. Co., 1126-27.

Berger Mfg. Co. (Architectural Sheet Metal Work), 354-56; (Sidewalk Light Construction), 634-35.

J. A. & W. Bird & Co. (Roofing), 396-97.

F. W. Bird & Son (Roofing and Insulating Papers), 376.

Blaisdell Machinery Co., 1290-91.

Chas. G. Blake & Co. (Mausoleums and Monuments), 90.

S. F. Bowser & Co., Inc. (Oil-Handling Equipment), 1274-75.

Boynton Furnace Co., 978-79.

Bridgeport Wood Finishing Co., 1312-13.

E. T. Burrowes Co. (Screens), 754-55.

Samuel Cabot, Inc. (Shingle Stains, etc.), 1316-21.

Cahill Iron Works (Plumbing Fixtures, Harry Verbeck, Agt.), 784-85.

Cameron Schroth Cameron Co. (Boilers and Radiators), 1009-11.

Carter White Lead Co., 1315.

Casement Hardware Co., 548-49.

Ceresit Waterproofing Co., 48-49.

Chamberlin Metal Weather Strip Co., 744-45.

Chicago Dryer Co. (Laundry Machinery), 1076-79.

CHICAGO, ILL.—Continued.

Chicago Granite Column and Carving Works, 91.

Chicago Spring Butt Co., 550-51.

Chicago Terra Cotta Co., 140-41.

Climax Co. (Concrete Reinforcement), 194.

Clinton Wire Cloth Co. (Concrete Reinforcement), 190-91.

Columbian Hardware Co. (Spring Hinges), 554-55; (Hangers), 558; (Registers), 980.

Columbus Brick and Terra Cotta Co. (S. S. Kimbell Brick Co., Agts.), 100.

Compound Injector and Specialty Co. (Plumbing Specialties, Water Softener, etc.), 848-49.

Conkling Co. (Water Softening Systems), 1084; (Washing Machines), 1085.

Cortright Metal Roofing Co., 418-19.

Abram Cox Stove Co., 984-87.

Creamery Package Mfg. Co. (Refrigerating Machinery), 1094-95.

Crocker-Wheeler Co. (Electrical Equipment), 1149.

Cropp Concrete Machinery Co., 26-27.

Crouse-Hinds Co. (Electrical Equipment), 1152-53.

Dahlstrom Metallic Door Co., 476-79.

Deming Co. (Pumping Machinery, Hennion & Hubbell, Agts.), 898-99.

Detroit Steel Products Co. (Wrought-Steel Sash, Charles R. Ayars, Agt.), 480-83.

Diamond Expansion Bolt Co., 559.

Donaldson Co. (Ventilating Appliances), 1047.

G. Drouve Co. (Puttyless Skylights), 448-49.

Eagle White Lead Co., 843.

Elevator Supply and Repair Co., 949-53.

Everhard Co. (Brick, Bonner & Marshall Co., Agts.), 110-11.

Farr & Bailey Mfg. Co. (Oil-Cloth, Linoleum, etc.), 1378-79.

Federal Cement Tile Co. (Roofing Tile), 382-83.

Ferro-Concrete Construction Co., 195-97.

Flexible Mosaic Co., 1370-71.

Flour City Ornamental Iron Works, 302-03.

Follansbee Brothers Co. (Roofing Tin), 420-21.

Ford & Johnson Co. (Chairs and Furniture), 1380-81.

Fort Wayne Electric Works, 1154-55.

Foundation Co., 38.

M. Ewing Fox & Co. (Decorative Coatings), 1322.

Frick Co. (Refrigerating Machinery, B. M. Osburn Co., Agts.), 1096-97.

Friedley-Voshardt Co. (Sheet Metal Work), 366-67.

Gardner Sash Pulley Co., 564.

General Electric Co., 1156-61.

General Fireproofing Co. (Metal Furniture), 1201.

Georgia Marble Co. (I. H. Dapprich Co., Rep.), 74-75.

Glidden Varnish Co., 1324-25.

Globe-Wernicke Co. (Steel and Wood Office Furniture), 1218-19.

George W. Golden (Metal Weather-Strips, W. L. Van Dame, Agt.), 747.

B. F. Goodrich Co. (Interlocking Rubber Tiling), 249.

Goodyear Tire and Rubber Co. (Interlocking Rubber Tiling), 250-51.

Gorham Co Architectural Bronze, 304-05.

Goulds Mfg. Co. (Pumping Machinery), 895.

Grant Pulley and Hardware Co. (John C. Bold, Rep.), 565-67.

Gulf Red Cedar Co., 723.

Hahl Automatic Clock Co., 1246-47.

Harris Fire Apparatus Co., 940-41.

S. H. Harris Co. (Steel Doors), 490-91.

Hart Mfg. Co. (Electric Goods), 1164-65.

CHICAGO, ILL.—Continued.

Hart & Cooley Co. (Registers), 981; (Lockers), 1204.
 Hartmann-Sanders Co. (Wood Columns and Capitals), 680-85.
 Heath-Johnson Co. (Ornamental Metal Work), 306-09.
 Hennebique Construction Co. (Concrete Reinforcement), 202-03.
 Hess Warming & Ventilating Co., 1205-07.
 J. G. Hetzel (Roofing Cement, J. C. McFarland, Agt.), 400-01.
 Higgin Mfg. Co. (Screens), 758-59.
 Hohmann & Maurer Division Taylor Instrument Companies (Heating Specialties), 992.
 E. Howard Clock Co., 1248-49.
 Robert W. Hunt & Co. (Consulting Engineers), 774-75.
 Huntington Roofing Tile Co. (Meding & MacLellan, Agts.), 385-87.
 Hydraulic-Press Brick Co., 113-15.
 Hydrex Felt and Engineering Co. (Waterproofing), 52.
 Hydrolithic Cement Co. (Cement Waterproofing), 53-55.
 Ilg Electric Ventilating Co., 1060-61.
 Illinois Damp-Proofing Co., 56-57.
 Imperial Brass Mfg. Co. (Shower-Bath Mixer), 856-57.
 Inland Steel Co. (Concrete Reinforcement), 204.
 International Harvester Company of America (Gas and Gasoline Engines), 928-29.
 Wm. H. Jackson Co. (Ornamental Metal Work), 312-13.
 Jeffrey Mfg. Co. (Elevators and Conveyors), 962-63.
 Jewell Water Improvement Co., 902-03.
 Kauffman Heating & Engineering Co. (Cuthbert Schaefer, Agt.), 996-97.
 Kawneer Mfg. Co. (Store Fronts and Metal Mouldings), 668-70.
 Keasbey & Mattison Co. (Asbestos Roofing, etc.), 402-05; (Pipe and Boiler Covering), 894.
 E. Keeler Co. (Boilers, Tanks, etc., O. A. Rochlitz, Agt.), 932-33.
 Keller Mfg. Co. (Vacuum Cleaners, Dish Washers, Clothes Washers), 1189-91.
 Kellogg-Mackay Co. (Heating Apparatus), 998-99.
 Thos. Kelly & Bros. (Plumbers' Specialties), 800-01.
 Kelsey Heating Co. (Warm-Air Generators, Van Evera & Lewis Mfg. Co., Agts.), 1000-01.
 David E. Kennedy, Inc. (Cork Floor Tiling, etc.), 266-67.
 Kerite Insulated Wire & Cable Co. (Watson Insulated Wire Co., Reps.), 1174.
 Kewanee Boiler Co., 1002-08.
 Kewanee Water Supply Co., 904-05.
 Kinnear Mfg. Co. (Steel Rolling Doors, etc.), 492-99.
 Knisely Brothers (Fireproof Doors and Windows), 502-03.
 Kohler Brothers (Electrical Engineers and Manufacturers), 1168-69.
 J. M. Kohler Sons Co. (Porcelain Enameled Ware), 804-05.
 Thomas Lalor & Co. (Factory and Warehouse Brokers), 10-11.
 E. R. Landon Iron and Wire Works, 314-15.
 Lansing Wheelbarrow Co. (Automobile Turntables), 1272-73.
 Willy H. Lau Co. (Lighting Fixtures), 1132-33.
 Lewis & Kitchen (Heating and Ventilating), 1012-13.
 Library Bureau (Metal Furniture), 1224-25.

CHICAGO, ILL.—Continued.

Loomis-Manning Filter Co., 907-09.
 Lord and Burnham Co. (Conservatories and Greenhouses), 1302-05.
 Lowe Brothers Co. (Paints, etc.), 1332-33.
 John Lucas & Co. (Paints, etc.), 1334-35.
 Ludowici-Celadon Co. (Roofing Tiles), 388-89.
 Mandel Brothers (Decorators, Upholsterers, Furnishers), 1388-89.
 Marine Engine and Machine Co. (Elevators), 957.
 Marsh Co. (Concrete Mixers, etc.), 32-33.
 McCord Mfg. Co. (Force-Feed Lubricator), 879; (McKim Gasket), 878.
 McCray Refrigerator Co., 1104-07.
 Merrill Corporation (Furniture), 1390-91.
 Merritt & Co. (Metal Lockers, etc., H. F. Boardman, Agt.), 1212.
 James A. Miller & Bro. (Fireproof Windows, etc.), 508-09.
 Mississippi Glass Co. (Decorative Glass), 650.
 Mississippi Wire Glass Co., 651.
 Moller & Schumann Co. (Varnishes, Enamels, etc.), 1337.
 Monolith Steel Co., Inc. (Concrete Reinforcement), 206-07.
 Moon Mfg. Co. (Annunciators), 1170-71.
 Benjamin Moore & Co. (Paints, etc.), 1340.
 Morgan Co. (Doors and Interior Woodwork, Morgan Sash and Door Co.), 702-03.
 Murphy Iron Works (Smokeless Furnaces), 934-35.
 Murphy Varnish Co., 1338-39.
 National Brass and Copper Tube Co., 862-63.
 National Fire Proofing Co., 230-37.
 National Lead Co. (Lead Pipe), 861; (Technical Paints), 1341.
 National Metal Molding Co., 1172-73.
 National Metal Weather Strip Co., Inc., 750-51.
 National Paint Works, 60-61.
 National Steam Specialty Co. (Air Valves and Gauges), 880-81.
 National Vacuum Heating Co., 1024-25.
 New Pedrara Mexican Onyx Co., 1362-63.
 New York Belting and Packing Co., Ltd. (Interlocking Rubber Tiling), 254.
 New York Prism Co., 640.
 North Carolina Granite Corporation, 94.
 Northwestern Expanded Metal Co., 210-11.
 Northwestern Terra Cotta Co., 131-37.
 Okonite Co. (Insulated Wires, etc., Central Electric Co., Agts.), 1176-77.
 Oneida Community, Ltd. (Reinforcing Wire Chains), 205; (Builders' Hardware), 578-579.
 Orr & Lockett Hardware Co., 1112-13.
 Paine Lumber Co., Ltd. (Doors and Interior Trim), 704-05.
 Patented Window Attachment Co., 580-81.
 Payson Mfg. Co. (Hardware Specialties), 582-83.
 Pennsylvania Rubber Co. (Interlocking Rubber Tiling), 255.
 Pittsburgh Water Heater Co., 832-35.
 Pittsburgh Gage & Supply Co. (Oil, Steam and Water Equipments, McMaster-Carr Supply Co., Agts.), 874.
 Powers Regulator Co. (Heating Specialties), 1026-29.
 Pratt & Lambert, Inc. (Varnishes, Stains, etc.), 1344-45.
 Pressed Prism Plate Glass Co., 641-43.
 Raymond Concrete Pile Co., 34-37.
 Reliance Ball Bearing Door Hanger Co. (F. P. Smith Wire & Iron Works, Agts.), 586-87.
 Republic Mfg. Co. (Plumbing Fixtures), 814-15.
 Richards Mfg. Co. (Doors Hangers), 588-90; (Spring Hinges), 591.
 Ridgway Dynamo and Engine Co., 936-37.

CHICAGO, ILL.—Continued.

Rinald Bros. (Technical Paints, Geo. E. Watson Co., Agts.), 1346-47.
 Emil W. Ritter Co. (Building Specialties), 592.
 Oscar C. Rixson Co. (Floor Hinges), 594; (Casement Adjusters), 595.
 Rockport Granite Co. (J. D. Duffy, Rep.), 97.
 Rubbertex Cloth and Paper Co. (Roofing Material), 410.
 Ruud Mfg. Co. (Gas Water-Heaters), 836-39.
 Sackett Plaster Board Co., 238-39.
 Sanitary Pump Co. (Erwin & Co., Agts.), 920-21.
 Schott Engineering Co. (Designing and Constructing Engineers), 778.
 Schott Specialty Co. (Steam and Water Specialties), 892.
 Sharon Steel Hoop Co. (Slotted Steel Studing), 240-42; (Steel Corner Bead), 600.
 Sherwin-Williams Co. (Paints), 1348-49.
 F. P. Smith Wire and Iron Works (Concrete Reinforcement), 222; (Iron and Bronze Work), 332-33.
 Standard Asphalt & Rubber Co. (Composition for Roofing, etc.), 406-07.
 Standard Co. (Ornamental Metal Work), 337.
 Standard Electric Time Co., 1250-51.
 Standard Paint Co. (Preservative Paints), 63; (Building Papers), 377; (Roofing and Insulating Papers), 408-09.
 Standard Underground Cable Co., 1180-81.
 Standard Varnish Works, 1350-51.
 Stanley Works (Builders' Hardware), 601.
 Star Expansion Bolt Co., 606.
 Steel City Electric Co. (I. A. Bennett Co., Agts.), 1182-83.
 Stowell Mfg. and Foundry Co. (Hardware Specialties), 602-03.
 H. C. Streeter (Structural Hardware), 604-05.
 B. F. Sturtevant Co. (Heating and Ventilating Apparatus), 1034-35.
 Seth Thomas Clock Co., 1252.
 Thomas & Smith, Inc. (Ventilating Appliances), 1066-67.
 Tiffany Enameled Brick Co., 128-29.
 Toch Brothers (Waterproofing Compounds, Paints, etc.), 64-65.
 Tokheim Mfg. Co., Inc. (Oil-Handling Equipment), 1276-77.
 Troy Laundry Machinery Co., Ltd., 1088-89.
 Tuttle & Bailey Mfg. Co. (Architectural Bronzes, etc.), 340-41; Registers, Ventilators, etc.), 1036-37.
 Union Fibre Co. (Sheathing and Deadening Materials), 378-79.
 Union Foundry Works, 344-45.
 United States Gypsum Co. (Wall Plasters), 174-77.
 United States Heater Co., 1038-39.
 United States Radiator Co., 1044-46.
 Variety Mfg. Co. (Folding Doors, Rolling Shutters, etc.), 519-25.
 Vermont Marble Co., 84-85.
 Voigtmann & Co. (Fireproof Windows, Doors, etc.), 532-35.
 Vonnegut Hardware Co. (Fire-Exit Devices, J. C. Bold, Rep.), 608-09.
 Wadsworth, Howland & Co., Inc. (Paints, Coatings, etc., Geo. E. Watson Co., Agts.), 1354-55.
 F. W. Wakefield Brass Co. (Lighting Fixtures), 1140-41.
 Walch & Wyeth (Valves), 888-89.
 Waterproofing Co., 66-67.
 Wear-Proof Mat Co., 1232.
 Wendnagel & Co. (Tanks and Tank Towers), 924-25.
 Western Electric Co., 1184-87.
 Wheeling Corrugating Co. (Sheet Metal Work), 370-71.

CHICAGO, ILL.—Continued.

- Ernst Wiener Co. (Industrial Railway Specialists), 22-23.
 Jas. G. Wilson Mfg. Co. (Rolling Doors, etc.), 711-13; (Venetian Blinds and Awnings), 721; (Rolling Partitions, etc.), 732.
 Winslow Bros. Co. (Ornamental Metal Works), 343.
 Fred W. Wolf Co. (Refrigerating Machinery), 1118-19.
 Woodbury Granite Co. (J. B. Reinhalter, Rep.), 99.
 Wright Wire Co. (Wire Work), 352-53.
 Yeomans Brothers (Electric Pumping Machinery), 852-53.
 York Mfg. Co. (Refrigerating Machinery), 1120-21.
 York Safe and Lock Co., 1238-39.
 Youngstown Iron & Steel Roofing Co. (Chicago Builders' Specialties Co., Agts.), 218-21.
Chicago, Chicago-Francis, Chicago-Rapido, and Chicago-Sun Clothes Dryers, and Chicago-Francis Combination Dryer and Stove, 1076-79.
 Chicago Builders' Specialties Co. (Agts. Youngstown Iron & Steel Roofing Co.), 218-21.
Chicago Clothes Dryers and Laundry Equipment, and Chicago-Francis Clothes Dryers, 1080-83.
 Chicago Dryer Co., 1076-79.
 Chicago Granite Column and Carving Works, 91.
 CHICAGO HEIGHTS, ILL.
 Inland Steel Co. (Concrete Reinforcement Works), 204.
 Ludowici-Celadon Co. (Roofing Tiles, Factory), 388-89.
 Chicago Spring Butt Co., 550-51.
Chicago Spring Hinges, and Checking Latches, 550-51.
 Chicago Terra Cotta Co., 140-41.
 Chiffoniers, see under Furniture.
 Chimes, Westminster.
 McShane Bell Foundry Co., 1264-65.
 Meneely Bell Co., 1266-67.
 Chimneys, Reinforced Concrete.
 Hennebique Construction Co., 202-03.
 Chimney Stacks, see Smoke-Stacks.
 China, Bone, Specialties.
 Trenton Potteries Co., 818-20.
 Chinaware.
 Mandel Brothers, 1388-89.
 Christian, J. O. (Agt. E. Keeler Co.), 932-33.
 Christie Lithograph & Printing Co. (Agts. Acorn Brass Mfg. Co.), 1048-49.
 Chronometers, Marine.
 Seth Thomas Clock Co., 1252.
 Church Decoration, see Decoration, Ecclesiastical.
 Chutes, Fuel, Vegetable, etc.
 Chattanooga Roofing and Foundry Co., 360-61.
 Grand Rapids Foundry Co., 1198-99.
 Majestic Furnace & Foundry Co., 1200.
 Emil W. Ritter Co., 592.
Majestic, 1200.
Model, 1200.
Rocnius, 1198-99.
 Chutes, Ice-Recording.
 R. E. Jones, 1102-03.
 Jones Cold Store Door Co., 1100-01.
 Victor, 1102-03.
 Chutes, Mail, see Mail Boxes and Chutes.

CINCINNATI, OHIO.

- Acorn Brass Mfg. Co. (Window Ventilators, etc., Chas. L. Myers, Agt.), 1048-49.
 American Enameled Brick and Tile Co., 101-07.
 American Laundry Machinery Mfg. Co., 1074-75.
 American Luxfer Prism Co., 617-21.
 American Sheet and Tin Plate Co. (Metal Roofing, W. T. Shannon, Agt.), 412-15.

CINCINNATI, OHIO—Continued.

- Architectural Stone Co., 150-51.
 Armstrong Cork Co. (Nonpareil Cork Pipe Covering, Philip Carey Co.), 893; (Cold Storage Insulation), 1090-92.
 Art Metal Construction Co. (Metal Furniture and Fixtures), 1214-15.
 Bankers Construction Co., 1213.
 Barrett Mfg. Co. (Roofing and Sheathing Felts), 373-75.
 E. T. Burrowes Co. (Screens), 754-55.
 Samuel Cabot, Inc. (Shingle Stains, etc., L. Mendenhall Co., Agts.), 1316-21.
 Carter White Lead Co., 1315.
 Chamberlin Metal Weather Strip Co., 744-45.
 Chatfield & Woods Co. (Metal Paints), 39; (Roofing Material), 398.
 Cincinnati Fly Screen Co., 756-57.
 Cincinnati Roofing Tile and Terra Cotta Co., 380-81.
 Columbus Brick and Terra Cotta Co. (L. H. McCammon Bros., Agts.), 100.
 Crouse-Hinds Co. (Electrical Equipment), 1152-53.
 Eagle White Lead Co., 843.
 Edwards Mfg. Co. (Sheet Metal Work), 362-63.
 Everhard Co. (Brick, Moores-Coney Co., Agts.), 110-11.
 Farr & Bailey Mfg. Co. (Oil-Cloth, Linoleum, etc., George F. Otte Co., Agts.), 1378-79.
 Ferro-Concrete Construction Co., 195-97.
 Ford and Johnson Co. (Chairs and Furniture), 1380-81.
 Fort Wayne Electric Works, 1154-55.
 Frick Co. (Refrigerating Machinery), 1096-97.
 General Electric Co., 1156-61.
 Globe-Wernicke Co. (Steel and Wood Office Furniture), 1218-19.
 George W. Golden (Metal Weather-Strips, Pursell & Grand, Agts.), 747.
 Grant Pulley and Hardware Co. (Lawrence Mendenhall, Rep.), 565-67.
 Albert Grauer & Co. (Sidewalk and Vault Lights), 636-39.
 Higgin Mfg. Co. (Screens), 758-59.
 Huntington Roofing Tile Co. (Allan R. Raff, Agt.), 385-87.
 Hydraulic-Press Brick Co. (L. H. McCammon Bros., Agts.), 113-15.
 Incandescent Light and Stove Co., 1130-31.
 R. F. Johnston Paint Co., 1328-29.
 Kawneer Mfg. Co. (Store Fronts and Metal Mouldings), 668-70.
 Keasbey & Mattison Co. (Asbestos Roofing, etc.), 402-05; (Pipe and Boiler Covering), 894.
 Kinnear Mfg. Co. (Steel Rolling Doors, etc.), 492-99.
 Thomas Lee (Sheet-Metal Work), 357-59.
 Louis Lipp Co. (Plumbing Fixtures), 806-07; (Gas Water Heaters), 823.
 Lynn-Superior Co. (Filter Systems, and Bakers' Machinery), 912-13.
 McCray Refrigerator Co., 1104-07.
 Meadow Marble Co., 78-79.
 Merritt & Co. (Metal Lockers, etc.), 1212.
 Monroe Refrigerator Co., 1108-09.
 Murphy Iron Works (Smokeless Furnaces), 934-35.
 Nat. Asso. of Master Sheet Metal Workers, 424-26.
 National Fire Proofing Co., 230-37.
 National Lead Co. (Lead Pipe), 861; (Technical Paints), 1341.
 North Carolina Granite Corporation, 94.
 Okonite Co. (Insulated Wires, etc., F. D. Lawrence Electric Co., Agts.), 1176-77.
 Pittsburgh Water Heater Co., 832-35.

CINCINNATI, OHIO—Continued.

- Pittsburgh Gage & Supply Co. (Oil, Steam and Water Equipments, Wirthlin-Scallan Co., Agts.), 874.
 Wm. Powell Co. (Steam Specialties), 884-85.
 Powers Regulator Co. (Heating Specialties), 1026-29.
 H. J. Reedy Co. (Elevators), 967.
 Ridgway Dynamo and Engine Co., 936-37.
 Ritter Folding Door Co., Inc., 528-29.
 Rookwood Pottery Co. (Faience and Tile), 146-47.
 Ruud Mfg. Co. (Gas Water-Heaters), 836-39.
 Safe-Cabinet Co., Inc., 1234-35.
 Sanitary Pump Co. (Fairbanks, Morse & Co., Agts.), 920-21.
 Sherwin-Williams Co. (Paints), 1348-49.
 Stewart Iron Works Co., Inc., 338-39.
 B. F. Sturtevant Co. (Heating and Ventilating Apparatus), 1034-35.
 Triumph Ice Machine Co., 1116-17.
 Victor Safe & Lock Co., 1236-37.
 Western Electric Co., 1184-87.
 D. T. Williams Valve Co., 890-91.
 Wood-Mosaic Co. (Flooring, Moores-Coney Co., Agts.), 738-40.
 Cincinnati Fly Screen Co., 756-57.
 Cincinnati Roofing Tile and Terra Cotta Co., 380-81.
Cincinnati Rustless Insect Screens, 756-57.
 Circles, Metal.
 Edwards Mfg. Co., 362-63.
 Circuit Breakers.
 General Electric Co., 1156-61.
 Cisterns, see Reservoirs.
 Cisterns, Covers for.
 Keenan Structural Slate Co., 796-98.
 Clamps, Corner.
 Brandenberger & Co., 660-61.
Universal, 660-61.
 Clamps, Metal.
 American Concrete Co., 6-7.
 Diamond Expansion Bolt Co., 559.
 Emil W. Ritter Co., 592.
Atlas, 592.
 Clare & Brockest (Western Representatives for Canada, Compound Injector and Specialty Co.), 848-49.
 Clark, William H. (Rep. Grant Pulley and Hardware Co.), 565-67.
 Clark Co., George W. (Agts. John W. Rapp Co.), 514-18.
 Clark-Guest Co. (Agts. Huntington Roofing Tile Co.), 385-87.
 Clarke Asphalt Roofing & Paint Co. (Agts. National Roofing Co.), 62, 399.
 Clay, John H., 944.
 Clay Products, see under Specific Headings, Brick, Tiles, etc.
Clay's Quick-Opening Engine-House Appliances, Sliding-Pole and Rail, Cast-Brass Hinges, etc., 944.
 CLAYTON, N. Y.
 Picton Island Red Granite Co. (Quarries), 96.
Clean-Seat Air, Steam and Water Valves, 874.
 Cleaners, Oats.
 F. P. Smith Wire and Iron Works, 332-33.
 Cleaners, Window.
 Casement Hardware Co., 548-49.
Outside-In, 548-49.
 Cleaning, Exterior.
 American Diamond Blast Co., 41.
 Cleaning, Mechanical.
 American Air Cleaning Co., 1288-89.
 American Diamond Blast Co., 41.
 Blaisdell Machinery Co., 1290-91.
 Foster & Glidden Engineering Co., 1287.
 Keller Mfg. Co., 1189-91.
 National Vacuum Cleaning Co., 1292-93.
 Palm Engineering Co., 1294-95.
 Vacuum Engineering Co., 1296-97.
Aero, 1288-89.
Keystone, 1287.

Cleaning, Mechanical—Continued.

Palm System, 1294-95.

Rotrex, 1296-97.

Santo, 1189-91.

20th Century System, 1292-93.

Specifications for, 1293, 1295, 1297.

Cleaning, Sand-Blast, see Sand-Blast Cleaning.
Cleaning Tools, Mechanical.

American Air Cleaning Co., 1288-89.

Blaisdell Machinery Co., 1290-91.

Palm Engineering Co., 1294-95.

Aero, 1288-89.

Cleaning, Vacuum System, see Cleaning, Mechanical.

CLEARING, ILL.

Rubbertext Cloth and Paper Co. (Roofing Material, Factory), 410.

CLEVELAND, OHIO.

Aertight Metal Weatherstrip Co. (Cleveland Builders' Supply Co., Agts.), 741.

American Enameled Brick and Tile Co., 101-07.

American Luxfer Prism Co., 617-21.

American Sanitary Works (Water-Closets and Specialties, Cleveland Plumbing Supply Co., Agts.), 780-81.

American Steel and Wire Co. (Electrical Wires and Cables), 1150-51.

Armstrong Cork Co. (Cold-Storage Insulation), 1090-92.

Asbestos Protected Metal Co. (Metal Roofing), 416-17.

Barrett Mfg. Co. (Roofing and Sheathing Felts), 373-75.

Brown Hoisting Machinery Co. (Concrete Reinforcement), 181.

E. T. Burrowes Co. (Screens), 754-55.

Samuel Cabot, Inc., (Shingle Stains, etc., Cleveland Builders' Supply Co., Agts.), 1316-21.

Carter White Lead Co., 1315.

Chamberlin Metal Weather Strip Co., 744-45.

Clinton Wire Cloth Co. (Concrete Reinforcement, Carl Horix, Agt.), 190-91.

Columbian Hardware Co. (Spring Hinges), 554-55; (Hangers), 558; (Registers), 980.

Columbus Brick and Terra Cotta Co. (Hunt Queisser & Bliss Co., Agts.), 100.

Crocker-Wheeler Co. (Electrical Equipment), 1149.

Detroit Steel Products Co. (Wrought-Steel Sash, A. G. Hathaway & Co., Agts.), 480-83.

Duplex Hanger Co., 560-62.

Duplex Shear Lock Co., 563.

Eagle White Lead Co. (Hale & Holmes Co., Agts.), 843.

Ferrosteel Co. (Metal Work), 298.

Fischer & Jirouch (Ornamentation), 1394.

Follansbee Brothers Co. (Roofing Tin), 420-21.

Garry Iron and Steel Co. (Metal Lath, Roofing, etc.), 200.

General Electric Co., 1156-61.

Glidden Varnish Co., 1324-25.

George W. Golden (Metal Weather-Strips, W. H. Taylor & Co., Agts.), 747.

B. F. Goodrich Co. (Interlocking Rubber Tiling), 249.

Goodyear Tire and Rubber Co. (Interlocking Rubber Tiling), 250-51.

Grant Pulley and Hardware Co. (W. Birmingham Co., Rep.), 565-67.

Albert Grauer & Co. (Sidewalk and Vault Lights), 636-39.

Hascall Paint Co., 1326-27.

Higgin Mfg. Co. (Screens), 758-59.

Hydraulic-Press Brick Co., 113-15.

Ideal Hanger Co. (Beam Hangers), 572.

Ilg Electric Ventilating Co., 1060-61.

Keasbey & Mattison Co. (Asbestos Roofing, etc.), 402-05; (Pipe and Boiler Covering), 894.

CLEVELAND, OHIO—Continued.

Kinnear Mfg. Co. (Steel Rolling Doors, etc.), 492-99.

Library Bureau (Metal Furniture), 1224-25.

Ludowici-Celadon Co. (Roofing Tiles), 388-89.

Mannen & Esterly Co. (Laundry Dryers), 1086-87.

McCray Refrigerator Co., 1104-07.

Merritt & Co. (Metal Lockers, etc., R. F. Carpenter, Agt.), 1212.

Benjamin Moore & Co. (Paints, etc.), 1340.

Murphy Iron Works (Smokeless Furnaces), 934-35.

Murphy Varnish Co., 1338-39.

Nat. Asso. of Master Sheet Metal Workers, 424-26.

National Fire Proofing Co., 230-37.

National Lead Co. (Lead Pipe), 861; (Technical Paints), 1341.

National Metal Weather Strip Co., Inc., 750-51.

Northampton Portland Cement Co., 168.

Ohio Blower Co. (Steam Specialties), 882-83; (Ventilators), 1068.

Ohio Brass and Iron Mfg. Co., 864-65.

Pittsburg Water Heater Co., 832-35.

George Rackle & Sons Co. (Artificial Stone), 152-53.

Reliance Ball Bearing Door Hanger Co. (W. S. Tyler Co., Agts.), 586-87.

Ridgway Dynamo and Engine Co., 936-37.

Riester & Thesmacher Co. (Fireproof Doors and Windows), 526-27.

Ruud Mfg. Co. (Gas Water-Heaters), 836-39.

Sanitary Pump Co. (W. M. Pattison Supply Co., Agts.), 920-21.

Sherwin-Williams Co. (Paints), 1348-49.

C. W. Smith Elevator Co., 970.

Steel City Electric Co. (Ambos-McNair Co., Agts.), 1182-83.

B. F. Sturtevant Co. (Heating and Ventilating Apparatus), 1034-35.

Triumph Ice Machine Co., 1116-17.

W. S. Tyler Co. (Ornamental Metal Work), 342.

Union Paper & Twine Co. (Roofing Material), 411.

United States Gypsum Co. (Wall Plasters), 174-77.

Van Dorn Iron Works Co. (Structural Metal Specialties), 610; (Metal Furniture and Fixtures), 1230.

Vermont Marble Co., 84-85.

Wadsworth, Howland & Co., Inc. (Paints, Coatings, etc., Cleveland Builders' Supply Co., Agts.), 1354-55.

F. W. Wakefield Brass Co. (Lighting Fixtures), 1140-41.

Wood-Mosaic Co. (Flooring, Cleveland Hardwood Floor Co., Agts.), 738-40.

Youngstown Iron & Steel Roofing Co. (Cleveland Builders' Supply Co., Agts.), 218-21.

Cleveland Builders' Supply Co. (Agts. Youngstown Iron & Steel Roofing Co.), 218-21;

(Agts. Aertight Metal Weatherstrip Co.), 741; (Agts. Samuel Cabot, Inc.), 1316-21;

(Agts. Wadsworth, Howland & Co., Inc.), 1354-55.

Cleveland Expanded Metal Lath, 200.

Cleveland Hardwood Floor Co. (Agts. Wood-Mosaic Co.), 738-40.

Cleveland Joist, Wall and Timber Hangers, 558.

Cleveland Magneto American Watchman Time Detector, 1178-79.

Cleveland Plumbing Supply Co. (Agts. American Sanitary Works), 780-81.

Cleveland Steel and Corrugated Flat Wall Ties, 560-62.

Climax Automatic Ventilating Sash Locks and Lifts, and Ventilating Hinges, 552-53.

Climax Co., 194.

Climax Hollow Reinforced-Concrete Floor Beams, 194.

Climax Lock & Ventilator Co., 552-53.

Climax Soapstone Laundry Tubs, Sinks, Urinal Stalls, Slabs, etc., 788-89.

CLINTON, MASS.

Clinton Wire Cloth Co. (Concrete Reinforcement), 190-91.

Clinton Electrically Welded Fabric, 190-91.

Clinton Mortar Colors, 156-57.

Clinton Wire Cloth Co., 190-91.

Clips, Connecting Steel.

H. C. Streeter, 604-05.

Clocks.

Hahl Automatic Clock Co., 1246-47.

E. Howard Clock Co., 1248-49.

Mandel Brothers, 1388-89.

Pettes & Randall Co., 1178-79.

Standard Electric Time Co., 1250-51.

Seth Thomas Clock Co., 1252.

Clocks, Marine or Astronomical.

E. Howard Clock Co., 1248-49.

National Steam Specialty Co., 880-81.

Seth Thomas Clock Co., 1252.

Clocks, Program.

Hahl Automatic Clock Co., 1246-47.

E. Howard Clock Co., 1248-49.

Pettes & Randall Co., 1178-79.

Standard Electric Time Co., 1250-51.

Clocks, Self-Winding Electric.

Hahl Automatic Clock Co., 1246-47.

Clocks, Street or Tower.

Hahl Automatic Clock Co., 1246-47.

E. Howard Clock Co., 1248-49.

Standard Electric Time Co., 1250-51.

Seth Thomas Clock Co., 1252.

Standard, 1250-51.

Clocks, Synchronized, see Clock Systems, Electric.

Clocks, Watchman's.

E. Howard Clock Co., 1248-49.

Pettes & Randall Co., 1178-79.

Cleveland Magneto American, 1178-79.

Clock Systems, Electric.

E. Howard Clock Co., 1248-49.

Pettes & Randall Co., 1178-79.

Standard Electric Time Co., 1250-51.

Pettes & Randall Co.'s, 1178-79.

Standard, 1250-51.

Clock Systems, Pneumatic.

Hahl Automatic Clock Co., 1246-47.

Closets, Medicine, see under Cabinets, Medicine.

Closets, Metal, see under Furniture.

Closet Seats, see Seats, Water-Closet.

Cloth, Cambric or Varnished.

Standard Underground Cable Co., 1180-81.

Cloth, Waterproofing.

Standard Paint Co., 408-09.

Ruberoid, 408-09.

Clothes Dryers, see under Dryers.

Clothes Lines.

Wright Wire Co., 352-53.

Clover Leaf Ventilators, 458-59.

Clow & Sons, James B. (Agts. Youngstown Iron & Steel Roofing Co.), 218-21.

Cluster Fixtures, see Lighting Fixtures.

Cluster Shingles, see Shingles, Metal.

Coal Chutes, see Chutes, Fuel.

Coal Holes, Covers for.

American Bar-Lock Co., 612-16.

American Mason Safety Tread Co., 540.

American 3-Way Prism Co., 622-31.

Eller Mfg. Co., 364-65.

F. P. Smith Wire and Iron Works, 332-33.

Bar-Lock, 612-16.

Mason Safety, 540.

Coal Windows, Iron.

H. W. Covert Co., 982-83.

Coal-Tar Products.

Barrett Mfg. Co., 373-75.

Chatfield & Woods Co., 398.

Coal-Washing, Systems for.

Jeffrey Mfg. Co., 962-63.

COATESVILLE, PA.

Craig Ridgway & Son Co. (Elevators), 968-69.

Coatings, Chemical-Proof, see under Preservatives, and Paints.

Coatings, Fireproofing, see under Fireproofing, and Paints, Fireproofing.

Coatings, Waterproofing, see Waterproofing and Damp-Resisting, Paints or Compounds for.

Coatings for Brick or Concrete.

Antakwa Co., 42-43.

Barber Asphalt Paving Co., 393-95.

C. L. Burns, 46-47.

Samuel Cabot, Inc., 1316-21.

M. Ewing Fox & Co., 1322.

Kessler Fluats Co., 58-59.

Wadsworth, Howland & Co., Inc., 1354-55.

Bay State, 1354-55.

Burns', 46-47.

Genasco, 393-95.

Permanite, 1322.

Specifications for, 47, 1355.

Coatings for Cement or Plaster.

Antakwa Co., 42-43.

C. L. Burns, 46-47.

M. Ewing Fox & Co., 1322.

Sherwin-Williams Co., 1348-49.

Wadsworth, Howland & Co., Inc., 1354-55.

Bay State, 1354-55.

Burns', 46-47.

Muralite, 1322.

S. W. P., 1348-49.

Specifications for, 47, 1355.

Coatings for Metal.

Lowe Brothers Co., 1332-33.

Coburn Trolleys and Tracks, 577.

Cochran, Drugan & Co., 786-87.

Cocks, Pedal.

Murphy Specialty Co., 858-59.

Cocks, Rotating Gauge.

Pittsburgh Gage & Supply Co., 874.

Cocks and Bibbs, Compression and Ground Key.

Humphries Mfg. Co., 792-93.

H. Mueller Mfg. Co., 860.

Ohio Brass and Iron Mfg. Co., 864-65.

Perfect Bibb and Faucet Co., 866-67.

Pittsburgh Gage & Supply Co., 875.

Republic Mfg. Co., 814-15.

E. Stebbins Mfg. Co., 868-69.

Turnbull-Smith Co., 870-71.

Broughton, 868-69.

Mueller Extra, Special, and Colonial, 860.

Ohio Never-Leak and Low-Down, 864-65.

Perfect, 866-67.

Pittsburgh, 875.

Springfield Esco, 868-69.

Stebbins Special Esco, 868-69.

T. S., 870-71.

Specifications for, 868-69, 870-71, 875.

Codru Water-Closets, 786-87.

Coe Brass Mfg. Co., 468-69.

COFFEYVILLE, KAN.

Ludowici-Celadon Co. (Roofing Tiles, Factory), 388-89.

COLD SPRING-ON-HUDSON, N. Y.

Library Bureau (Metal Furniture, Factory),

1224-25.

Cold-Storage Doors, see Doors, Refrigerator and

Cold-Storage.

Cold-Storage Rooms, see under Refrigerators, and

Insulation, Cold-Storage.

Cold-Water Paint, see Paints, Water.

Cole, George N., 470-71.

Cole Co., John R. (Agts. American Circular Loom

Co.), 1146-48.

COLLEGE POINT, LONG ISLAND, N. Y.

John W. Rapp Co. (Fireproof Doors, etc.),

514-18.

Collins, B. V. (Agt. Ludowici-Celadon Co.),

388-89.

COLLINSVILLE, ILL.

Hydraulic-Press Brick Co. (Works), 113-15.

Colonial Cocks and Bibbs, 860.

Colonial Column Mfg. Co., 676-77.

Colonnades, Wood.

Paine Lumber Co., Ltd., 704-05.

Colorado Machinery & Supply Co. (Agts. Pittsburgh Gage & Supply Co.), 874.

Colors, see Paints.

Colors, Mortar.

American Hard Wall Plaster Co., 156-57.

Samuel Cabot, Inc., 1316-21.

Samuel H. French & Co., 1323.

Garry Iron and Steel Co., 200.

Toch Brothers, 64-65.

Clinton, 156-57.

Edinburgh, 64-65.

French's, 1323.

Garry Brands, 200.

Pearless, 1323.

Colors, Oil.

John Lucas & Co., 1334-35.

Colt Co., J. B., 1123.

Colt Standard Carbide-Fed Acetylene Generators, and Colt Municipal Acetylene Generators, 1123.

COLUMBIA, S. C.

McCray Refrigerator Co., 1104-07.

Columbia All-Metal Weather Strip, 750-51.

Columbian Concrete Steel Bar Co., 192-93.

Columbian Hardware Co. (Spring Hinges, etc.), 554-55; (Hangers, etc.), 558; (Registers), 980.

Columbian System of Concrete Reinforcement Ribbed-Steel Bars, and Unit Girder Frames 192-93.

Columbian Tarred Roofing Felt, 373-75.

Columbian Wrought-Steel and Ball-Bearing Spring Hinges, and Floor Spring Hinges. 554-55.

Columbian-Cleveland Double Hanger, 558.

COLUMBUS, GA.

Sibley-Menge Press Brick Co. (A. H. Bickstaff, Agt.), 126-27.

COLUMBUS, OHIO.

Acorn Brass Mfg. Co. (Window Ventilators, etc., R. D. Lamb, Agt.), 1048-49.

American Enameled Brick and Tile Co., 101-

07.

J. A. & W. Bird & Co. (Roofing), 396-97.

Samuel Cabot, Inc. (Shingle Stains, etc., J. P.

Carlile, Agt.), 1316-21.

Columbus Brick and Terra Cotta Co., 100.

Columbus Heating and Ventilating Co., 790-91.

J. W. Coulson & Co. (Store-Front Construc-

tion), 663-65.

Everhard Co. (Brick, Warren B. Ferris Brick

Co., Agts.), 110-11.

Follansbee Brothers Co. (Roofing Tin),

420-21.

General Electric Co., 1156-61.

Albert Grauer & Co. (Sidewalk and Vault

Lights), 636-39.

Huntington Roofing Tile Co. (R. L. Watson,

Agt.), 385-87.

Hydraulic-Press Brick Co. (Le Roy W. Gad-

dis, Agt.), 113-15.

Ilg Electric Ventilating Co. (Erner & Hop-

kins Co., Agts.), 1060-61.

Jeffrey Mfg. Co. (Elevators and Conveyors),

962-63.

Kinnear & Gager Mfg. Co. (Metal-Covered

Doors, Windows and Metal Shingles),

500.

Kinnear Mfg. Co. (Steel Rolling Doors, etc.),

492-99.

Nat. Asso. of Master Sheet Metal Workers,

424-26.

National Metal Weather Strip Co. Inc. (S. H.

Shearer, Agt.), 750-51.

C. T. Nelson Co. (Wood Columns and Capi-

talats), 686-87.

Ohio Elevator and Machine Co., 964-65.

Pittsburg Water Heater Co., 832-35.

H. J. Reedy Co. (Elevators), 967.

Ruud Mfg. Co. (Gas Water-Heaters), 836-39.

COLUMBUS, OHIO—Continued.

Triumph Ice Machine Co., 1116-17.

F. W. Wakefield Brass Co. (Lighting Fix-

tures), 1140-41.

Columbus Brick and Terra Cotta Co., 100.

Columbus Brick and Terra Cotta Co. (B. Miffin

Hood, Rep.), 118.

Columbus Heating and Ventilating Co., 790-91.

Columbus Metal-Covered Door, 500.

Columbus Octagon and Sidewall Ventilated Uri-

nals, and Ventilated Closets, 790-91.

Columbus & Hocking Coal and Iron Co. (B.

Miffin Hood, Rep.), 118.

Columns, Cement, Composition or Plaster.

American Concrete Co., 6-7.

Hennebique Construction Co., 202-03.

George Rackle & Sons Co., 152-53.

Columns, Concrete-Filled, Steel.

Acme Column Co., 276-77.

Union Metal Mfg. Co., 346-47.

United States Column Co., 348-49.

Acme, 276-77.

Lally, 348-49.

Columns, Hooped or Spiral.

Gabriel Concrete Reinforcement Co., 198-99.

F. P. Smith Wire and Iron Works, 222.

Trussed Concrete Steel Co., 212-13.

Gabriel, 198-99.

Kahn, 212-13.

Columns, Iron or Steel.

Acme Column Co., 276-77.

William Bayley Co., 284-85.

Chattanooga Roofing and Foundry Co.,

360-61.

Chesapeake Iron Works, 296.

Monolith Steel Co., Inc., 206-07.

F. P. Smith Wire and Iron Works, 332-33.

Union Foundry Works, 344-45.

Union Metal Mfg. Co., 346-47.

Watertite Drain Co., 872-73.

Monolith Stapled and Socket, 206-07.

Union, 346-47.

Columns, Lock-Joint, see Columns, Wood.

Columns, Marble.

Blue Ridge Marble Co., 72-73.

Kennesaw Marble Co., 76-77.

Henry A. Schweyer Co., 1364-65.

Tennessee Producers Marble Co., 82-83.

Columns, Metal.

Architects Standard Bronze Co., 282-83.

Columns, Sheet Metal, see Sheet Metal Work,

Architectural.

Columns, Stone.

Chicago Granite Column and Carving Works,

91.

Picton Island Red Granite Co., 96.

Columns, Wood.

Colonial Column Mfg. Co., 676-77.

Doane & Jones Lumber Co., 678-79.

Hartmann-Sanders Co., 680-85.

Hyde-Murphy Co., 710.

C. T. Nelson Co., 686-87.

Nickerson Mfg. Co., 688-89.

Paine Lumber Co., Ltd., 704-05.

Koll's Lock-Joint, 680-85.

Nickerson Double-Lock Joint, 688-89.

Perfect Joint, 678-79.

Triumph Lock Joint, 676-77.

Column Coverings, see Coverings, Column or

Girder.

Colwell Lead Co., 788-89.

Colwell Lead Co. (Agts. American Sanitary

Works), 780-81.

Comerma Co., 223.

Common Sense Sash Pulleys, 565-67.

Community Galvanized Sash Chains, and Chain

Fabric for the Reinforcement of Concrete,

578-79.

Commutators, Electric.

Crouse-Hinds Co., 1152-53.

Compensares, Electric.

Fort Wayne Electric Works, 1154-55.

Compo Ornaments, see under Ornaments.

- Composite Stone, see Stone, Artificial.
Compound Door Co., 698-99.
Compound Injector and Specialty Co., 848-49.
 Compression Work, see Cocks and Bibbs.
Compressor System of Foundation, 202-03.
 Compressors, Air.
 Deming Co., 898-99.
 I X L Pump & Mfg. Co., 794-95.
 Jacobson Machine Mfg. Co., 930-31.
 I X L, 794-95.
 Compressors, Ammonia.
 Brunswick Refrigerating Co., 1093.
 Creamery Package Mfg. Co., 1094-95.
 Triumph Ice Machine Co., 1116-17.
 York Mfg. Co., 1120-21.
 Brunswick, 1093.
 Triumph, 1116-17.
Concealed Transom Lift Co., 556-57.
Concentrated Galvanic Primer Paint, 1346-47.
 Concrete, Coatings for, see under Coatings, Enamels, and Preservatives.
 Concrete, Liquid.
 Zibell Damp-Resisting Paint Co., 69-71.
 Alkacene, 69-71.
 Concrete, Machinery for.
 American Concrete Co., 6-7.
 Ashland Steel Range & Mfg. Co., 24-25.
 Cropp Concrete Machinery Co., 26-27.
 Ideal Concrete Machinery Co., 28-30.
 Marsh Co., 32-33.
 Stanley Hoisting Co., 18-21.
 Duplex Post, 32-33.
 Ideal, 28-30.
 Marsh-Dexter, 32-33.
 United States Standard, 24-25.
 Concrete, Reinforcement for.
 American Concrete Co., 6-7.
 American Steel and Wire Co., 182-85.
 Berger Mfg. Co., 354-56, 634-35.
 Brown Hoisting Machinery Co., 181.
 Buffalo Steel Co., 188.
 Clinton Wire Cloth Co., 190-91.
 Columbian Concrete Steel Bar Co., 192-93.
 Duplex Shear Lock Co., 563.
 Gabriel Concrete Reinforcement Co., 198-99.
 General Fireproofing Co., 201.
 Hunt Metal Corner Co., 570-71.
 Inland Steel Co., 204.
 Monolith Steel Co., Inc., 206-07.
 National Wire Cloth Co., 208-09.
 Northwestern Expanded Metal Co., 210-11.
 Oneida Community, Ltd., 205.
 F. P. Smith Wire and Iron Works, 222.
 Standard Concrete-Steel Co., 243.
 Trussed Concrete Steel Co., 212-13.
 C. A. P. Turner, 214-15.
 Turner Construction Co., 216-17.
 Wright Wire Co., 352-53.
 Youngstown Iron & Steel Roofing Co., 218-21.
 Clinton, 190-91.
 Columbian System, 192-93.
 Duplex Shear Lock, 563.
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 Reliance Ball Bearing Door Hanger Co. (Central Insulation Supply Co., Agts.), 586-87.
 Des Moines Building Material Co. (Agt. Columbus Brick and Terra Cotta Co.), 100.
Des Moines Elaterite Cement Waterproofing and Bonding and Metal and Wood Preservative and Marine Paints, 50-51.
 Desks.
 Art Metal Construction Co., 1214-15.
 General Fireproofing Co., 1201
 Jamestown Metal Furniture Co., 1220-21.
 Desks, Typewriter, Metal.
 Art Metal Construction Co., 1214-15.
Desper Elevator Service Recorder, 949-53.

DETROIT, MICH.

- American Blower Co. (Heating and Ventilating Apparatus and Steam-Engines), 1052-53.
 American Enameled Brick and Tile Co., 101-07.
 American Sanitary Works (Water-Closets and Specialties, Detroit Lead Pipe and Sheet Lead Works, Agts.), 780-81.
 American Sheet and Tin Plate Co. (Metal Roofing, James A. Smith, Jr., Agt.), 412-15.
 J. E. Bolles Iron and Wire Works, 288-89.
 E. T. Burrowes Co. (Screens), 754-55.
 Samuel Cabot, Inc. (Shingle Stains, etc., C. H. Little Co., Agts.), 1316-21.
 Carter White Lead Co., 1315.
 Chamberlin Metal Weather Strip Co., 744-45.
 Columbus Brick and Terra Cotta Co. (F. B. Holmes & Co., Agts.), 100.
 H. W. Covert Co. (Fireplace Appliances, Detroit Mantel & Tile Co., Agts.), 982-83.
 Crocker-Wheeler Co. (Electrical Equipment), 1149.
 Detroit Show Case Co., 662.
 Detroit Steel Products Co. (Wrought-Steel Sash), 480-83.
 Everhard Co. (Brick, Bartlett Co., Agts.), 110-11.
 Follansbee Brothers Co. (Roofing Tin), 420-21.
 Gabriel Concrete Reinforcement Co., 198-99.
 General Electric Co., 1156-61.
 George W. Golden (Metal Weather-Strips), 747.
 B. F. Goodrich (Interlocking Rubber Tiling), 249.
 Albert Grauer & Co. (Sidewalk and Vault Lights), 636-39.
 Howarth Reversible Sash Center Co., 569.
 Hydraulic-Press Brick Co. (Thomas Bros. & Co., Agts.), 113-15.
 Hygeia Filter Co., 900-01.
 Kawneer Mfg. Co. (Store Fronts and Metal Mouldings), 668-70.
 Lavigne Mfg. Co. (Pumps, Valves and Brass Goods), 876-77.
 Library Bureau (Metal Furniture), 1224-25.
 Ludowici-Celadon Co. (Roofing Tiles, Thomas Bros. & Co., Agts.), 388-89.
 McCord Mfg. Co. (Force-Feed Lubricator), 879; (McKim Gasket), 878.
 McCray Refrigerator Co., 1104-07.
 Merritt & Co. (Metal Lockers, etc., S. Murray, Agt.), 1212.
 C. H. Muckenhiem Closet Co. (Water-Closets and Seats), 808-09.
 Murphy Iron Works (Smokeless Furnaces), 934-35.

DETROIT, MICH.—Continued.

- National Metal Molding Co., 1172-73.
 Palm Engineering Co., 1294-95.
 John Phillips & Co., Ltd. (Store-Front Bars and Show-Cases), 671.
 Pittsburg Water Heater Co., 832-35.
 Pittsburgh Gage & Supply Co. (Oil, Steam and Water Equipments, Frederick H. Mason, Agt.), 874.
 Powers Regulator Co. (Heating Specialties), 1026-29.
 Reliance Ball Bearing Door Hanger Co. (J. E. Bolles Iron & Wire Works, Agts.), 586-87.
 Rubbertex Cloth and Paper Co. (Roofing Material), 410.
 Ruud Mfg. Co. (Gas Water-Heaters), 836-39.
 Sanitary Pump Co. (Fairbanks, Morse & Co., Agts.), 920-21.
 Stowell Mfg. and Foundry Co. (Hardware Specialties), 602-03.
 Trussed Concrete Steel Co. (Waterproofing Compounds), 68; (Concrete Reinforcement), 212-13.
 Union Paper & Twine Co. (Roofing Material), 411.
 United States Heater Co., 1038-39.
 J. P. Wadell Show Case and Cabinet Co., 1231.
 Wadsworth, Howland & Co., Inc. (Paints, Coatings, etc., C. H. Little Co., Agts.), 1354-55.
 Detroit Lead Pipe and Sheet Lead Works (Agts. American Sanitary Works), 780-81.
 Detroit Mantel & Tile Co. (Agts. H. W. Covert Co.), 982-83.
Detroit Show Case Co., 662.
Detroit Steel Products Co., 480-83.
Dewdrop Prism Tiles, 622-31.
Dewey Hose Reels, 938-39.
Dexter Portland Cement, 163.
DIAMOND, KAN.
 Hydraulic-Press Brick Co. (Works), 113-15.
Diamond-A Expanded Metal Lath, 186-87.
Diamond Calced Plaster, 166.
Diamond Expansion Bolt Co., 559.
Diamond Expansion Bolts and Screw Anchors, 559.
Diamond H Electric Switches, Steel Wall Cases, and Outlet-Box Receptacles, etc., 1164-65.
Diamond N Drills, 559.
Diamond Prepared, and Cement Plasters, 174-77.
Diamond Tarred Roofing Felt, 373-75.
Dibujo Lavatory, 792-93.
Dick Steel Safe-Cabinet, 1234-35.
 Diffusers, Lighting.
 General Electric Co., 1156-61.
 Directories and Bulletin Boards, Office Building, etc.
 Art Metal Construction Co., 1214-15.
 David E. Kennedy, Inc., 266-67.
 United States Changeable Sign Co., 1244-45.
 Directory Frames.
 Architects Standard Bronze Co., 282-83.
 Dish Washers.
 Gas Appliance Display Rooms, 1196-97.
 Insinger Co., 1192-93.
 Keller Mfg. Co., 1189-91.
Insinger, 1192-93.
Santo, 1189-91.
 Disinfectors.
 Bernstein Mfg. Co., 1258-59.
 Kensington Engine Works Co., 1262-63.
 Troy Laundry Machinery Co., Ltd., 1088-89.
 Bernstein, 1258-59.
Kinyoun-Francis, 1262-63.
 Specifications for, 1262-63.
 Distilling Plants.
 Jewell Water Improvement Co., 902-03.
 Loomis-Manning Filter Co., 907-09.
 Sanitary Water-Still Co., 922-23.
Jewel (Ira H.), 902-03.
Sanitary, 922-23.

Distributing Boards.

- Crouse-Hinds Co., 1152-53.
 Distributors and Conveyors, Library, Book.
 Lamson Consolidated Store Service Co., 1222.
Dixie Metal Shingles, 370-71.
Dixie Ventilators, 1056.
 Doane & Jones Lumber Co., 678-79.
 Dobbs, S. B. (Agt. Everhard Co.), 110-11.
 Docks, Concrete.
 Raymond Concrete Pile Co., 34-37.
 Domes, Glass.
 Mandel Brothers, 1388-89.
 Domes, Metal.
 P. Deissler & Bro., 446-47.
 Dome Framing, Steel.
 Chesapeake Iron Works, 296.
Dome Self-Measuring Price-Computing Oil Pumps, and Long-Distance Automobile Gasoline Outfit, 1276-77.
Donaldson Co., 1047.
Doncella Lavatory, 792-93.
 Doors, Abattoir.
 Jones Cold Store Door Co., 1100-01.
 Doors, Air-Tight.
 Stevenson Co., 1122.
 Doors, Ash-Pit.
 H. W. Covert Co., 982-83.
 F. P. Smith Wire and Iron Works, 332-33.
 Doors, Balance.
 Pitt Balance Door Co., 706-07.
 Doors, Bronze or Bronze-Covered, see Doors, Metal, Ornamental.
 Doors, Bungalow.
 Morgan Co., 702-03.
 Doors, Canopy, see Doors, Warehouse.
 Doors, Cellar.
 Chesapeake Iron Works, 297.
 F. P. Smith Wire and Iron Works, 332-33.
 Doors, Clean-Out.
 H. W. Covert Co., 982-83.
 F. P. Smith Wire and Iron Works, 332-33.
 Doors, Coiling, see Doors, Rolling and Coiling.
 Doors, Cold-Storage, see Doors, Refrigerator and Cold-Storage.
 Doors, Craftsman's.
 Morgan Co., 702-03.
 Doors, Duct.
 Jones Cold Store Door Co., 1100-01.
 Doors, Dumb-Waiter or Elevator, see Elevator Doors.
 Doors, Fire.
 George N. Cole, 470-71.
 Consolidated Sheet Metal Works, 472-73.
 Kinnear Mfg. Co., 492-99.
 Lyster Sheet Metal Co., 452-53.
 Peelle Co., 510-11.
 Sagax Wood Co., 708-09.
 Variety Mfg. Co., 519-25.
Abacus, 492-99.
Cross, 470-71, 519-25.
Lyster's, 452-53.
Peelle, 510-11.
 Doors, Fire, Fixtures for.
 Allith Mfg. Co., 536-37.
 Chesapeake Iron Works, 297.
 Kinnear Mfg. Co., 492-99.
 T. C. Prouty Co., Ltd., 501.
 Richards Mfg. Co., 588-90.
 Stowell Mfg. and Foundry Co., 602-03.
Allith, 536-37.
Prouty, 501.
Reliable, 536-37.
Richards Monarch, and Mutual 588-90.
Wilbern, 602-03.
 Specifications for, 603.
 Doors, Fireproof.
 American Concrete Co., 6-7.
 American Metal Door Co., 462-63.
 Architects Standard Bronze Co., 282-83.
 Berger Mfg. Co., 354-56.
 J. F. Blanchard Co., 466-67.
 Dahlstrom Metallic Door Co., 476-79.

Doors, Fireproof—Continued.

- Dowman-Dozier Mfg. Co., 484-85.
 Grinden Art Metal Co., 488-89.
 S. H. Harris Co., 490-91.
 Jones Cold Store Door Co., 1100-01.
 Kinnear Mfg. Co., 492-99.
 Knisely Brothers, 502-03.
 David Lupton's Sons Co., 504-07.
 National Skylight and Ventilator Co., 443-45.
 C. D. Pruden Co., 512-13.
 John W. Rapp Co., 514-18.
 Riester & Thesmacher Co., 526-27.
 Ritter Folding Door Co., Inc., 528-29.
 Sagax Wood Co., 708-09.
 Standard Co., 337.
 Stowell Mfg. and Foundry Co., 602-03.
 Thorp Fire Proof Door Co., 530-31.
 Variety Mfg. Co., 519-25.
 Voigtmann & Co., 532-35.
 Jas. G. Wilson Mfg. Co., 711-13.
 York Safe and Lock Co., 1238-39.
Ajax, 492-99.
All-Metal, 466-67.
Architects Bronze, 282-83.
Dahlstrom, 476-79.
Knisely Brothers, 502-03.
Lupton's Underwriter's Standard, 504-07.
Pruden, 512-13.
R & T, 526-27.
Richardson's, 466-67.
Sagax, 514-18; 708-09.
Sjobring, 462-63.
Thorp Richardson, 530-31.
 Specifications for, 488-89, 526-27.
- Doors, Front, see Doors, Vestibule.
- Doors, Ice-Recording.
 Jones Cold Store Door Co., 1100-01.
- Doors, Illuminating, see Doors, Sidewalk.
- Doors, Interior.
 American Compound Door Co., 692-93.
 Morgan Co., 702-03.
 Paine Lumber Co., Ltd., 704-05.
 Voigtmann & Co., 532-35.
- Doors, Interior, Mirror.
 Morgan Co., 702-03.
- Doors, Kalamined, see Doors, Fireproof.
- Doors, Mausoleum, see Doors, Metal, Ornamental.
- Doors, Metal, Ornamental.
 American Concrete Co. 6-7.
 American Revolving Door Co., Inc., 694-95.
 Anchor Post Iron Works, 278-81.
 Architects Standard Bronze Co., 282-83.
 Art Metal Construction Co., 1214-15.
 William Bayley Co., 284-85.
 J. E. Bolles Iron and Wire Works, 288-89.
 Bureau Brothers, 292-93.
 Chesapeake Iron Works, 297.
 Dahlstrom Metallic Door Co., 476-79.
 Dyer Revolving Door Co., 691.
 Faunt Le Roy Elevator Co., 275.
 Ferrosteel Co., 298.
 J. W. Fiske Iron Works, 300-01.
 General Fireproofing Co., 1201.
 Gorham Co Architectural Bronze, 304-05.
 Grinden Art Metal Co., 488-89.
 S. H. Harris Co., 490-91.
 Heath-Johnson Co., 306-09.
 Hecla Iron Works, 310-11.
 Henry-Bonnard Bronze Co., 299.
 Wm. H. Jackson Co., 312-13.
 Kinnear & Gager Mfg. Co., 500.
 E. R. Landon Iron and Wire Works, 314-15.
 Willy H. Lau Co., 1132-33.
 Love Brothers, Inc., 318-19.
 Midland Metal Co., Inc., 322-23.
 John Pirkel Iron Works, 324-25.
 William R. Pitt Composite Iron Works, 326.
 C. D. Pruden Co., 512-13.
 John W. Rapp Co., 514-18.
 F. P. Smith Wire and Iron Works, 332-33.
 Standard Co., 337.
 Thorp Fire Proof Door Co., 530-31.

Doors, Metal, Ornamental—Continued.

- Tuttle & Bailey Mfg. Co., 340-41.
 Voigtmann & Co., 532-35.
 Jno. Williams Inc., 350-51.
 Winslow Bros. Co., 343.
 York Safe and Lock Co., 1238-39.
Columbus, 500.
Dyer, 691.
Grinden, 488-89.
Safety, 694-95.
Simplex, 694-95.
Standard, 694-95.
Thorp Richardson, 530-31.
 Specifications for, 488-89.
- Doors, Refrigerator and Cold-Storage.
 Jones Cold Store Door Co., 1100-01.
 R. E. Jones, 1102-03.
 Stevenson Co., 1122.
Stevenson's Automatic, 1122.
- Doors, Revolving.
 American Revolving Door Co., Inc., 694-95.
 Atchison Revolving Door Co. 696-97.
 Dyer Revolving Door Co., 691.
 Stevenson Co., 1122.
Curved Wing, 696-97.
Dyer Collapsible Panic-Proof, 691.
Dyer Standard, 691.
Safety Collapsible, 694-95.
Simplex, 694-95.
Standard, 694-95.
Straight Wing, 696-97.
 Specifications for, 696-97.
- Doors, Rolling and Coiling, Metal or Wood.
 Flexifold Door and Shutter Co., 700-01.
 Kinnear Mfg. Co., 492-99.
 Variety Mfg. Co., 519-25.
 Jas. G. Wilson Mfg. Co., 711-13.
Flexifold, 700-01.
Kinnear, 492-99.
Variety, 519-25.
- Doors, Safety-Exit.
 American Revolving Door Co., Inc., 694-95.
 Dyer Revolving Door Co., 691.
Dyer Collapsible Panic-Proof, 691.
Safety Collapsible, 694-95.
- Doors, Screen, see under Screens.
- Doors, Showcase, Self-Closing Attachment.
 Athey Sanitary Equipment Co., 742-43.
- Doors, Sidewalk.
 American Bar-Lock Co., 612-16.
 American 3-Way Prism Co., 622-31.
 Chattanooga Roofing and Foundry Co., 360-61.
 S. H. Harris Co., 490-91.
Bar-Lock, 612-16.
- Doors, Sliding.
 S. H. Harris Co., 490-91.
 Kinnear Mfg. Co., 492-99.
 John W. Rapp Co., 514-18.
 F. P. Smith Wire and Iron Works, 332-33.
 James G. Wilson Mfg. Co., 711-13.
Ajax, 492-99.
Kinnear, 492-99.
- Doors, Swing.
 John W. Rapp Co., 514-18.
 Jas. G. Wilson Mfg. Co., 711-13.
- Doors, Vault.
 S. H. Harris Co., 490-91.
 F. P. Smith Wire and Iron Works, 332-33.
 Van Dorn Iron Works Co., 610.
 Victor Safe & Lock Co., 1236-37.
- Doors, Veneered, see Doors, Wood.
- Doors, Vestibule.
 American Compound Door Co., 692-93.
 American Revolving Door Co., Inc., 694-95.
 Morgan Co., 702-03.
 Paine Lumber Co., Ltd., 704-05.
 John Pirkel Iron Works, 324-25.
 Voigtmann & Co., 532-35.
Morgan, 702-03.
Safety, 694-95.
Simplex, 694-95.
Standard, 694-95.

Doors, Warehouse.

- George N. Cole, 470-71.
 S. H. Harris Co., 490-91.
 Ritter Folding Door Co., Inc., 528-29.
 F. P. Smith Wire and Iron Works, 332-33.
 Variety Mfg. Co., 519-25.
Cross, 470-71, 519-25.
Ritter, 528-29.
- Doors, Wood.
 American Compound Door Co., 692-93.
 American Revolving Door Co., Inc., 694-95.
 Compound Door Co., 698-99.
 Dyer Revolving Door Co., 691.
 Hyde-Murphy Co., 710.
 Morgan Co., 702-03.
 Paine Lumber Co., Ltd., 704-05.
 Alfred Struck Co., Inc., 731.
Dyer, 691.
Korelock Veneered, 704-05.
Morgan, 702-03.
Safety, 694-95.
Simplex, 694-95.
Standard, 694-95.
 Specifications for, 692-93.
- Door Bottoms, Automatic.
 Tabor Sash Fixture Co., 753.
- Door Bottoms, Metal.
 Introstile and Novelty Co., 748-49.
- Door Bumpers.
 Bommer Brothers, 544-45.
 Shelby Spring Hinge Co., 509-97.
- Door Checks.
 Joseph Bardsley, 542-43.
- Door Guards.
 Climax Lock and Ventilator Co., 552-53.
- Door Guides, Stable.
 W. W. Schouler, 1284-85.
- Door Holders.
 Joseph Bardsley, 542-43.
 C. E. L. Hatch, Agent, 568.
 Richards Mfg. Co., 591.
 Shelby Spring Hinge Co., 596-97.
Bardsley, 542-43.
Ruppman, 568.
Shelby, 596-97.
Superior, 591.
- Door Knobs and Handles.
 Joseph Bardsley, 542-43.
- Door Knockers.
 Lasar-Letzig Mfg. Co., 316-17.
- Door Pulls, and Push and Kick Plates.
 Climax Lock and Ventilator Co., 552-53.
- Door Stops.
 Joseph Bardsley, 542-43.
- Dorrill, R. A. (Agt. Wood-Mosaic Co.), 738-40.
Double Thick Tarred Roofing Felt, 373-75.
- Doubrawa & Son, John (Agt. Wood-Mosaic Co.), 738-40.
- Dowman-Dozier Mfg. Co. (Metal Doors and Windows), 484-85; (Ventilators and Skylights), 1056.**
- Draft Systems, Mechanical.
 American Blower Co., 1052-53.
 B. F. Sturtevant Co., 1034-35.
- Dragon Steam and Hot-Water Heaters*, 1030-31.
- Drains, Floor.
 Compound Injector and Specialty Co., 848-49.
 Murphy Specialty Co., 858-59.
 Watertite Drain Co., 872-73.
Anticlog, 872-73.
Damptrax, 872-73.
- Drains, Floor, and Combined Back-Water Traps or Valves.
 Compound Injector and Specialty Co., 848-49.
Acme, 848-49.
Dehn's Peerless, 848-49.
- Drainboards.
 Cahill Iron Works, 784-85.
 Humphries Mfg. Co., 792-93.
 J. M. Kohler Sons Co., 804-05.
 Trenton Potteries Co., 818-20.

Drainers, Cellar.

Philip Braender, 846-47.
I X L Pump & Mfg. Co., 794-95.
Braender, 846-47.

Drain-Pipe.

Greenpoint Fire Brick Co., 112.

Draper, F. G., 486-87.

Drapery Stuffs, see Furnishings, Interior.
Drawers, Filing, Metal, see Cabinets, Filing.
Drawer Pulls.

Climax Lock and Ventilator Co., 552-53.

Dredging, Machinery for.

Jeffrey Mfg. Co., 962-63.

DRESDEN, GERMANY.

L. & C. Hardtmuth (Architects' Supplies), 4-5.

Dressers, see under Furniture.

Drills, Brick or Stone.

Diamond Expansion Bolt Co., 559.

Star Expansion Bolt Co., 606.

Diamond N, 559.

Star, 606.

Drills, Coal and Rock.

Jeffrey Mfg. Co., 962-63.

Drills, Electric.

Fort Wayne Electric Works, 1154-55.

Drill Holders and Points.

Diamond Expansion Bolt Co., 559.

Drives, see Construction, Road.

Drouve Co., G., 448-49.

Druggists' Supplies, Porcelain, etc.

Trenton Potteries Co., 818-20.

Dryers, Clothes, Laundry.

American Laundry Machinery Mfg. Co., 1074-1075.

Chicago Dryer Co., 1076-79.

Conkling Co., 1085.

Dryer Mfg. Co., 1080-83.

Gas Appliance Display Rooms, 1196-97.

Hill-Canton Dryer Co., 1070-71.

Mannen & Esterly Co., 1086-87.

James Spear Stove and Heating Co., 1032-33.

Troy Laundry Machinery Co., Ltd., 1088-89.

Chicago, Chicago-Francis, Chicago-Rapido,

and Chicago-Sun, 1076-79.

Chicago, and Chicago-Francis, 1080-83.

Manest, 1086-87.

Spear's, 1032-33.

Specifications for, 1076-79, 1086-87.

Dryers, Clothes, Open-Air.

Chicago Dryer Co., 1076-79.

Hill Dryer Co., 1069.

Dryers, Fruit, Hair, Soap, Starch.

Chicago Dryer Co., 1076-79.

Dryers, Grain.

Hess Warming & Ventilating Co., 1205-07.

Dryer Mfg. Co., 1080-83.

Drying Rooms, see Dryers, Clothes, Laundry.

Drying Systems, Industrial.

American Blower Co., 1052-53.

B. F. Sturtevant Co., 1034-35.

DUBLIN, IRELAND.

Genuine Bangor Slate Co., Inc., 432-35.

DUBUQUE, IOWA.

Sanitary Pump Co. (A. Y. McDonald & Morrison Mfg. Co., Agts.), 920-21.

Duchess Bathtubs, 804-05.

Duffy, J. D. (Rep. Rockport Granite Co.), 97.

Dufur & Co. (Agts. Anchor Post Iron Works),

278-81; (Agts. Reliance Ball Bearing Door

Hanger Co.), 586-87.

Dukes, F. H. (Agt. Hydraulic-Press Brick Co.),

113-15.

Dulkote Finish, 1344-45.*Dull Kote Paint*, 1328-29.

DULUTH, MINN.

Acorn Brass Mfg. Co. (Window Ventilators, etc., Christie Lithograph & Printing Co., Agts.), 1048-49.

American Enameled Brick and Tile Co., 101-107.

American Luxfer Prism Co., 617-21.

Asbestos Protected Metal Co. (Metal Roofing), 416-17.

DULUTH, MINN.—Continued.

Atlantic Terra Cotta Co. (Thompson &

Stewart, Agts.), 138-39.

Samuel Cabot, Inc. (Shingle Stains, etc., Dunlop-Moore Co.), 1316-21.

Carter White Lead Co., 1315.

Columbus Brick and Terra Cotta Co. (Paine & Nixon, Agts.), 100.

Everhard Co. (Brick, Paine & Nixon Co., Agts.), 110-11.

Flour City Ornamental Iron Works, 302-03.

General Electric Co., 1156-61.

Hydraulic-Press Brick Co. (Kelley Brick & Tile Co., Reps.), 113-15.

Merritt & Co. (Metal Lockers, etc., Robinson, Cary & Sands Co., Agts.), 1212.

Nat. Asso. of Master Sheet Metal Workers, 424-26.

Pittsburgh Gage & Supply Co. (Oil, Steam and Water Equipments, Marshall-Wells Hardware Co., Agts.), 874.

Ruud Mfg. Co. (Gas Water-Heaters), 836-39.

F. W. Wakefield Brass Co. (Lighting Fixtures), 1140-41.

Dumb-Waiters.

Energy Elevator Co., 954-55.

Faunt Le Roy Elevator Co., 956.

Charles W. Hoffman Co., 960-61.

Imperial Kitchen Elevator Co., 1194-95.

Marine Engine and Machine Co., 957.

Ohio Elevator and Machine Co., 964-65.

Otis Elevator Co., 966.

H. J. Reedy Co., 967.

Sedgwick Machine Works, 971-73.

Storm Mfg. Co., 974-75.

Warsaw Elevator Co., 976-77.

Energy, 954-55.

Imperial Kitchen Elevator, 1194-95.

Little Beauty, 954-55.

Little Giant, 954-55.

Manhattan, 974-75.

New York Safety, 974-75.

Paragon Automatic, 974-75.

Rapid Transit, 954-55.

Sedgwick Automatic Brake, 971-73.

Simplex, 971-73.

Dumb-Waiters, Revolving.

American Revolving Door Co., Inc., 694-95.

Dump, Ash.

Chattanooga Roofing and Foundry Co., 360-361.

S. & W. Specialty Co., 1256-57.

DUNBAR, PA.

Continuous Glass Press Co. (Wire Glass, Works), 648-49.

Duncan & Goodell Co. (Rep. Grant Pulley and

Hardware Co.), 565-67.

Dunham Vacuo-Vapor Heating Systems, Steam

Radiator Traps, and Automatic Vacuum

Air-Valves, 1024-25.

DUNKIRK, N. Y.

United States Radiator Co., 1044-46.

Dunlop-Moore Co. (Agts. Samuel Cabot, Inc.),

1316-21.

Dunn Bros. & Co. (Agts. Hydraulic-Press Brick

Co.), 113-15.

Duplex Concrete Post Machine, 32-33.

Duplex Gutter Trap, 1284-85.

Duplex Hanger Co., 560-62.

Duplex Joist, Wall, Beam, Pipe, and Shaft

Hangers, Malleable Post Caps, and Post

Bases, 560-62.

Duplex Shear Lock, 563.

Duplex Shear Lock Co., 563.

Duram Special Heating Trap, 892.

Dust Collectors.

B. F. Sturtevant Co., 1034-35.

Dust-Proofing, Systems of.

Athey Sanitary Equipment Co., 742-43.

Dusters, Floor.

Buttle Parquet Floor Co., 736.

Dwyer-Field Co. (Agts. Ridgway Dynamo and Engine Co.), 936-37.

Dyes, Wood.

Samuel H. French & Co., 1323.

Dye Tubs, see under Tubs.

Dyer Revolving Door Co., 691.

Dyer Standard, and Collapsible Panic-Proof Revolving Doors, 691.

Dynamamos.

Lunt-Moss Co., 910-11.

E

Eagle Pressed Metal Sash Pulleys, 538-39.

Eagle Sash Pulleys, 538-39, 565-67.

Eagle Water-Closets, 806-07.

Eagle White Lead Co., 843.

Earth Closets.

C. H. Stephenson, 850-51.

EAST WALPOLE, MASS.

F. W. Bird & Son (Roofing and Insulating Papers), 376.

Eastman, H. E. (Rep. Woodbury Granite Co.), 99.

EASTON, PA.

Genuine Bangor Slate Co., Inc., 432-35.

Henry A. Schwyer Co. (Decorative Green Marble), 1364-65.

Eaton, W. H. (Agt. American Sheet and Tin Plate Co.), 412-15.

Eaves-Trough, see Gutters and Guttering, Roof.

Eaves-Trough Hangers, see under Hangers.

Eclipse Air-Washers, Injectors and Coolers, 1047.

Eclipse Hose Racks, 946-47.

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- Litharge.
Carter White Lead Co., 1315.
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- Little Blue Flag Varnish*, 1332-33.
- Little Co., C. H. (Agts. Samuel Cabot, Inc.), 1316-21; (Agts. Wadsworth, Howland & Co., Inc.), 1354-55.
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Edward Darby & Sons Co., Inc., 1202-03.
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- Lolico Vitreous China Lavatories*, 806-07.
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- Lonabond Textile Ready Roofing*, 410.
- LONDON, ONT., CANADA.
Ideal Concrete Machinery Co., 28-30.
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- LONDON, ENG.
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American Steel & Wire Co. (Electrical Wires and Cables), 1150-51.
Asbestos Protected Metal Co. (Metal Roofing), 416-17.
Barrett Mfg. Co. (Roofing and Sheathing Felts), 373-75.
Boston Pressed Metal Co. (Casement and Transom Adjusters, Miles A. Hoffman & Co., Agts.), 546-47.
Compound Injector and Specialty Co. (Plumbing Specialties, Water Softener, etc., British Ruud Water Heater Co., Representatives for Great Britain), 848-49.
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Globe-Wernicke Co. (Steel and Wood Office Furniture), 1218-19.
B. F. Goodrich Co. (Interlocking Rubber Tiling), 249.
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Robert W. Hunt & Co. (Consulting Engineers), 774-75.
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- Lord & Burnham Co. (Sash Operating Apparatus), 576; (Boilers and Tank Heaters), 1014-15; (Conservatories and Greenhouses), 1302-05.
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 Conkling-Armstrong Terra Cotta Co. (Louis R. Bedell, Agt.), 142-43.
 Deming Co. (Pumping Machinery, Smith-Booth-Usher Co., Agts.), 898-99.
 Detroit Steel Products Co. (Wrought-Steel Sash, California Builders' Supply Co., Agts.), 480-83.
 Frick Co. (Refrigerating Machinery), 1096-97.
 General Electric Co., 1156-61.
 B. F. Goodrich Co. (Interlocking Rubber Tiling), 249.
 Goulds Mfg. Co. (Pumping Machinery), 895.
 Hartmann-Sanders Co. (Wood Columns and Capitals, A. J. Koll Planing Mill Co., Agts.), 680-85.
 J. G. Hetzel (Roofing Cement, Paraffine Paint Co., Agts.), 400-01.
 Higgin Mfg. Co. (Screens), 758-59.
 Huntington Roofing Tile Co. (Clark-Guest Co., Agts.), 385-87.
 Hygeia Filter Co., 900-01.
 Kawneer Mfg. Co. (Store Fronts and Metal Mouldings), 668-70.
 Kinnear Mfg. Co. (Steel Rolling Doors, etc.), 492-99.
 Library Bureau (Metal Furniture), 1224-25.
 Ludowici-Celadon Co. (Roofing Tiles, B. V. Collins, Agt.), 388-89.
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 Pittsburg Water Heater Co., 832-35.
 Pittsburgh Gage & Supply Co. (Oil, Steam and Water Equipments, Smith-Booth-Usher Co., Agts.), 874.
 John W. Rapp Co. (Fireproof Doors, etc., George W. Clark Co., Agts.), 514-18.
 Reliance Ball Bearing Door Hanger Co. (Louis R. Bedell, Agts.), 586-87.
 Rinald Bros. (Technical Paints, Waterhouse & Price Co., Agts.), 1346-47.
 Ruud Mfg. Co. (Gas Water-Heaters), 836-39.
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 Youngstown Iron & Steel Roofing Co. (Union Lime Co., Agts.), 218-21.
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 Louden Hardware Specialty Co. (Agts. Louden Machinery Co.), 1280-83.
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 American Enameled Brick and Tile Co., 101-07.
 American Machine Co. (Elevators), 948.
 Samuel Cabot, Inc. (Shingle Stains, etc., National Roofing & Supply Co., Agts.), 1316-21.
 Chamberlin Metal Weather Strip Co., 744-45.
 Columbus Brick and Terra Cotta Co. (W. J. Watkins & Co., Agts.), 100.
 Deming Co. (Pumping Machinery, Laib Co., Agts.), 898-99.
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 Ernst Wiener Co., 22-23.
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Lunt-Moss Pneumatic Tanks, and Complete Water-Supply Systems, 910-11.
Lupton Fireproof and Underwriters' Standard Windows, Doors, and Shutters, and Rolled-Steel Bar Skylights, 504-07.

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 Lyon, C. H. (Agt. Columbus Brick and Terra Cotta Co.), 100.
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 Chas. Niedner's Sons Co. (Unlined Linen Fire Hose), 945.
 Malleable Castings, Wagon or Special.
 Stowell Mfg. and Foundry Co., 602-03.

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King Mantel Co., 1384-85.

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Meadow Marble Co., 78-79.

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Henry A. Schwyer Co., 1364-65.

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Pennsylvania Marble and Granite Co., 95.

Rutland Florence Marble Co., 80-81.

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Mason Safety Tread, Vault Lights, Coal-Hole

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 Sunburst Prism Light Co., 644-45.
 Sundh Electric Co., 1188.
 Swedish Venetian Blind Co., 716-17.
 Tabor Sash Fixture Co. (Sash Fixtures), 718-20; (All-Metal Weather-Strips), 753.
 Terwilliger Mfg. Co. (Wood Floors), 737.
 Seth Thomas Clock Co., 1252.
 Thomas & Smith, Inc. (Ventilating Appliances), 1066-67.
 Toch Brothers (Waterproofing Compounds, Paints, etc.), 64-65.
 Triumph Ice Machine Co., 1116-17.
 Troy Laundry Machinery Co., Ltd., 1088-89.
 Tucker & Vinton (Vault Light Construction), 646-47.
 Turner Construction Co. (Reinforced Concrete Construction), 216-17.
 Tuttle & Bailey Mfg. Co. (Architectural Bronzes, etc.), 340-41; (Registers, Ventilators, etc.), 1036-37.
 W. S. Tyler Co. (Ornamental Metal Work), 342.
 Union Fibre Co. (Sheathing and Deadening Materials), 378-79.
 United States Changeable Sign Co., 1244-45.
 United States Gypsum Co. (Wall Plasters), 174-77; (Hollow Tile), 244-45.
 United States Heater Co., 1038-39.
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 Vacuum Engineering Co. (Cleaning Apparatus), 1296-97.
 Vermont Marble Co., 84-85.
 Voigtmann & Co. (Fireproof Windows, Doors, etc.), 532-35.
 Vonnegut Hardware Co. (Fire-Exit Devices, Grant Pulley and Hardware Co., Reps.), 608-09.
 J. P. Wadell Show Case and Cabinet Co., 1231.
 Wadsworth, Howland & Co., Inc. (Paints, Coatings, etc.), 1354-55.
 F. W. Wakefield Brass Co. (Lighting Fixtures), 1140-41.
 Walch & Wyeth (Valves, Intercontinental Engineering Co., Agts.), 888-89.
 Charles Warner Co. (Builders' Supplies), 178-79.
 Warsaw Elevator Co., 976-77.
 Waterproofing Co., 66-67.
 Watertite Drain Co. (Drains and Gutters), 872-73; (Stable Fittings), 1286.
 Weatherproof Construction Co. (Skylights, etc.), 460-61.
 Western Electric Co., 1184-87.
 Wheeling Corrugating Co. (Sheet Metal Work), 370-71.
 White Fireproof Construction Co. (Reinforced Concrete), 246-47.
 Whitehall Portland Cement Co., 180.
 Whitestone Marble Co. (Samuel Spalding, Agt.), 272-73.
 Whitney-Steen Co. (Building Contractors), 12-13.
 Ernst Wiener Co. (Industrial Railway Specialists), 22-23.
 Jno. Williams Inc. (Ornamental Metal Work), 350-51.
 Williamsport Radiator Co., 1042-43.
 Jas. G. Wilson Mfg. Co. (Rolling Doors, etc.), 711-13; (Venetian Blinds and Awnings), 721; (Rolling Partitions, etc.), 732.
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 York Safe and Lock Co., 1238-39.
 Zibell Damp-Resisting Paint Co., 69-71.
New York Belting and Packing Co., Ltd., 254.
New York Electric Fountain Co., Inc., 1175.
New York Prism Co., 640.
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New York Safety Dumb-Waiter, 974-75.
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 Carter White Lead Co., 1315.
 Chamberlin Metal Weather Strip Co., 744-45.
 Crocker-Wheeler Co. (Electrical Equipment), 1149.
 J. G. Hetzel (Roofing Cement), 400-01.
 Moore Electrical Co. (The Moore Light), 1134-35.
 Murphy Varnish Co., 1338-39.
 W. W. Schouler (Stable Fixtures, etc.), 1284-85.
 Sherwin-Williams Co. (Paints), 1348-49.
 Storm Mfg. Co. (Elevators and Dumb-Waiters), 974-75.
 Tabor Sash Fixture Co. (Sash Fixtures), 718-20; (All-Metal Weather-Strips), 753.
 Wood-Mosaic Co. (Flooring, R. A. Dorrill, Agt.), 738-40.
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 C. T. Nelson Co., 686-87.
 Paine Lumber Co., Ltd., 704-05.
Newhall I-Beam Trolleys, 577.
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 Higgin Mfg. Co. (Screens), 758-59.
NEWTON, MASS.
 Sterling Elliott Co. (Garage Equipment), 1270-71.
NIAGARA FALLS, ONTARIO, CAN.
 Oneida Community, Ltd. (Builders' Hardware, Factory), 578-79.
Niagara Interlocking Clay Roofing, and Glass Skylight Tiles, 388-89.
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Niagara Steel Chains, 578-79.
Nice, Eugene E., 1342-43.
Nice Colors, Enamels, Japans, Fillers, Finishes, Mixed Paints, Shingle Stains, White Lead and Varnishes, 1342-43.
NICETOWN, PA.
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Nickerson Double-Lock Joint Porch Columns, 688-89.
Nickerson Mfg. Co., 688-89.
 Nickson, E. E. (Agt. John W. Rapp Co.), 514-518.
Niedner's Linen Hose, 945.
Niedner's Sons Co., Chas., 945.
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 Kawneer Mfg. Co. (Store Fronts and Metal Mouldings), 668-70.
NILES, OHIO.
 Bostwick Steel Lath Co., 186-87.
No Metal Drinking Fountains, and Closet and Seat Combinations, 858-59.
No-Dust Automatic Weather-Strip, 746.
No-Gloss Varnish, 1338-39.

No. 1 and No. 2 Hercules Fire Hose, 942-43.
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NORFOLK, VA.
 American Enameled Brick and Tile Co., 101-107.
 American Sanitary Works (Water-Closets and Specialties, Virginia-Carolina Supply Co., Agts.), 780-81.
 Asbestos Protected Metal Co. (Metal Roofing), 416-17.
 Atlantic Terra Cotta Co. (G. S. Friebus, Agt.), 138-39.
 Columbus Brick and Terra Cotta Co. (J. C. Grinnan, Agt.), 100.
 Conkling-Armstrong Terra Cotta Co. (J. C. Grinnan, Agt.), 142-43.
 Follansbee Brothers Co. (Roofing Tin), 420-21.
 Hydraulic-Press Brick Co. (G. S. Friebus, Agt.), 113-15.
 J. B. King & Co. (Hard Wall Plaster, etc., Arthur P. Jones, Agt.), 166.
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 Swedish Venetian Blind Co. (Olmstead & Meyer Co., Agts.), 716-17.
 Jas. G. Wilson Mfg. Co. (Rolling Doors, etc.), 711-13; (Venetian Blinds and Awnings), 721; (Rolling Partitions), 732.
 Norfolk Iron & Wire Works (Agts. Reliance Ball Bearing Door Hanger Co.), 586-87.
 Norris, L. A. (Agt. Clinton Wire Cloth Co.), 190-91.
 Norris, W. K. (Agt. Boston Pressed Metal Co.), 546-47.
NORTH CAMBRIDGE, MASS.
 American Circular Loom Co. (Conduit and Fittings, Factory), 1146-48.
North Carolina Granite Corporation, 94.
NORTH PENN JUNCTION, PA.
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NORTH POULTNEY, VT.
 E. J. Johnson Co. (Slate, Quarry), 436-37.
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 Atlas Portland Cement Co. (Works), 158-59.
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Northampton Portland Cement Co., 168.
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 Northern Electric & Mfg. Co., Ltd. (Agts. Western Electric Co.), 1184-87.
Northey Mfg. Co., 1110-11.
Northey's Dry-Air, Slope-Top Sectional Cooling Rooms, S., 1110-11.
Northwestern Expanded Metal Co., 210-11.
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Norton Rosendale Cement, 162.
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 Goodyear Tire and Rubber Co., 250-51.
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Nox-Em-All Red Rosin Sized Sheathing Paper, 373-75.
 Nozzles, Hose or Stand-Pipe.
 W. D. Allen Mfg. Co., 938-39.
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O. G. Box and Roof Gutters, 294-95, 362-63, 366-67.
O. K. Ventilators, 458-59.
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O. & I. Scotch Enamel, 1346-47.
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 Standard Underground Cable Co. (Factory), 1180-81.
 John Wood Mfg. Co. (Boilers and Heaters), 840-42.
 York Mfg. Co. (Refrigerating Machinery), 1120-21.
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 O'Fallon Supply Co., M. J. (Agts. American Sanitary Works), 780-81.
 Office, Bank & Library Co. (Agts. T. De Long Furniture Co.), 1376-77.
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 Office Fittings and Fixtures, see under Fixtures.
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 Office Railings, Metal, see Railings, Metal, Ornamental.
Ohio Blower Co. (Steam Specialties), 882-83; (Ventilators), 1068.
Ohio Brass and Iron Mfg. Co., 864-65.
Ohio Cluster Metal Shingles, 370-71.
Ohio Elevator & Machine Co., 964-65.
Ohio Never-Leak Bibbs, Basin and Bath Cocks, Low-Down Basin Cocks, and Ground-Key Work, 864-65.
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 Farr & Bailey Mfg. Co., 1378-79.
 Lord & Taylor, 1386-87.
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Oil Cup Bases.
 Pittsburgh Gage & Supply Co., 874.
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Oil-Regulated Self-Closing Faucets, 814-15.
Oiling Systems, Automatic.
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OKLAHOMA CITY, OKLA.
 American Enameled Brick and Tile Co., 101-07.
 Samuel Cabot, Inc. (Shingle Stains, etc., S. H. Hanson Builders' Supply Co., Agts.), 1316-21.
 Chamberlin Metal Weather Strip Co., 744-45.
 General Electric Co., 1156-61.
 Higgin Mfg. Co. (Screens), 758-59.
 Ridgway Dynamo and Engine Co. (C. A. Tappan, Agt.), 936-37.
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Okonite Insulated Wires and Cables, and Rubber Insulating Tape, 1176-77.
Old English Red Repressed Brick, 125.
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 Oliver, A. W. (Agt. Ridgway Dynamo and Engine Co.), 936-37.
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 American Sanitary Works (Water-Closets and Specialties, U. S. Supply Co., Agts.), 780-81.
 Atlantic Terra Cotta Co. (Sunderland Bros. Co., Agts.), 138-39.
 Samuel Cabot, Inc. (Shingle Stains, etc., F. M. Hamling, Agt.), 1316-21.
 Carter White Lead Co. (Factory), 1315.
 Chamberlin Metal Weather Strip Co., 744-45.
 Columbus Brick and Terra Cotta Co. (Sunderland Bros. Co., Agts.), 100.
 Hydraulic-Press Brick Co., 113-15.
 Keasbey & Mattison Co. (Asbestos Roofing, etc.), 402-05; (Pipe and Boiler Covering), 894.
 Nat. Asso. of Master Sheet Metal Workers, 424-26.
 Reliance Ball Bearing Door Hanger Co. (Jas. Morton & Sons Co., Agts.), 586-87.
 Sherwin-Williams Co. (Paints), 1348-49.
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New Pedrara Mexican Onyx Co., 1362-63.
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 Oplinger, W. M. (Agt. Pittsburgh Gage & Supply Co.), 874.
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Eagle White Lead Co., 843.
Oriental Floor and Crack Filler, 1310-11.
Orleans Interlocking Clay Roofing, and Glass Skylight Tiles, 388-89.
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National Lead Co., 861.
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 Emmel Co., 1392-93.
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 Stone-Steel Co., 149.
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Architectural Stone Co., 150-51.
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Blue Ridge Marble Co., 72-73.

Ornaments, Metal, see Sheet Metal Work, Ornamental.

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 Stone-Steel Co., 149.

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Orr & Lockett Hardware Co., 1112-13.

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Kinnear Mfg. Co. (Steel Rolling Doors, etc.), 492-99.

Osborne Transom, Blind and Casement Locks, and Adjusters, 546-47.

Osburn Co., B. M. (Agts. Frick Co.), 1096-97.

OSHKOSH, WIS.

Morgan Co. (Doors and Interior Woodwork), 702-03.

Paine Lumber Co., Ltd. (Doors and Interior Trim), 704-05.

Ostrander Fire Brick Co. (American Hard Wall Plaster Co., Agts.), 156-57.

Otis Elevator Co., 966.

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American Enameled Brick and Tile Co., 101-07.

Library Bureau (Metal Furniture), 1224-25.
 Otte Co., George F. (Agts. Farr and Bailey Mfg. Co.), 1378-79.

Otto & Co., A. L. (Agts. Acorn Brass Mfg. Co.), 1048-49.

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C. H. Stephenson, 850-51.

Phenix Mfg. Co., 764-65.

Outlets, Electrical.

Steel City Electric Co., 1182-83.

Flexbox, 1182-83.

Outside-In Window Cleaning Device, 548-49.

Ovens.

Gas Appliance Display Rooms, 1196-97.

Van Dorn Iron Works Co., 610.

Ovoid Deformed Bar, 198-99.

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Samuel H. French & Co., 1323.

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Standard Underground Cable Co., 1180-81.

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P & B Acid-Resisting Paints, 63.

P & B Sheathing and Insulating Papers, 377.

Pacific Sink and Laundry Tray Combination, 784-85.

Packer Natural Window Ventilators, 1050-51.

Packet System of Bricklaying and Scaffolds, 8-9.

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Keasbey & Mattison Co., 894.

Packing-House Fixtures and Equipment.

Orr & Lockett Hardware Co., 1112-13.

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Paine Lumber Co., Ltd., 704-05.

Paine & Nixon, (Agts. Columbus Brick and Terra Cotta Co.), 100; (Agts. Everhard Co.), 110-11.

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American Concrete Co., 6-7.

American Hard Wall Plaster Co., 156-57.

Antakwa Co., 42-43.

Barber Asphalt Paving Co., 393-95.

F. W. Bird & Son, 376.

J. A. & W. Bird & Co., 396-97.

Bridgeport Wood Finishing Co., 1312-13.

C. L. Burns, 46-47.

Carter White Lead Co., 1315.

Chatfield & Woods Co., 39.

Chattanooga Roofing and Foundry Co., 360-61.

Elaterite Paint and Mfg. Co., 50.

Eller Mfg. Co., 364-65.

M. Ewing Fox & Co., 1322.

Samuel H. French & Co., 1323.

Hascall Paint Co., 1326-27.

Hydrex Felt and Engineering Co., 52.

R. F. Johnston Paint Co., 1328-29.

Lowe Brothers Co., 1332-33.

John Lucas & Co., 1334-35.

Benjamin Moore & Co., 1340.

Murphy Varnish Co., 1338-39.

National Lead Co., 1341.

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National Roofing Co., 62.

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Rubbertex Cloth and Paper Co., 410.

Sherwin-Williams Co., 1348-49.

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Toch Brothers, 64-65.

Union Paper & Twine Co., 411.

Wadsworth, Howland & Co., Inc., 1354-55.

Wheeling Corrugating Co., 370-71.

Zibell Damp-Resisting Paint Co., 69-71.

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Bullion, 1310-11.

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Des Moines Elaterite, 50.

Dull Kote, 1328-29.

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French's Crown, 1323.

Gutta Percha, 1310-11.

Hascall's, 1326-27.

High Standard, 1332-33.

Hydrex, 52.

Muresco, 1340.

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Nice, 1342-43.

Nuwite Flat, 1340.

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Paints, Acid-Proof, Anti-Corrosive, and Anti-Fouling, see Paints, Technical.

Paints, Aluminum.

Sherwin-Williams Co., 1348-49.

Paints, Brick, Cement, Plaster, Stone, etc.

Antakwa Co., 42-43.

Barber Asphalt Paving Co., 393-95.

C. L. Burns, 46-47.

M. Ewing Fox & Co., 1322.

Samuel H. French & Co., 1323.

Hascall Paint Co., 1326-27.

Hydrex Felt and Engineering Co., 52.

Illinois Damp-Proofing Co., 56-57.

R. F. Johnston Paint Co., 1328-29.

Rinald Bros., 1346-47.

Toch Brothers, 64-65.

Wadsworth, Howland & Co., Inc., 1354-55.

Antakwa, 42-43.

Bay State, 1354-55.

Burns', 46-47.

Genasco, 393-95.

Hydrex, 52.

I. D. P. Dampno, and Transparent, 56-57.

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Muralite, 1322.

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Samuel H. French & Co., 1323.

Glidden Varnish Co., 1324-25.

Toch Brothers, 64-65.

Glidden's Copperplate Finish, 1324-25.

Verte Antique, 64-65.

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Paints, Enamel.

Rinald Bros., 1346-47.

O. & I. Scotch, 1346-47.

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Adams & Elting Co., 1310-11.

Bridgeport Wood Finishing Co., 1312-13.

Carter White Lead Co., 1315.

Samuel H. French & Co., 1323.

Glidden Varnish Co., 1324-25.

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C. L. Burns, 46-47.
 M. Ewing Fox & Co., 1322.
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Elaterite Paint and Mfg. Co., 50.
 Samuel H. French & Co., 1323.
 Lowe Brothers Co., 1332-33.
 Toch Brothers, 64-65.
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Antakwa Co., 42-43.
 C. L. Burns, 46-47.
 Carter White Lead Co., 1315.
 Chatfield & Woods Co., 39.
 Elaterite Paint and Mfg. Co., 50.
 Samuel H. French & Co., 1323.
 Hascall Paint Co., 1326-27.
 J. G. Hetzel, 400-01.
 Hydrex Felt and Engineering Co., 52.
 Illinois Damp-Proofing Co., 56-57.
 Lowe Brothers Co., 1332-33.
 National Lead Co., 1341.
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 National Roofing Co., 62.
 Rinald Bros., 1346-47.
 Sherwin-Williams Co., 1348-49.
 Standard Paint Co., 63.
 Toch Brothers, 64-65.
 Wadsworth, Howland & Co., Inc., 1354-55.
 Zibell Damp-Resisting Paint Co., 69-71.
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Asphaltus, 62.
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Hydrex, 52.

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Mill Gloss, 1354-55.

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R. I. W., 64-65.

S P C Flexible Iron and Graphite, 63.

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National Paint Works, 60-61.

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Barber Asphalt Paving Co., 393-95.
 F. W. Bird & Son, 376.
 J. A. & W. Bird & Co., 396-97.
 Chatfield & Woods Co., 39.
 Chattanooga Roofing and Foundry Co., 360-61.
 Elaterite Paint and Mfg. Co., 50.
 Eller Mfg. Co., 364-65.
 Samuel H. French & Co., 1323.
 Hascall Paint Co., 1326-27.
 J. G. Hetzel, 400-01.
 Hydrex Felt and Engineering Co., 52.
 R. F. Johnston Paint Co., 1328-29.
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 National Lead Co., 1341.
 National Roofing Co., 62.
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Bessemer, 1346-47.
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Genasco, 393-95.
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Paints, Technical.

American Hard Wall Plaster Co., 156-57.
 Antakwa Co., 42-43.
 Elaterite Paint and Mfg. Co., 50.
 Samuel H. French & Co., 1323.
 Hascall Paint Co., 1326-27.
 J. G. Hetzel, 400-01.
 Lowe Brothers Co., 1332-33.
 National Lead Co., 1341.
 Rinald Bros., 1346-47.
 Rubbertex Cloth and Paper Co., 410.
 Standard Paint Co., 63.
 Toch Brothers, 64-65.
Antakwa Colorless, 42-43.
Des Moines Elaterite, 50.
Hetzel's, 400-01.
P. & B. Acid-Resisting, 63.
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M. Ewing Fox & Co., 1322.
 J. B. King & Co., 166.
 Benjamin Moore & Co., 1340.
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Perfect, 166.
Permanite, 1322.
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American Concrete Co., 6-7.
 Antakwa Co., 42-43.
 Barber Asphalt Paving Co., 393-95.
 C. L. Burns, 46-47.
 Chatfield & Woods Co., 39.
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Samuel H. French & Co., 1323.

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Palace Automatic Window Ventilator, 940-41.

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Ideal Concrete Machinery Co., 28-30.

Palm Engineering Co., 1294-95.

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Palm Sanitary Cleaning Systems, and Vacuum Pumps, 1294-95.

PALMER, MASS.

Wright Wire Co. (Wire Work, Factory), 352-53.

PAN HANDLE, TEXAS.

American Enameled Brick and Tile Co., 101-07.

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American Compound Door Co., 692-93.

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Buffalo Wire Works Co., 290-91.

Panels, Plastic.

Tognarelli & Voigt Co., 1374-75.

Panels, Slate.

Keenan Structural Slate Co., 796-98.

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Crouse-Hinds Co., 1152-53.
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Paraffine Paint Co. (Agts. J. G. Hetzel), 400-01.

Paragon Plaster Co. (Agts. Clinton Wire Cloth Co.), 190-91; (Agts. Youngstown Iron & Steel Roofing Co.), 218-21.

Paragon Plaster & Supply Co. (Agts. Youngstown Iron & Steel Roofing Co.), 218-21.

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 L. & C. Hardtmuth (Architects' Supplies), 4-5.
 Heaton & Wood (Parquetry Floors), 734-35.
 Library Bureau (Metal Furniture), 1224-25.
 Pratt & Lambert, Inc. (Varnishes, Stains, etc.), 1344-45.
 Standard Paint Co. (Preservative Paints), 63; (Building Papers), 377; (Roofing and Insulating Papers), 408-09; (See. Ane. des Toitures et Isolants, Agts.).
 Trenton Potteries Co., 818-20.
 Troy Laundry Machinery Co., Ltd., 1088-89.
 Western Electric Co. (Societe de Materiel Telephonique, Agts.), 1184-87.
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 J. W. Fiske Iron Works, 300-01.
Parke & Son Co., V. H. (Agts. Columbus Brick and Terra Cotta Co.), 100.
Parker, J. W. (Agts. E. Keeler Co.), 932-33.
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 Keystone Fireproofing Co., 226.
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 National Fire Proofing Co., 230-37.
 Sharon Steel Hoop Co., 240-42.
 White Fireproof Construction Co., 246-47.
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 Flexifold Door and Shutter Co., 700-01.
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 Wadsworth, Howland & Co., Inc. (Paints, Coatings, etc., Hiram W. Wadsworth, Agt.), 1354-55.
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 Higgin Mfg. Co. (Screens), 758-59.
Pattison Supply Co., W. M. (Agts. Sanitary Pump Co.), 920-21.
Paulson, J. P. (Agt. Wood-Mosaic Co.), 738-40.
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Payson Mfg. Co., 582-83.
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Peelle Underwriters' Counterbalance Fire Doors, 510-11.
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Perfect Joint Columns, 678-79.
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Perfect Safety Window Guard, 584.
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 Atlantic Terra Cotta Co. (Factory), 138-39.
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Pettes & Randall Co., 1178-79.
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 Acme Column Co. (Metal Columns), 276-77.
 Allith Mfg. Co. (Structural Hardware), 536-37.
 American Art Marble Co. (Artificial Marble), 1368.
 American Bar-Lock Co. (Sidewalk Light Construction), 612-16.
 American Blower Co. (Heating and Ventilating Apparatus and Steam-Engines), 1052-53.
 American Enameled Brick and Tile Co., 101-07.
 American Luxfer Prism Co., 617-21.
 American Mason Safety Tread Co., 540.
 American Pulley Co., 538-39.
 American Sanitary Works (Water-Closets and Specialties, Haynes-Thompson Co., Agts.), 780-81.
 American Sheet and Tin Plate Co. (Metal Roofing, Thos. W. Simpers, Agt.), 412-15.
 Aquabar Co. (Cement Waterproofing), 44-45.
 Armstrong Cork Co. (Cork Pipe Covering), 893; (Cold-Storage Insulation), 1090-92; (John R. Livezey, Agt.).
 Art Metal Construction Co. (Metal Furniture and Fixtures), 1214-15.
 Asbestos Protected Metal Co. (Metal Roofing), 416-17.
 Atlantic Terra Cotta Co., 138-39.
 Austral Window Balance Co., 541.
 Barber Asphalt Paving Co. (Asphalt Roofing), 393-95.
 Barrett Mfg. Co. (Roofing and Sheathing Felts), 373-75.
 Berger Mfg. Co. (Architectural Sheet Metal Work), 354-56; (Sidewalk Light Construction), 634-35.
 Bernstein Mfg. Co. (Hospital Furniture), 1258-59.
 S. F. Bowser & Co., Inc. (Oil-Handling Equipment), 1274-75.
 Bridgeport Wood Finishing Co., 1312-13.
 Bureau Brothers (Ornamental Metal Work), 292-93.
 E. T. Burrowes Co. (Screens), 754-55.
 Samuel Cabot, Inc. (Shingle Stains, etc., Samuel H. French & Co., Agts.), 1316-21.
 Cahill Iron Works (Enameled Ware, Russell D. Knight, Agt.), 784-85.
 Carter White Lead Co., 1315.
 Chamberlin Metal Weather Strip Co., 744-45.
 Chapman Slate Co. (Roofing Slate, Andrew Schulz, Agt.), 430-31.
 John H. Clay (Fire-Department and Fire-Protection Supplies), 944.
 Columbus Brick and Terra Cotta Co. (O. W. Ketcham, Agt.), 100.
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 D'Ascenzo Studios (Stained Glass Windows), 658-59.
 P. Deissler & Bro. (Ventilators), 446-47.
 Deming Co. (Pumping Machinery, W. P. Dallett, Agt.), 898-99.
 Detroit Steel Products Co. (Wrought-Steel Sash, Samuel Bettie, Jr., Agt.), 480-83.
 Eagle White Lead Co., 843.
 Emmel Co. (Architectural Ornamentation, Henry C. Elder, Agt.), 1392-93.
 Energy Elevator Co., 954-55.
 Everhard Co. (Brick, S. B. Dobbs, Agt.), 110-11.
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 George W. Golden (Metal Weather-Strips, C. Chester, Agt.), 747.
 B. F. Goodrich Co. (Interlocking Rubber Tiling), 249.
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 Goulds Mfg. Co. (Pumping Machinery), 895.
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 Hennebique Construction Co. (Concrete Reinforcement), 202-03.
 J. G. Hetzel (Roofing Cement, Berger Bros., Agts.), 400-01.
 Higgin Mfg. Co. (Screens), 758-59.
 Huntington Roofing Tile Co. (O. W. Ketcham, Agt.), 385-87.
 Hydraulic-Press Brick Co., 113-15.
 I X L Pump & Mfg. Co. (Simple Plumbing Specialties), 794-95.
 Ilg Electric Ventilating Co., 1060-61.
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 Italian Marble Mosaic Co., 1360-61.
 Kauffman Heating & Engineering Co. (Snyder & Raub, Agts.), 996-97.
 Kawneer Mfg. Co. (Stone Fronts and Metal Mouldings), 668-70.
 Keasbey & Mattison Co. (Asbestos Roofing, etc.), 402-05; (Pipe and Boiler Covering), 894.
 E. Keeler Co. (Boilers, Tanks, etc., J. W. Parker; G. L. Jones, Agts.), 932-33.
 Keller Mfg. Co. (Vacuum Cleaners, Dish Washers, Clothes Washers), 1189-91.
 David E. Kennedy, Inc. (Cork Floor Tiling, etc.), 266-67.
 Kensington Engine Works Co. (Disinfecting Machinery), 1262-63.
 O. W. Ketcham (Terra Cotta and Brick), 144-45.
 Keystone Fireproofing Co., 226.
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 J. B. King & Co. (Hard Wall Plaster, etc., John H. Holmes, Agt.), 166.
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 Lansing Wheelbarrow Co. (Automobile Turntables), 1272-73.
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 Loudon Machinery Co. (Barn Equipment, Stone & Downey, Agts.), 1280-83.
 John Lucas & Co. (Paints, etc.), 1334-35.
 Ludowici-Celadon Co. (Roofing Tiles), 388-89.
 David Lupton's Sons Co. (Sheet Metal Workers), 504-07.
 Lynn-Superior Co. (Filter Systems, and Bakers' Machinery), 912-13.
 Lyster Sheet Metal Co. (Skylights, Roofing, etc.), 452-53.
 Henry Maurer & Son (Terra Cotta Fireproofing), 228-29.
 Thomas Meehan & Sons, Inc. (Landscape Gardening), 776-77.
 Metal Lock Tile Co., 252-53.
 Midland Metal Co., Inc. (Ornamental Metal Work), 322-23.
 Model Heating Co., 1016-17.
 Murphy Iron Works (Smokeless Furnaces), 934-35.
 Nat. Asso. of Master Sheet Metal Workers, 424-26.
 National Brass and Copper Tube Co., 862-63.
 National Fire Proofing Co., 230-37.
 National Glass Brick Co., (L. and R. Wister & Co., Agts.), 130.
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 National Lead Co. (Lead Pipe), 861; (Technical Paints), 1341; (John T. Lewis & Bros. Co., Agts.).
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 Paine Lumber Co., Ltd. (Doors and Interior Trim), 704-05.
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 Pittsburgh Water Heater Co., 832-35.
 Pittsburgh Gage & Supply Co. (Oil, Steam and Water Equipments, Vandyck-Churchill Co., Albert Schade Co., Agts.), 874.
 Wm. Powell Co. (Steam Specialties), 884-85.
 Powers Regulator Co. (Heating Specialties), 1026-29.
 T. C. Prouty Co., Ltd. (Fire-Door Fixtures), 501; (Door Hangers), 585.
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 John W. Rapp Co. (Fireproof Doors, etc., E. E. Nickson, Agt.), 514-18.
 Raymond Concrete Pile Co., 34-37.
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 Rinald Bros. (Technical Paints), 1346-47.
 Roberts Filter Mfg. Co., 916-18.
 Royal Ventilator & Mfg. Co., 1064-65.
 C. S. Rutter (Metal Weather-Strip), 752.
 Ruud Mfg. Co. (Gas Water-Heaters), 836-39.
 S. & W. Specialty Co. (Medicine Closets, etc.), 1256-57.
 Sherwin-Williams Co. (Paints), 1348-49.
 Smyser-Royer Co. (Metal Work), 334-35.
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 B. F. Sturtevant Co. (Heating and Ventilating Apparatus), 1034-35.
 Swedish Venetian Blind Co. (Heaton & Wood, Agts.), 716-17.
 N. & G. Taylor Co. (Metal Roofing), 428-29.
 Thompson-Kirkpatrick Co., (Composition Flooring), 270-71.
 Thomson Wood Finishing Co., 1352-53.
 Toch Brothers (Waterproofing Compounds, Paints, etc.), 64-65.
 Tognarelli & Voigt Co. (Modelers, Carvers and Casters), 1374-75.
 Triumph Ice Machine Co., 1116-17.
 Vermont Marble Co., 84-85.
 Vonnegut Hardware Co. (Fire-Exit Devices, T. B. and H. S. Hendrickson, Reps.), 608-09.
 Wadsworth, Howland & Co., Inc. (Paints, Coatings, etc., H. M. Leh, Agt.), 1354-55.
 F. W. Wakefield Brass Co. (Lighting Fixtures), 1140-41.
 Charles Warner Co. (Builders' Supplies), 178-79.
 Warsaw Elevator Co., 976-77.
 Western Electric Co., 1184-87.
 Wheeling Corrugating Co. (Sheet Metal Work), 370-71.
 Whitehall Portland Cement Co., 180.
 Wirt & Knox Mfg. Co. (Hose Racks and Reels), 946-47.
 Wood-Mosaic Co. (Flooring, Heaton & Wood, Agts.), 738-40.
 Wright Wire Co. (Wire Work), 352-53.
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 Philadelphia & Boston Face Brick Co., 120-21.
 Phillips & Co., I. W. (Agts. Sibley-Menge Press Brick Co.), 126-27.
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 Phoenix Hollow Tile Wall Construction, 228-29.
 Phoenix Metal Lockers, Fireproof Window Frames and Sash, and Metal Ceilings, 1208.
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 Architects Standard Bronze Co., 282-83.
 Wheeling Corrugating Co., 370-71.
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 Colonial Column Mfg. Co., 676-77.
 Hartmann-Sanders Co., 680-85.
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 Pilaster Caps, Metal.
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Mandel Brothers, 1388-89.

Pine Cone Hydrated Lime, 170-71.

Pipe, Bending.

Pittsburgh Gage & Supply Co., 874.

Pipe, Brass or Copper.

National Brass and Copper Tube Co., 862-63.

Pipe, Conductor.

Berger Mfg. Co., 354-56.

Chattanooga Iron and Wire Works, 294-95.

Chattanooga Roofing and Foundry Co., 360-61.

Dowman-Dozier Mfg. Co., 1056.

Edwards Mfg. Co., 362-63.

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Friedley-Voshardt Co., 366-67.

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Thos. W. Irwin Mfg. Co., 450-51.

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American Concrete Co., 6-7.

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National Lead Co., 861.

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National Lead Co., 861.

Sanitary Water-Still Co., 922-23.

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Pipe-Joints, Compounds for.

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Pirkel Iron Works, John, 324-25.

Pitcairn, James R. (Agt. Columbus Brick and Terra Cotta Co.), 100.

Pitcairn, J. R. (Agt. Conkling-Armstrong Terra Cotta Co.), 142-43.

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Barrett Mfg. Co., 373-75.

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Pitt Balance Door Co. (Agts. Champion Metal Weather-Strip and Parting Bead Co.), 746.

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Acorn Brass Mfg. Co. (Window Ventilators, etc., A. L. Otto & Co., Agts.), 1048-49.

American Blower Co. (Heating and Ventilating Apparatus and Steam-Engines), 1052-53.

American Enameled Brick and Tile Co., 101-07.

American Luxfer Prism Co., 617-21.

American-Sanitary Works (Water-Closets and Specialties, Pittsburgh Supply Co., Agts.), 780-81.

American Sheet and Tin Plate Co. (Metal Roofing), 412-15.

American Steel & Wire Co. (Electrical Wires and Cables), 1150-51.

Armstrong Cork Co. (Cork Pipe Covering), 893; (Cold-Storage Insulation), 1090-92.

Atchison Revolving Door Co. (C. M. Eichlenlaub, Agt.), 696-97.

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Baker Sidewalk Light Co., 632-33.

Beler Water Heater Co., 826-27.

Brown Hoisting Machinery Co. (Concrete Reinforcement), 181.

E. T. Burrowes Co. (Screens), 754-55.

Samuel Cabot, Inc. (Shingle Stains, etc., Houston Brothers Co., Agts.), 1316-21.

Carter White Lead Co., 1315.

Chamberlin Metal Weather Strip Co., 744-45.

Columbian Concrete Steel Bar Co., 192-93.

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Columbus Brick and Terra Cotta (James R. Pitcairn, Agt.), 100.

Conkling-Armstrong Terra Cotta Co. (J. R. Pitcairn, Agt.), 142-43.

Crocker-Wheeler Co. (Electrical Equipment), 1149.

Deming Co. (Pumping Machinery, Harris Pump & Supply Co., Agts.), 898-99.

Eagle White Lead Co. (Pittsburgh Paint Supply Co., Agts.), 843.

Follansbee Brothers Co. (Roofing Tin), 420-21.

Fort Wayne Electric Works, 1154-55.

Frick Co. (Refrigerating Machinery), 1096-97.

General Electric Co., 1156-61.

General Fireproofing Co. (Metal Furniture), 1201.

B. F. Goodrich Co. (Interlocking Rubber Tiling), 249.

Goulds Mfg. Co. (Pumping Machinery), 895.

Grant Pulley and Hardware Co. (Steiner & Voegtly Hardware Co., Rep.), 565-67.

Albert Grauer & Co. (Sidewalk and Vault Lights), 636-39.

Hennebique Construction Co. (Concrete Reinforcement), 202-03.

Higgin Mfg. Co. (Screens), 758-59.

Hohmann & Maurer Division Taylor Instrument Companies (Heating Specialties, S. H. Stupakoff, Agt.), 992.

Robert W. Hunt & Co. (Consulting Engineers), 774-75.

Huntington Roofing Tile Co. (Pittsburgh Clay Products Co., Agts.), 385-87.

Jeffrey Mfg. Co. (Elevators and Conveyors), 962-63.

E. J. Johnson Co. (Slate), 436-37.

Kauffman Heating & Engineering Co. (John T. Bealor, Agt.), 996-97.

Kawneer Mfg. Co. (Store Fronts and Metal Mouldings), 668-70.

Keasbey & Mattison Co. (Asbestos Roofing, etc.), 402-05; (Pipe and Boiler Covering), 894.

E. Keeler Co. (Boilers, Tanks, etc., James T. Castle, Agt.), 932-33.

S. Keighley Metal Ceiling and Mfg. Co., 1208.

David E. Kennedy, Inc. (Cork Floor Tiling, etc.), 266-67.

Kewanee Water Supply Co., 904-05.

Keystone Nail Co., 573.

Kinnear Mfg. Co. (Steel Rolling Doors, etc.), 492-99.

Library Bureau (Metal Furniture), 1224-25.

McCord Mfg. Co. (Force-Feed Lubricator), 879; (McKim Gasket), 878.

McCray Refrigerator Co., 1104-07.

J. G. McDowell Co. (Pumping Machinery), 919.

Merritt & Co. (Metal Lockers, etc., N. McClintock, Agt.), 1212.

Monolith Steel Co., Inc. (Concrete Reinforcement, Works), 206-07.

Murphy Iron Works (Smokeless Furnaces), 934-35.

National Fire Proofing Co., 230-37.

National Glass Brick Co. (L. and R. Wister & Co., Agts.), 130.

National Lead Co. (Lead Pipe), 861; (Technical Paints), 1341; (National Lead & Oil Co., Agts.).

National Metal Molding Co., 1172-73.

National Metal Weather Strip Co., Inc., 750-51.

National Roofing Co. (Preservative Paints), 62; (Asphalt Roofing and Paint), 399; (Morris Ayrault, Mgr.).

National Store-Front Co., 672-73.

New York Belting and Packing Co., Ltd. (Interlocking Rubber Tiling), 254.

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Raymond Concrete Pile Co., 34-37.

H. J. Reedy Co. (Elevators), 967.

Ridgway Dynamo and Engine Co., 936-37.

Roberts Filter Mfg. Co., 916-18.

Ruud Mfg. Co. (Gas Water-Heaters), 836-39.

Sanitary Pump Co. (Modern Water Supply Co., Agts.), 920-21.

Standard Underground Cable Co., 1180-81.

Steel City Electric Co., 1182-83.

B. F. Sturtevant Co. (Heating and Ventilating Apparatus), 1034-35.

W. S. Tyler Co. (Ornamental Metal Work), 342.

Union Specialty Mfg. Co. (Brick Handlers and Wall Ties), 31.

United Marble Tile & Terrazzo Co., 1366-67.

F. W. Wakefield Brass Co. (Lighting Fixtures), 1140-41.

Waterproofing Co., 66-67.

Western Electric Co., 1184-87.

Wood-Mosaic Co. (Flooring, Empire Flooring Co., Agts.), 738-40.

Yeomans Brothers (Pumping Machinery, N. C. Davison & Co., Agts.), 852-53.

York Mfg. Co. (Refrigerating Machinery), 1120-21.

York Safe and Lock Co., 1238-39.

Youngstown Iron & Steel Roofing Co. (L. E. Aber, Agt.), 218-21.

Pittsburg Automatic Instantaneous Gas Water Heaters, and Circulating Thermostat, 832-35.

Pittsburg Paint Supply Co. (Agts. Eagle White Lead Co.), 843.

Pittsburg Steel Wall Ties, 156-57.

Pittsburgh Supply Co. (Agts. American Sanitary Works), 780-81.

Pittsburg Water Heater Co., 832-35.

Pittsburgh Clay Products Co. (Agts. Huntington Roofing Tile Co.), 385-87.

Pittsburgh Gage & Supply Co. (Oil, Steam and Water Equipment), 874; (Cocks and Bibbs), 875.*Pittsburgh Separators, Gage Cocks, Safety Water Columns, Pressure and Recording, Automatic, Chain-Lever Gages, Exhaust Heads, Body-Gate Valves, Water Alarms for Boilers, and Cocks and Bibbs*, 874, 875.

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American Hard Wall Plaster Co., 156-57.

Delac Plaster Co., 160-61.

Keystone Plaster Co., 165.

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F. P. Smith Wire and Iron Works, 332-33.

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Blue Ridge Marble Co., 72-73.

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Keenan Structural Slate Co., 796-98.

Platforms, Soapstone.

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Plumbers and Steam Fitters Supply Co. (Agts. American Sanitary Works), 780-81.

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Columbus Heating & Ventilating Co., 790-91.

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Porcelite Enamel Paints, 1352-53.

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Architectural Stone Co., 150-51.

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E. T. Burrowes Co. (Screens), 754-55.

Champion Metal Weather-Strip and Parting Bead Co. (Roscoe S. Davis, Agt.), 746.

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Acorn Brass Mfg. Co. (Window Ventilators, etc., F. C. Cook, Agt.), 1048-49.

American Enameled Brick and Tile Co., 101-07.

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American Sheet and Tin Plate Co. (Metal Roofing, R. R. Hoge, Agt.), 412-15.

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 Kawneer Mfg. Co. (Store Fronts and Metal Mouldings), 668-70.
 Louden Machinery Co. (Barn Equipment, Beall & Co., Agts.), 1280-83.
 Merritt & Co. (Metal Lockers, etc., F. T. Crowe & Co., Agts.), 1212.
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Genasco Model, Smooth-Surface, Stone-Surface, and Whitestone, 393-95.
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Mount Laurel Slag Co., 384.

Roofing, Saw-Tooth.

Weatherproof Construction Co., 460-61.

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Roofing, Terra Cotta, see under Terra Cotta.

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Rookwood Mat-Glazed Architectural Faience, 146-47.

Rookwood Pottery Co., 146-47.

Root, Neal & Co. (Agts. Deming Co.), 898-99.

Rope, Wire.

American Steel and Wire Co., 14-15.

Broderick & Bascom Rope Co., 16-17.

Wright Wire Co., 352-53.

Yellowstrand Powersteel, 16-17.

ROSENDALE, N. Y.

Consolidated Rosendale Cement Co. (Mills), 162.

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ROSEVILLE, OHIO.

Hydraulic-Press Brick Co. (Works), 113-15.

Roslyn Supply Co. (Agts. Clinton Wire Cloth Co.), 190-91.

Rosters, Club.

United States Changeable Sign Co., 1244-45.

Rotrex Vacuum Cleaning Systems, 1296-97.

Royal Hose Racks, 946-47.

Royal Ventilator & Mfg. Co., 1064-65.

Royal Ventilators, 1064-65.

Rubber, Mineral.

Standard Asphalt & Rubber Co., 406-07.

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Rubber House Paint, 1310-11.

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Rubbertext Cloth and Paper Co., 410.

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Rubroid Co., Ltd. (Agts. Standard Paint Co.), 63, 377, 408-09.

Rubroid Gesellschaft, M. B. H. (Agts. Standard Paint Co.), 63, 377, 408-09.

Rubroid Roofing, Flooring, Damp-proof Cloth and Damp Course, 408-09.

Ruggles Co., Walter G. (Agts. Pittsburgh Gage and Supply Co.), 874.

Rugs, Imported or Domestic.

Lord & Taylor, 1386-87.

Mandel Brothers, 1388-89.

Rugs and Borders, Oilcloth.

Farr & Bailey Mfg. Co., 1378-79.

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Narragansett Machine Co., 1268-69.

Ruppman Door Holders, 568.

Russell & Co., J. (Agts. Youngstown Iron & Steel Roofing Co.), 218-21.

Rutherford Black Waterproof Paper, 396-97.

Rutland Florence Marble Co., 80-81.

Rutter, C. S., 752.

Rutter's Metal Weather-Strip, 752.

Rutty Metal Wall Plugs, 156-57.

Ruud Gas Water-Heater, Reheating System, Storage System, and Internal Thermostat, 836-39.

Ruud Mfg. Co., 836-39.

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S P C Graphite, Damp-Proofing and Flexible Iron Paints, 63.

S W P Concrete and Cement Finishes, 1348-49.

S-W Handcraft Lacquers, and Stains, Flat-tone, Enamelastic, and Metalastic Finishes, 1348-49.

S & A Safety Gas Cock, and Shock Absorber, 1138-39.

S. & W. Sanitary Medicine Chests and Closets, Toilet-Paper Cabinets, Arch Bars and Dampers, Ash Dumps, Sliding Spark Arresters, etc., 1256-57.

S. & W. Specialty Co., 1256-57.

Sackett Plaster Board Co., 238-39.

Sackett Plaster Board, 156-57, 238-39.

Sackett's Waterproof Sheathing Paper, 373-75.

Saddle Hose Racks, 946-47.

Safes.

S. H. Harris Co., 490-91.

Lowrie Safe and Lock Co., 1233.

Victor Safe & Lock Co., 1236-37.

York Safe and Lock Co., 1238-39.

Lowrie Small Wall, 1233.

Victor Fireproof, and Spherical Manganese Bank, 1236-37.

Safe-Cabinets, Metal.

Safe-Cabinet Co., Inc., 1234-35.

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Safe-Cabinet Co., Inc., 1234-35.

Safety Automatically Collapsible Revolving Door, 694-95.

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Safety Roofing, 399.

Safety Treads, see Treads, Stair.

Safety Window Cleaners' Guards, see under Guards.

Sagax Fire Doors and Fire Shutters, 514-18, 708-09.

Sagax Wood Co., 708-09.

SAGINAW, MICH.

Pittsburgh Gage & Supply Co. (Oil, Steam and Water Equipments, United Supply Co., Agts.), 874.

ST. JOHN, NEW BRUNSWICK, CAN.

Wood-Mosaic Co. (Flooring, Hamilton & Gay, Agts.), 738-40.

ST. JOHNS, QUEBEC, CAN.

Trenton Potteries Co. (Canadian-Trenton Potteries Co., Ltd., Agts.), 818-20.

ST. JOSEPH, MICH.

Compound Door Co. (Doors and Interior Trim), 698-99.

ST. JOSEPH, MO.

Chamberlin Metal Weather Strip Co., 744-45.

Farr & Bailey Mfg. Co. (Oil-Cloth, Linoleum, etc., Wheeler-Motter Mercantile Co., Agts.), 1378-79.

Nat. Asso. of Master Sheet Metal Workers, 424-26.

ST. LOUIS, MO.

American Blower Co. (Heating and Ventilating Apparatus and Steam-Engines), 1052-53.

American Enameled Brick and Tile Co., 101-07.

American Machine Co. (Elevators, Ramsay Elevator & Machine Co., Agts.), 948.

American Mason Safety Tread Co., 540.

American Sheet and Tin Plate Co. (Metal Roofing, W. J. Wetstein, Agt.), 412-15.

American Steel & Wire Co. (Electrical Wires and Cables), 1150-51.

Armstrong Cork Co. (Cold-Storage Insulation), 1090-92.

Art Metal Construction Co. (Metal Furniture and Fixtures), 1214-15.

Asbestos Protected Metal Co. (Metal Roofing), 416-17.

ST. LOUIS, MO.—Continued.

Atchison Revolving Door Co. (Seidel Mfg. Co., Agts.), 696-97.

Barrett Mfg. Co. (Roofing and Sheathing Felts), 373-75.

Berger Mfg. Co. (Architectural Sheet Metal Work), 354-56; (Sidewalk Light Construction), 634-35.

Broderick & Bascom Rope Co. (Wire Rope and Aerial Tramways), 16-17.

P. M. Bruner Granitoid Co. (Sidewalk and Vault Lights), 636-39.

E. T. Burrowes Co. (Screens), 754-55.

Samuel Cabot, Inc. (Shingle Stains, etc., Whitelaw Brothers, Agts.), 1316-21.

Carter White Lead Co., 1315.

Chamberlin Metal Weather Strip Co., 744-45.

Clinton Wire Cloth Co. (Concrete Reinforcement, Hunkins-Willis Lime & Cement Co., Agts.), 190-91.

Columbus Brick and Terra Cotta Co. (National Pressed Brick Co., Agts.), 100.

Dahlstrom Metallic Door Co., 476-79.

Detroit Steel Products Co. (Wrought-Steel Sash, Hunkins-Willis Lime & Cement Co., Agts.), 480-83.

Diamond Expansion Bolt Co., 559.

Eagle White Lead Co., 843.

Everhard Co. (Brick, Illinois Supply & Construction Co., Agts.), 110-11.

Farr & Bailey Mfg. Co. (Oil-Cloth, Linoleum, etc., J. Kennard & Sons Carpet Co., Agts.), 1378-79.

Flour City Ornamental Iron Works, 302-03.

Follansbee Brothers Co. (Roofing Tin, Stockhoff Supply Co., Agts.), 420-21.

Fort Wayne Electric Works, 1154-55.

Frick Co. (Refrigerating Machinery), 1096-97.

General Electric Co., 1156-61.

Glidden Varnish Co., 1324-25.

George W. Golden (Metal Weather-Strips, McRee Green, Agt.), 747.

B. F. Goodrich Co. (Interlocking Rubber Tiling), 249.

Goodyear Tire and Rubber Co. (Interlocking Rubber Tiling), 250-51.

Gorham Co Architectural Bronze, 304-05.

Goulds Mfg. Co. (Pumping Machinery), 895.

Grant Pulley and Hardware Co. (Seidel Mfg. Co., Rep.), 565-67.

Harris Fire Apparatus Co., 940-41.

Hohmann & Maurer Division Taylor Instrument Companies (Heating Specialties), 992.

Robert W. Hunt & Co. (Consulting Engineers), 774-75.

Hydraulic-Press Brick Co., 113-15.

Inland Steel Co. (Concrete Reinforcement), 204.

Jeffrey Mfg. Co. (Elevators and Conveyors), 962-63.

Kauffman Heating & Engineering Co., 996-97.

Kawneer Mfg. Co. (Store Fronts and Metal Mouldings), 668-70.

Keasbey & Mattison Co. (Asbestos Roofing, etc.), 402-05; (Pipe and Boiler Covering), 894.

David E. Kennedy, Inc. (Cork Floor Tiling, etc.), 266-67.

Kewanee Boiler Co., 1002-08.

Kinnear Mfg. Co. (Steel Rolling Doors, etc.), 492-99.

Lasar-Letzig Mfg. Co. (Ornamental Metal Work), 316-17.

Library Bureau (Metal Furniture), 1224-25.

Ludowici-Celadon Co. (Roofing Tiles, A. P. Miller, Agt.), 388-89.

Charles F. Luehrmann Hardwood Lumber Co. (Red Gum), 726-30.

McCray Refrigerator Co., 1104-07.

ST. LOUIS, MO.—Continued.

Merritt & Co. (Metal Lockers, etc., Alexander Galt, Agt.), 1212.
 Mississippi Glass Co. (Decorative Glass), 650.
 Mississippi Wire Glass Co., 651.
 Murphy Varnish Co., 1338-39.
 National Fire Proofing Co., 230-37.
 National Lead Co. (Lead Pipe), 861; (Technical Paints), 1341.
 National Steam Specialty Co. (Air Valves and Gauges, T. K. Peters Co., Agts.), 880-81.
 New York Belting and Packing Co., Ltd. (Interlocking Rubber Tiling), 254.
 Paine Lumber Co., Ltd., (Doors and Interior Trim), 704-05.
 Pittsburg Water Heater Co., 832-35.
 Pittsburgh Gage & Supply Co. (Oil, Steam and Water Equipments, Thomas Co., Agts.), 874.
 Raymond Concrete Pile Co., 34-37.
 H. J. Reedy Co. (Elevators), 967.
 Reliance Ball Bearing Door Hanger Co. (Lasar-Letzig Mfg. Co., Agts.), 586-87.
 Richards Mfg. Co. (Door Hangers), 588-90; (Spring Hinges), 591.
 Ridgway Dynamo and Engine Co. (A. W. Oliver, Agt.), 936-37.
 Rinald Bros. (Technical Paints, Hunkins-Willis Lime & Cement Co., Agts.), 1346-47.
 Emil W. Ritter Co. (Building Specialties, Edward Muehlenbrock & Co., Agts.), 592.
 Rubbertex Cloth and Paper Co. (Roofing Material), 410.
 Ruud Mfg. Co. (Gas Water-Heaters), 836-39.
 Sanitary Pump Co. (Mahler Machinery & Supply Co. Agts.), 920-21.
 Sherwin-Williams Co. (Paints), 1348-49.
 Standard Underground Cable Co., 1180-81.
 Stowell Mfg. and Foundry Co. (Hardware Specialties), 602-03.
 B. F. Sturtevant Co. (Heating and Ventilating Apparatus), 1034-35.
 U. S. Mail Chute Equipment Co., 1242-43.
 Vermont Marble Co., 84-85.
 Wadsworth, Howland & Co., Inc. (Paints, Coatings, etc., Hunkins-Willis Lime & Cement Co., Agts.), 1354-55.
 F. W. Wakefield Brass Co. (Lighting Fixtures), 1140-41.
 Walch & Wyeth (Valves, St. Louis Steam Specialty Co., Agts.), 888-89.
 Western Electric Co., 1184-87.
 Wheeling Corrugating Co. (Sheet Metal Work), 370-71.
 York Mfg. Co. (Refrigerating Machinery), 1120-21.

St. Louis Steam Specialty Co. (Agts. Walch & Wyeth), 888-89.

ST. MARY'S, OHIO.

Pittsburgh Gage & Supply Co. (Oil, Steam and Water Equipments, Jaspersen Supply Co., Agts.), 874.

ST. PAUL, MINN.

American Enameled Brick and Tile Co., 101-07.
 American Luxfer Prism Co., 617-21.
 American Steel & Wire Co. (Electrical Wires and Cables), 1150-51.
 Atchison Revolving Door Co. (Johnson, Jackson & Corning, Inc., Agts.), 696-97.
 Samuel Cabot, Inc. (Shingle Stains, etc., Johnson, Jackson & Corning, Agts.), 1316-21.
 Carter White Lead Co., 1315.
 Columbus Brick and Terra Cotta Co. (Johnson, Jackson & Corning, Agts.), 100.
 H. W. Covert Co. (Fireplace Appliances, Northern Brick & Supply Co., Agts.), 982-83.

ST. PAUL, MINN.—Continued.

Eagle White Lead Co. (Bazille & Partridge Co., Agts.), 843.
 Fort Wayne Electric Works, 1154-55.
 George W. Golden (Metal Weather-Strips, Frye & Jenkins, Agts.), 747.
 Goodyear Tire and Rubber Co. (Interlocking Rubber Tiling), 250-51.
 Huntington Roofing Tile Co. (Twin City Brick Co., Agts.), 385-87.
 Inland Steel Co. (Concrete Reinforcement), 204.
 Kauffman Heating & Engineering Co. (Dwyer Field Co., Agts.), 996-97.
 Keasbey & Mattison Co. (Asbestos Roofing, etc.), 402-05; (Pipe and Boiler Covering), 894.
 Loudon Machinery Co. (Barn Equipment), 1280-83.
 Merritt & Co. (Robinson, Cary & Sands Co., Agts.), 1212.
 Murphy Iron Works (Smokeless Furnaces, Robinson, Cary & Sands Co., Agts.), 934-35.
 Reliance Ball Bearing Door Hanger Co. (K. F. Lott, Agt.), 586-87.
 Ridgway Dynamo and Engine Co. (Dwyer Field Co., Agts.), 936-37.
 Rinald Bros. (Technical Paints, Builders' Supply Co., Agts.), 1346-47.
 St. Paul Roofing, Cornice & Ornament Co., 372.
 Wadsworth, Howland & Co., Inc. (Paints, Coatings, etc., J. W. L. Corning & Co., Agts.), 1354-55.

St. Paul Roofing, Cornice & Ornament Co., 372.

Salamander Rolling Shutters, 711-13.

SALEM, OHIO.

Deming Co. (Pumping Machinery), 898-99.
 W. H. Mullins Co. (Sheet Metal Work), 368-69.

SALT LAKE CITY, UTAH.

W. D. Allen Mfg. Co. (Hose Racks, etc.), 938-39.
 American Steel & Wire Co. (Electrical Wires and Cables), 1150-51.
 Asbestos Protected Metal Co. (Metal Roofing), 416-17.
 Samuel Cabot, Inc. (Shingle Stains, etc., Charles F. Porter, Agt.), 1316-21.
 Detroit Steel Products Co. (Wrought-Steel Sash, Thomas A. Williams, Agt.), 480-83.
 Farr & Bailey Mfg. Co. (Oil-Cloth, Linoleum, etc., Salt Lake Hardware Co., Agts.), 1378-79.
 General Electric Co., 1156-61.
 Kauffman Heating and Engineering Co. (Thomas A. Williams, Agt.), 996-97.
 Loudon Machinery Co. (Barn Equipment, Miller-Cahoon Co., Agts.), 1280-83.
 Merrill Corporation (Furniture), 1390-91.
 Meurer Bros Co. (Metal Roofing), 422-23.
 Nat. Asso. of Master Sheet Metal Workers, 424-26.
 National Metal Molding Co., 1172-73.
 Pittsburg Water Heater Co., 832-35.
 Stowell Mfg. and Foundry Co. (Hardware Specialties), 602-03.
 Wadsworth, Howland & Co. Inc. (Paints, Coatings, etc., Chas. F. Porter, Agt.), 1354-55.
 Western Electric Co., 1184-87.
 Whitney-Steen Co. (Building Contractors), 12-13.
 Wood-Mosaic Co. (Flooring, J. P. Paulson, Agt.), 738-40.
 Youngstown Iron & Steel Roofing Co. (Utah Lumber Co.), 218-21.
 Salt Lake Hardware Co. (Agts. Farr & Bailey), 1378-79.
 Sample & Marshall Co. (Agts. Atchison Revolving Door Co.), 696-97.
 Samson Water-Closet Seats, 802-03.

SAN ANTONIO, TEXAS.

American Enameled Brick and Tile Co., 101-07.
 Samuel Cabot, Inc. (Shingle Stains, etc., West End Lumber Co., Agts.), 1316-21.
 Higgin Mfg. Co. (Screens), 758-59.
 Nat. Asso. of Master Sheet Metal Workers, 424-26.

SAN DIEGO, CAL.

New Pedrara Mexican Onyx Co., 1362-63.

SAN FRANCISCO, CAL.

A. P. W. Paper Co., 854-55.
 Acorn Brass Mfg. Co. (Window Ventilators, etc., Willkomm Building & Supply Co., Agts.), 1048-49.
 Allith Mfg. Co. (Structural Hardware), 536-37.
 American Blower Co. (Heating and Ventilating Apparatus and Steam Engines), 1052-53.
 American Circular Loom Co. (Conduit and Fittings, John R. Cole Co., Agts.), 1146-48.
 American Enameled Brick and Tile Co., 101-07.
 American Luxfer Prism Co., 617-21.
 American Sanitary Works (Water-Closets and Specialties, George H. Tay Co., Agts), 780-81.
 American Sheet and Tin Plate Co. (Metal Roofing, I. B. Williams, Agt.), 412-15.
 American Steel & Wire Co. (Wire Rope), 14-15; (Concrete Reinforcement), 182-85; (Electrical Wires and Cables, A. T. DeForest, Sales Agt.), 1150-51.
 Armstrong Cork Co. (Cold-Storage Insulation), 1090-92.
 Art Metal Construction Co. (Metal Furniture & Fixtures), 1214-15.
 Asbestos Protected Metal Co. (Metal Roofing), 416-17.
 Ashley House-Sewage Disposal Co., 844-45.
 Atchison Revolving Door Co. (Waterhouse and Price Co., Agts.), 696-97.
 Barber Asphalt Paving Co. (Asphalt Roofing), 393-95.
 Benjamin Electric Mfg. Co., 1126-27.
 Berger Mfg. Co. (Architectural Sheet Metal Work), 354-56; (Sidewalk Light Construction), 634-35.
 S. F. Bowser & Co., Inc. (Oil-Handling Equipment), 1274-75.
 Samuel Cabot, Inc. (Shingle Stains, etc., Waterhouse & Price Co., Agts.), 1316-21.
 Cahill Iron Works (Enameled Ware, Chas. H. Stanyan, Agt.), 784-85.
 Chamberlin Metal Weather Strip Co., 744-45.
 Clinton Wire Cloth Co. (Concrete Reinforcement, L. A. Norris, Agt.), 190-91.
 Dahlstrom Metallic Door Co., 476-79.
 Deming Co. (Pumping Machinery, Henshaw, Bulkley & Co., Agts.), 898-99.
 Detroit Steel Products Co. (Wrought-Steel Sash, Wilkomm Building Supply Co., Agts.), 480-83.
 Edwards Mfg. Co. (Sheet Metal Work), 362-63.
 Elevator Supply and Repair Co., 949-53.
 Farr & Bailey Mfg. Co. (Oil-Cloth, Linoleum, etc., Hulse, Bradford Co., Agts.), 1378-79.
 Flour City Ornamental Iron Works, 302-03.
 Fort Wayne Electric Works, 1154-55.
 General Electric Co., 1156-61.
 Gleason-Tiebout Glass Co. (Illuminating Glassware), 1142.
 George W. Golden (Metal Weather-Strips, J. M. Born, Agt.), 747.
 B. F. Goodrich Co. (Interlocking Rubber Tiling), 249.
 Goodyear Tire and Rubber Co. (Interlocking Rubber Tiling), 250-51.
 Gorham Co Architectural Bronze, 304-05.

SAN FRANCISCO, CAL.—Continued.

Grant Pulley and Hardware Co. (Waterhouse & Price Co., Rep.), 565-67.
 Goulds Mfg. Co. (Pumping Machinery), 895.
 Hahl Automatic Clock Co., 1246-47.
 Harris Fire Apparatus Co., 940-41.
 Robert W. Hunt & Co. (Consulting Engineers), 774-75.
 Kauffman Heating & Engineering Co. (Royal Heating Co., Agts.), 996-97.
 Kawneer Mfg. Co. (Store Fronts and Metal Mouldings), 668-70.
 Kinnear Mfg. Co. (Steel Rolling Doors, etc.), 492-99.
 J. M. Kohler Sons Co. (Porcelain Enamelled Ware), 804-05.
 Lansing Wheelbarrow Co. (Automobile Turntables), 1272-73.
 Library Bureau (Metal Furniture), 1224-25.
 Louis Lipp Co. (Plumbing Fixtures), 806-07.
 Ludowici-Celadon Co. (Roofing Tiles, Gladding, McBean & Co., Agts.), 388-89.
 McCord Mfg. Co. (McKim Gasket), 878; (Force-Feed Lubricators), 879; (Maydwell Co., Agts.).
 McCray Refrigerator Co., 1104-07.
 Merritt & Co. (Metal Lockers, etc., Waterhouse & Price Co., Agts.), 1212.
 Meurer Bros. Co. (Metal Roofing, A. H. McDonald, Rep.), 422-23.
 Mosaic Tile Co. (Floor and Wall Tile), 262-63.
 Nat. Asso. of Master Sheet Metal Workers, 424-26.
 National Brass and Copper Tube Co., 862-63.
 National Fire Proofing Co., 230-37.
 National Metal Molding Co., 1172-73.
 National Paint Works, 60-61.
 National Steam Specialty Co. (Air Valves and Gauges, Amby J. Buckley, Agt.), 880-81.
 New Pedrara Mexican Onyx Co., 1362-63.
 New York Belting and Packing Co., Ltd. (Interlocking Rubber Tiling), 254.
 Oneida Community, Ltd. (Builders' Hardware), 578-79.
 Pennsylvania Rubber Co. (Interlocking Rubber Tiling), 255.
 Pittsburg Water Heater Co., 832-35.
 Pittsburgh Gage & Supply Co. (Oil, Steam and Water Equipments, Henshaw, Buckley & Co., Agts.), 874.
 T. C. Prouty Co., Ltd. (Fire-Door Fixtures), 501; (Door Hangers), 585.
 Reliance Ball Bearing Door Hanger Co. (Sartorius Co., Agts.), 586-87.
 Rinald Bros. (Technical Paints, Waterhouse & Price Co., Agts.), 1346-47.
 Ruud Mfg. Co. (Gas Water-Heaters), 836-39.
 Sherwin-Williams Co. (Paints), 1348-49.
 Standard Electric Time Co., 1250-51.
 Speakman Supply and Pipe Co. (W. E. Gilchrist, Rep.), 816-17.
 Standard Paint Co. (Preservative Paints), 63; (Building Papers), 377; (Roofing and Insulating Papers), 408-09.
 Standard Underground Cable Co., 1180-81.
 Star Expansion Bolt Co., 606.
 Steel City Electric Co. (Telephone Electrical Equipment Co., Agts.), 1182-83.
 Stowell Mfg. and Foundry Co. (Hardware Specialties), 602-03.
 Swedish Venetian Blind Co. (Williams & Carter Co., Agts.), 716-17.
 Troy Laundry Machinery Co., Ltd., 1088-89.
 Union Fibre Co. (Sheathing and Deadening Materials), 378-79.
 United States Gypsum Co. (Wall Plasters), 174-77.

SAN FRANCISCO, CAL.—Continued.

Vermont Marble Co., 84-85.
 Wadsworth, Howland & Co., Inc. (Paints, Coatings, etc., Walter F. Klatt, Agt.), 1354-55.
 F. W. Wakefield Brass Co. (Lighting Fixtures), 1140-41.
 Western Electric Co., 1184-87.
 Winslow Bros. Co. (Ornamental Metal Work), 343.
 John Wood Mfg. Co. (Boilers and Heat-ers), 840-42.
 Wood-Mosaic Co. (Flooring, Hardwood Interior Co., Agts.), 738-40.
 Wright Wire Co. (Wire Work), 352-53.
 Yeomans Brothers (Electric Pumping Machinery, A. C. Hanna, Agt.), 852-53.
 Youngstown Iron & Steel Roofing Co. (Atlantic Fireproofing Co., Agts.), 218-21.
SAN JUAN, PORTO RICO.
 Asbestos Protected Metal Co. (Metal Roofing), 416-17.
Sand, Building.
 American Concrete Co., 6-7.
 American Hard Wall Plaster Co., 156-57.
 Charles Warner Co., 178-79.
Sand, Filtering.
 Loomis-Manning Filter Co., 907-09.
 Roberts Filter Mfg. Co., 916-18.
Sand-Blast Cleaning, Exterior or Interior, and Appliances.
 American Diamond Blast Co., 41.
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 G. P. Sherwood & Co., 98.
SANDUSKY, OHIO.
 National Wire Cloth Co. (Concrete Reinforcement), 208-09.
Sanitary Metal Tile Co., 264-265.
Sanitary Pump Co., 920-21.
Sanitary Pumps, and Pneumatic Water-Supply Systems, 920-21.
Sanitary Water Stills and Water Distilling Plants, 922-23.
Sanitary Water-Still Co., 922-23.
SANTIAGO, CHILE.
 Kinnear Mfg. Co. (Steel Rolling Doors, etc.), 492-99.
 Santo Vacuum Cleaners, Dish Washers and Clothes Washers, 1189-91.
 Sarco Waterproofing, Roofing and Asphaltic Paving Cement, Road Compound, Filler, Insulating Compound, Varnish Gum, Mineral Rubber, Mastic, Matrix, and Mineral Rubber Pipe and Protective Coatings, 406-07.
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SARDIS, MISS.
 Carrier Lumber & Mfg. Co. (Red Gum), 726-30.
 Sargent, Allston (Mgr. Jewett Refrigerator Co.), 1098-99.
 Sargent Paint & Color Co. (Agts. Wadsworth Howland & Co., Inc.), 1354-55.
 Sartac Damb-Proofing, 406-07.
 Sartorius Co. (Agts. Reliance Ball Bearing Door Hanger Co.), 586-87.
 Sash, see under Frames and Sash.
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 Austral Window Balance Co., 541.
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 Grant Pulley and Hardware Co., 565-67.
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Sash Fixtures.

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 Tabor Sash Fixtures Co., 718-20.
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 Climax Lock and Ventilator Co., 552-53.
 Gardner Sash Pulley Co., 564.
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Follansbee Bankfield, Pure Iron Old Style, Security, Old Reliable, 420-21.
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MF Terne Plates, 412-15.
Meurer, 422-23.
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Scott's Extra Coated, 420-21.
Taylor's Columbia, Extra Coated, 428-29.
Taylor's Redipped, 428-29.
Taylor's Target and Arrow, 428-29.
U. S. Eagle Terne Plates, 412-15.
Wheeling, 370-71.
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Tin, Roofing, Advantages of.

- National Association of Master Sheet Metal Workers, 424-26.

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Tip Top Electric Wire, 1180-81.

Toch Brothers, 64-65.

Tockolith Cement Paint, 64-65.

Toxement Cement Waterproofing, 64-65.

Toxloxpore Concrete, Brick and Stone Rain-proofer, 64-65.

Todd & Bro., John R. (Agts. Eagle White Lead Co.), 843.

Tognarelli & Voigt Co., 1374-75.

Toilet Paper.

A. P. W. Paper Co., 854-55.

Union Paper & Twine Co., 411.

Toilet-Paper Holders, see Holders, Toilet-Paper.

Tokheim Mfg. Co., Inc., 1276-77.

Tokheim Oil Storage and Distributing Systems, Underground Tanks, etc., 1276-77.

TOKIO, JAPAN.

Grant Pulley and Hardware Co. (T. Ito & Co., Rep.), 565-67.

TOLEDO, OHIO.

Acorn Brass Mfg. Co. (Window Ventilators, etc., Bostwick-Braun Co., Agts.), 1048-49.
 American Enameled Brick and Tile Co., 101-07.

American Sanitary Works (Water-Closets and Specialties, J. F. Grasswiller Supply Co., Agts.), 780-81.

Samuel Cabot, Inc. (Shingle Stains, etc., F. J. Hoag, Agt.), 1316-21.

Columbus Brick and Terra Cotta Co. (The Toledo Builders' Supply Co., Agts.), 100.

Economy Drawing Table Co., 1-3.

George W. Golden (Metal Weather-Strips, A. A. Blood, Agt.), 747.

Houghton Elevator and Machine Co., 958-59.

Higgin Mfg. Co. (Screens), 758-59.

Huntington Roofing Tile Co. (A. B. Luten, Agt.), 385-87.

Hydraulic-Press Brick Co. (Toledo Builders' Supply Co., Agts.), 113-15.

Nat. Asso. of Master Sheet Metal Workers, 424-26.

Pittsburg Water Heater Co., 832-35.

Ruud Mfg. Co. (Gas Water-Heaters), 836-39.

United Marble Tile & Terrazzo Co., 1366-67.

Wood-Mosaic Co. (Hardwood Floors, Lumber and Veneers, E. G. McFillen, Agt.), 738-40.

Toledo Builders' Supply Co. (Agts. Columbus Brick and Terra Cotta Co.), 100; (Agts. Hydraulic-Press Brick Co.), 113-15.

Tomb Brand Deadening Felt, 73-75.

TONAWANDA, N. Y.

Buffalo Steel Co. (Concrete Reinforcement), 188.

National Roofing Co. (Preservative Paints), 62; (Asphalt Roofing and Paint), 399.

Toogood, H. H. (Agt. Samuel Cabot, Inc.), 1316-21.

Tools, Concrete Workers'.

American Concrete Co., 6-7.

Ideal Concrete Machinery Co., 28-29.

Tools, Hay.

Stowell Mfg. and Foundry Co., 602-03.

Tool Houses, see Outhouses.

Top-Notch Sash Pulleys, 538-39, 565-67.

TOPTON, PA.

T. De Long Furniture Co. (Interior Finish and Cabinet Work), 1376-77.

TORONTO, ONTARIO, CAN.

American Enameled Brick and Tile Co., 101-07.

Benjamin Electric Mfg. Co., 1126-27.

S. F. Bowser & Co., Inc. (Oil-Handling Equipment), 1274-75.

Samuel Cabot, Inc. (Shingle Stains, etc., Andrew Muirhead, Agt.), 1316-21.

General Electric Co. (Canadian General Electric Co., Ltd., Agts.), 1156-61.

George W. Golden (Metal Weather-Strips, P. V. Woodard, Agt.), 747.

Grant Pulley and Hardware Co. (J. L. Vokes & Son, Rep.), 565-67.

Hart Mfg. Co. (Electric Goods), 1164-65.

Lamson Consolidated Store Service Co., (Works), 1222.

Library Bureau (Metal Furniture), 1224-25.

Ludowici-Celadon Co. (Roofing Tiles, J. D. Macdonell & Co., Agts.), 388-89.

Benjamin Moore & Co. (Paints, etc.), 1340.

National Fire Proofing Co., 230-37.

Ruud Mfg. Co. (Gas Water-Heaters), 836-39.

Sherwin-Williams Co. (Paints), 1348-49.

Standard Varnish Works (Factory, International Varnish Co., Ltd., Agts.), 1350-51.

Steel City Electric Co. (C. H. L. Keeler Co., Agts.), 1182-83.

B. F. Sturtevant Co. (Heating and Ventilating Apparatus), 1034-35.

Swedish Venetian Blind Co. (F. H. Hancock, Agt.), 716-17.

F. W. Wakefield Brass Co. (Lighting Fixtures), 1140-41.

TOTTENVILLE, N. Y.

Atlantic Terra Cotta Co. (Factory), 138-39.

Touaine Boilers, 998-99.

Towels, Monogram.

Mandel Brothers, 1388-89.

Towers, Tension-Line.

Chesapeake Iron Works, 296.

Towers, Water-Tank, Windmill, etc.

A. J. Corcoran, Inc., 896-97.

Hennebique Construction Co., 202-03.

Lunt-Moss Co., 910-11.

Wendnagel & Co., 924-25.

Toxement Paint, 64-65.

Toxloxpore Waterproofing, 64-65.

Tracing Cloth.

L. & C. Hardtmuth, 4-5.

Koh-I-Noor, 4-5.

Tracks, Ball-Bearing.

Gardner Sash Pulley Co., 564.

Tracks, Door or Showcase.

Grant Pulley and Hardware Co., 565-67.

New Jersey Foundry & Machine Co., 577.

W. S. Roof & Son, 593.

Stowell Mfg. and Foundry Co., 602-03.

Coburn, 577.

Grant, 565-67.

Tracks and Track Layouts, Industrial Railway.

American Concrete Co., 6-7.

Ernst Wiener Co., 22-23.

Tramways, Aerial.

Broderick & Bascom Rope Co., 16-17.

Transformers, Electric.

Crocker-Wheeler Co., 1149.

Fort Wayne Electric Works, 1154-55.

General Electric Co., 1156-61.

Transoms, Gearing, Centers and Fixtures for.

Concealed Transom Lift Co., 556-57.

Lord and Burnham Co., 576.

Payson Mfg. Co., 582-83.

Ideal, 556-57.

Simplex, 582-83.

Transoms, Metal.

David Lupton's Sons Co., 504-07.

F. P. Smith Wire and Iron Works, 332-33.

Thorp Fire Proof Door Co., 530-31.

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Traps, Dirt.

Watertite Drain Co., 872-73.

Anticlog, 872-73.

Harriman, 872-73.

Jersey, 872-73.

Traps, Heating.

Schott Specialty Co., 892.

Duram, 892.

Traps, Plumbing.

Compound Injector and Specialty Co., 848-49.

Eagle White Lead Co., 843.

Humphries Mfg. Co., 792-93.

Murphy Specialty Co., 858-59.

National Lead Co., 861.

Ohio Brass and Iron Mfg. Co., 864-65.

Trenton Potteries Co., 818-20.

Watertite Drain Co., 872-73.

Dehn's Hygienic and Acme Grease, 848-49.

Murphy, 858-59.

Radcliff's Positive Anti-Siphon, 864-65.

Traps, Steam.

American Blower Co., 1052-53.

National Steam Specialty Co., 880-81.

National Vacuum Heating Co., 1024-25.

Schott Specialty Co., 892.

B. F. Sturtevant Co., 1034-35.

D. T. Williams Valve Co., 890-91.

Dunham, 1024-25.

Williams Cookson, 890-91.

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Treads, Stair.

American Mason Safety Tread Co., 540.

American 3-Way Prism Co., 622-31.

Blue Ridge Marble Co., 72-73.

Goodyear Tire and Rubber Co., 250-51.

David E. Kennedy, Inc., 266-67.

New York Belting and Packing Co., Ltd., 254.

Phoenix Soapstone Co., 812-13.

Trussed Concrete Steel Co., 212-13.

Universal Safety Tread Co., 607.

Interlocking, 254.

Mason Safety (Lead or Carborundum Filled) and Cork Combination, 540.

Star, 622-31.

Trus-Con, 212-13.

Universal, 607.

Treads, Stair, Oilcloth.

Farr & Bailey Mfg. Co., 1378-79.

Tree Guards, see under Guards.

Trellises, Metal.

Anchor Post Iron Works, 278-81.

William Bayley Co., 284-85.

TRENTON, N. J.

American Sanitary Works (Water-Closets and Specialties, Factory), 780-81.

Cochran, Drugan & Co. (Sanitary and Porcelain Ware), 786-87.

Nat. Asso. of Master Sheet Metal Workers, 424-26.

Trenton Potteries Co., 818-20.

Trenton Potteries Co., 818-20.

Trim, Faience.

Philadelphia & Boston Face Brick Co., 120-21.

Trim, Interior, Metal.

American Concrete Co., 6-7.

American Metal Door Co., 462-63.

Architects Standard Bronze Co., 282-83.

Art Metal Construction Co., 1214-15.

J. F. Blanchard Co., 466-67.

Dahlstrom Metallic Door Co., 476-79.

Grinden Art Metal Co., 488-89.

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John W. Rapp Co., 514-18.
Thorp Fire Proof Door Co., 530-31.
Voigtmann & Co., 532-35.

Trim, Interior, Wood.

Compound Door Co., 698-99.
T. De Long Furniture Co., 1376-77.
Hyde-Murphy Co., 710.
George Mertz' Sons, 724-25.
Morgan Co., 702-03.
C. T. Nelson Co., 686-87.
Paine Lumber Co., Ltd., 704-05.
Red Gum Producers, 726-30.
Alfred Struck Co., Inc., 731.

TRIMBLE, GA.

B. Mifflin Hood (Brick, Works), 118.
Trinidad Lake Asphalt Roofing Cement, 393-95.
Triplex Spring Hinges, 550-51.
Triton Wall, Flue and Plate-Warmer Radiators, 1044-46.

Triumph Ice Machine Co., 1116-17.

Triumph Ice-Water Plants, 1116-17.
Triumph Lock Joint Columns and Pilasters, 676-77.
Triumph Refrigerating and Ice-Making Machinery and Ammonia Fittings, 1116-17.

Trolleys.

New Jersey Foundry & Machine Co., 577.
Richards Mfg. Co., 588-90.
Coburn, 577.
Delta I-Beam, 577.
Newhall I-Beam, 577.

Troughs, Oyster.

Keenan Structural Slate Co., 796-98.

Troughs, Water, see Watering-Troughs.

TROY, N. Y.

American Blower Co. (Heating and Ventilating Apparatus and Steam-Engines, Works), 1052-53.
American Enameled Brick and Tile Co., 101-07.
Globe Ventilator Co., 1058-59.
Grant Pulley and Hardware Co. (J. M. Warren & Co., Rep.), 565-67.
Meneely Bell Co., 1266-67.
Thorne Hold-Fast Metal Bar Co. (Store Front Construction), 674-75.
Troy Laundry Machinery Co., Ltd., 1088-89.
Troy Laundry Machinery Co., Ltd., 1088-89.
Trucks, Library, see Library Equipment and Furniture.

Trucks, Metal.

Bankers Construction Co., 1213.
Van Dorn Iron Works Co., 610.

Trunk Lifts, see Elevators, Hand-Power.

Trus-Con Joist Hangers, Post Caps, Shaft Hangers, and Stair Treads, 212-13.

Trus-Con Liquid Waterproofing, Waterproof Filler, Floor and Wall Finishes, Bonding and Foundation Coats, Stone Backing, and Solid Bituminous Cements X and Y, 68.

Trusses, Iron or Steel.

Chesapeake Iron Works, 296.
F. P. Smith Wire and Iron Works, 332-33.
Union Foundry Works, 344-45.

Trussed Concrete, Steel Co. (Waterproofing Compounds), 68; (Concrete Reinforcement), 212-13.

Trussit Self-Centering Reinforcement for Concrete, 201.

Tubes, Dumb-Waiter or Speaking.

Climax Lock and Ventilator Co., 552-53.
National Brass and Copper Tube Co., 862-63.

Tubes, Map, Metal.

Art Metal Construction Co., 1214-15.

Tubes, Pneumatic.

Lamson Consolidated Store Service Co., 1222.
National Brass and Copper Tube Co., 862-63.

Tube and Wire, Flexible.

Habirshaw Wire Co., 1162-63.
Attix, 1162-63.
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Tubing, Electric.

General Electric Co., 1156-61.

Tubing, Seamless Brass or Copper.

National Brass and Copper Tube Co., 862-63.

Tubing, Tin.

National Lead Co., 861.

Tu-Bo Hot-Air and Ventilating Registers, 558.

Tubs, Builders'.

Ernst Wiener Co., 22-23.

Tubs, Dye.

A. J. Corcoran, Inc., 896-97.

Tubs, Wash, see Laundry Tubs.

Tucker & Vinton, 646-47.

Tumblers, Laundry.

Troy Laundry Machinery Co., Ltd., 1088-89.

Tunaloid Waterproofing Felt, 396-97.

Tungstenware.

Gleason-Tiebout Glass Co., 1142.

Tunnels.

Foundation Co., 38.

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Turnbull-Smith Co., 870-71.

Turner, C. A. P., 214-15.

Turner Antifriction Drawer Slides and Supports, 565-67.

Turner Construction Co., 216-17.

Turner System of Concrete Steel Construction, 214-15.

Turnstiles.

Anchor Post Iron Works, 278-81.

J. W. Fiske Iron Works, 300-01.

Turntables, Automobile.

Sterling Elliott Co., 1270-71.

Lansing Wheelbarrow Co., 1272-73.

Elliott's Oil-Less, and Wood-Top Ball-Bearing, 1270-71.

Lansing, 1272-73.

Turntables, Locomotive.

Ernst Wiener Co., 22-23.

Tuttle & Bailey Mfg. Co. (Architectural Bronzes, etc.), 340-41; (Registers, Ventilators, etc.), 1036-37.

20th Century System of Vacuum Cleaning, and Vacuum Cleaning Stationary and Portable Plants, 1292-93.

Twin City Brick Co. (Agts. Huntington Roofing Tile Co.), 385-87.

Twin City Paint Co. (Agts. Eagle White Lead Co.), 843.

Twine.

Union Paper & Twine Co., 411.

Two-in-One Kitchen Spacesavers, 788-89.

Tycrete Artificial Stone, 28-30.

Tyler, Alfred (Agt. Hydraulic-Press Brick Co.), 113-15.

Tyler, Owen (Agt. Merritt & Co.), 1212.

Tyler Co., W. S., 342.

Tyler Co., W. S. (Agts. Reliance Ball Bearing Door Hanger Co.), 586-87.

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U. S. Eagle Terne Plates, 412-15.

U. S. Gypsum Hollow Tile, 244-45.

U. S. G. Bond Plaster, 174-77.

U. S. Shingle Tiles and Terra Cotta Trimmings, 390-91.

U-Bar Greenhouses and Equipment, 1306-09.

Umbrella Stands.

J. W. Fiske Iron Works, 300-01.

Underwriters' Standard Doors and Shutters, see under Doors, Fireproof, and Shutters, Fireproof.

Union Brick Bonds, or Wall Ties, and Handlers, 31.

Union Cork Board, 378-79.

Union Fibre Co., 378-79.

Union Foundry Works, 344-45.

UNION FURNACE, OHIO.

Columbus Brick and Terra Cotta Co. (Works), 100.

Union Hardware & Electric Supply Co. (Rep. Grant Pulley and Hardware Co.), 565-67.

Union Lime Co. (Agts. Youngstown Iron & Steel Roofing Co.), 218-21.

Union Metal Columns and Lamp Standards, 346-47.

Union Metal Corner Bead, 156-57.

Union Metal Mfg. Co., 346-47.

Union Paper & Twine Co., 411.

Union Railway Storage Co. (Agts. Atlantic Terra Cotta Co.), 138-39.

Union Specialty Mfg. Co., 31.

Union Wall Plaster, and White Finishing, 178-79.

UNIONTOWN, PA.

Cameron Schroth Cameron Co. (Radiator Plant), 1009-11.

McCrum-Howell Co. (Radiator Plant), 799, 1009-1011.

Unique Metal Shingle, 422-23.

United Marble Tile & Terrazzo Co., 1366-67.

United Peach Bottom Slate Co., 442.

United States Changeable Sign Co., 1244-45.

United States Column Co., 348-49.

U. S. Engineering Co. (Agts. American Machine Co.), 948.

United States Gypsum Co. (Wall Plasters), 174-77; (Hollow Tile), 244-45.

United States Heater Co., 1038-39.

U. S. Mail Chute Equipment Co., 1242-43.

U. S. Mail Chute, and Mail Boxes, 1240-41.

United States Radiator Co., 1044-46.

United States Standard Continuous Concrete Mixer, and Cement Block Machine, 24-25.

United States Steel Products Export Co. (Export Representatives American Sheet and Tin Plate Co.), 412-15.

U. S. Supply Co. (Agts. American Sanitary Works), 780-81.

United States Tile Co., 390-91.

United States Water and Steam Supply Co. (Agts. American Sanitary Works), 780-81.

United Supply Co. (Agts. Pittsburgh Gage & Supply Co.), 874.

Universal Conductor Connections and Boots, 364-365.

Universal Corner Clamp for All-Glass Show-Windows and Show-Cases, 660-61.

Universal Insulator Supports, 1182-83.

Universal Plaster Finish, 174-77.

Universal Rotary and Shaker Sifters, 1069.

Universal Safety Tread Co., 607.

Universal Steel Shelving, 1212.

UNNA, KOENIGSBRONN, GERMANY.

Ceresit Waterproofing Co., 48-49.

Unxld Sheathing Paper, 373-75.

Upholstery, Fabrics for.

Lord & Taylor, 1386-87.

UPPER SANDUSKY, OHIO.

Perfect Bibb and Faucet Co., 866-67.

Urinals.

Cahill Iron Works, 784-85.

Cochran, Drugan & Co., 786-87.

Columbus Heating and Ventilating Co., 790-91.

Humphries Mfg. Co., 792-93.

I X L Pump & Mfg. Co., 794-95.

Keenan Structural Slate Co., 796-98.

J. M. Kohler Sons Co., 804-05.

Lewis & Kitchen, 1012-13.

Republic Mfg. Co., 814-15.

Trenton Potteries Co., 818-20.

Columbus Octagon and Sidewall Ventilated, 790-91.

K. S. S. Co., 796-98.

Suri, 794-95.

Urinals, Fixtures for.

Trenton Potteries Co., 818-20.

Urinal Stalls.

Colwell Lead Co., 788-89.

Keenan Structural Slate Co., 796-98.

Phoenix Soapstone Co., 812-13.

Trenton Potteries Co., 818-20.

Climax, 788-89.

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Urns, Sheet-Metal.

- Edwards Mfg. Co., 362-63.
 Utah Lumber Co. (Agts. Youngstown Iron & Steel Roofing Co.), 218-21.
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 American Enameled Brick and Tile Co., 101-07.
 American Hard Wall Plaster Co., 156-57.

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- Vacuum Engineering Co.**, 1296-97.
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Vaile & Young, 456-57.
Vaile & Young's Metallic Puttyless Skylight, 456-57.
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 National Steam Specialty Co., 880-81.
 National Vacuum Heating Co., 1024-25.
 Pittsburgh Gage & Supply Co., 874.
 Schott Specialty Co., 892.
 Walch & Wyeth, 888-89.
Auto-Vac, 892.
Clean-Seat, 874.
 Dunham, 1024-25.
 Erwood, 888-89.
 National and National Paul, 880-81.
Valves, Back-Water.
 Compound Injector and Specialty Co., 848-49.
Valves, Body-Gate.
 Pittsburgh Gage & Supply Co., 874.
Valves, Flush (Plumbing).
 Colwell Lead Co., 788-89.
 Murphy Specialty Co., 858-59.
 Republic Mfg. Co., 814-15.
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 E. Stebbins Mfg. Co., 868-69.
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Valves, Steam.
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 National Steam Specialty Co., 880-81.
 Pittsburgh Gage & Supply Co., 874.
 Wm. Powell Co., 884-85.
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 D. T. Williams Valve Co., 890-91.
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Lavigne Packless, 876-77.
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 Lavigne Mfg. Co., 876-77.
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 Schott Specialty Co., 892.
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 I X L Pump & Mfg. Co., 794-95.
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- Speakman Supply and Pipe Co., 816-17.
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VANCOUVER, BRITISH COLUMBIA.
 American Sanitary Works (Water-Closets and Specialties, Robertson-Godson Co., Ltd., Agts.), 780-81.
 Samuel Cabot, Inc. (Shingle Stains, etc., Henry Darling, Agt.), 1316-21.
 Flour City Ornamental Iron Works, 302-03.
 Kawneer Mfg. Co. (Store Fronts and Metal Mouldings), 668-70.
 Merrill Corporation (Furniture), 1390-91.
 Reliance Ball Bearing Door Hanger Co. (Wm. N. O'Neil & Co., Agts.), 586-87.
 Sherwin-Williams Co. (Paints), 1348-49.
 Union Fibre Co. (Sheathing and Deadening Materials), 378-79.
 Western Electric Co. (Northern Electric & Mfg. Co., Ltd., Agts.), 1184-87.
 Van Dame, W. L. (Agt. George W. Golden), 747.
Van Dorn Iron Works Co. (Structural Metal Specialties), 610; (Metal Furniture), 1230.
Van Dorn Joist and Wall Hangers, Steel Furniture, Fixtures, and Lockers, 610, 1230.
 Vandyke-Churchill Co. (Agts. Pittsburgh Gage and Supply Co.), 874.
 Van Evera & Lewis Mfg. Co. (Agts. Kelsey Heating Co.), 1000-01.
Van Noorden Co., E., 458-59.
Van Noorden Skylights, Windows and Ventilators, 458-59.
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Variety Mfg. Co., 519-25.
Variety Steel Rolling Doors and Shutters, 519-25.
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 Standard Underground Cable Co., 1180-81.
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 Standard Asphalt & Rubber Co., 406-07.
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Vases, Concrete.
 American Concrete Co., 6-7.
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 J. W. Fiske Iron Works, 300-01.
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 Chicago Granite Column and Carving Works, 91.
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 A. J. Corcoran, Inc., 896-97.
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Williamsport Radiator Co., 1042-43.
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American Sanitary Works (Water-Closets and Specialties, Speakman Supply and Pipe Co., Agts.), 780-81.
H. W. Covert Co. (Fireplace Appliances, Joseph S. Hamilton, Agt.), 982-83.
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Nat. Asso. of Master Sheet Metal Workers, 424-26.
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James A. Miller & Bro., 508-09.
Crittall, 474-75.
Economic, 474-75.
Hope, 491a-491b.

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Jones Cold Store Door Co., 1100-01.
R. E. Jones, 1102-03.

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Austral Window Balance Co., 541.
E. B. Badger & Sons Co., 464.
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Kinnear & Gager Mfg. Co., 500.
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Thomas Lee, 357-59.
David Lupton's Sons Co., 504-07.
Lyster Sheet Metal Co., 452-53.
James A. Miller & Bro., 508-09.
W. H. Mullins Co., 368-69.
National Skylight and Ventilator Co., 443-45.
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American Revolving Door Co., Inc., 694-95.
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Thomas Lee, 357-59.
James A. Miller & Bro., 508-09.
Phenix Mfg. Co., 764-65.
C. D. Pruden Co., 512-13.
E. Van Noorden Co., 458-59.
Voigtmann & Co., 532-35.
Bogenberger, 472-73.
Edwards, 362-63.
Lee, 357-59.
Phenix, 764-65.
Prudential, 512-13.
Van Noorden, 458-59.
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 General Electric Co., 1156-61.
 Habirshaw Wire Co., 1162-63.
 Kerite Insulated Wire & Cable Co., 1174.
 Okonite Co., 1176-77.
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American Steel and Wire Co., 1150-51.
 Kerite Insulated Wire & Cable Co., 1174.
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Wire, Telegraph or Telephone.

American Steel and Wire Co., 1150-51.
 Habirshaw Wire Co., 1162-63.
 Kerite Insulated Wire & Cable Co., 1174.
 Okonite Co., 1176-77.
 Standard Underground Cable Co., 1180-81.

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Habirshaw Wire Co., 1162-63.

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American Steel and Wire Co., 1150-51.
 Habirshaw Wire Co., 1162-63.
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 Stewart Iron Works Co., Inc., 338-39.
 Jno. Williams Inc., 350-51.
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 Buffalo Wire Works Co., 290-91.
 Edward Darby & Sons Co., Inc., 1202-03.
 E. R. Landon Iron and Wire Works, 314-15.
 F. P. Smith Wire and Iron Works, 332-33.
 Wright Wire Co., 352-53.

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Wolfe Co., Ben F. (Agts. Pittsburgh Gage & Supply Co.), 874.

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WORCESTER, MASS.

American Sanitary Works (Water-Closets and Specialties, Colwell Lead Co., Agts.), 780-81.

American Steel & Wire Co. (Wire Rope), 14-15; (Electrical Wires and Cables, George A. Cragin, Sales Agent), 1150-51.

Boston Pressed Metal Co. (Casement and Transom Adjusters), 546-47.

Colwell Lead Co. (Plumbing Supplies and Specialties), 788-89.

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Grant Pulley and Hardware Co. (Duncan & Goodell Co., Rep.), 565-67.

Hill Dryer Co. (Laundry Equipment), 1069.

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York Interlocking Shingle Tile, 388-89.

York Mfg. Co., 1120-21.

York Safe and Lock Co., 1238-39.

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Union Fibre Co. (Sheathing and Deadening Materials, Factory), 378-79.

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General Fireproofing Co. (Steel Lath), 201; (Metal Furniture), 1201.

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Trussed Concrete Steel Co. (Waterproofing Compounds, Works), 68; (Concrete Reinforcement, Works), 212-13.

Youngstown Iron & Steel Roofing Co., 218-21.

Youngstown Corrugated Expanded Metal Lath, and Studding, 218-21.

Youngstown Iron & Steel Roofing Co., 218-21.

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ZANESVILLE, OHIO.

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American Encaustic Tiling Co., Ltd., 256-59.

Hydraulic-Press Brick Co., 113-15.

Mosaic Tile Co. (Floor and Wall Tile), 262-63.

Zenith Prepared Cement and Wood-Fibre Plaster, 174-77.

Zephyr Side-Wall Registers, 980.

Zibell Damp-Resisting Paint Co., 69-71.

Zimmerman & Co., G. F. S., 611.

Zimmerman Wood Porch Column Base, 690.

Zimmermann's Bldg. Specialty Co. (Agts. Samuel Cabot, Inc.), 1316-21.

Zimmerman's Shutter Fasteners and Casement Window Adjusters, and Anti-Sag Strap Hinges, 611.

Zinc, Sheet.

Follansbee Brothers Co., 420-21.

Zinc, White.

Benjamin Moore & Co., 1340.

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Zweitusch & Co., E., (Agts. Western Electric Co.), 1184-87.

Zolium Patented Tile Roofing, 396-97.

ECONOMY DRAWING TABLE CO.
Drawing Tables, Sectional Filing Cases and Office Furniture
TOLEDO, OHIO

- PRODUCTS.

Manufacturers of DRAWING TABLES, SECTIONAL FILING CASES, SPECIAL TABLES for Colleges, Manual Training Schools, and High Schools, OFFICE and PUBLIC BUILDING FURNITURE.
- FACILITIES.

We operate the largest special furniture factory in Ohio. We carry a large variety of styles in stock for immediate shipment. All our work is of the highest grade.
- SPECIFICATIONS.

Read our Standard Specifications for Tables and Filing Cases, as follows:
- MATERIAL.

Drawing Boards and tops of all tables made of soft white pine. All other exposed parts of tables, plain oak. All exposed parts of filing cases oak, except backs, which are plain beaded work. Drawers and slides of cherry or other hardwood. Other unexposed parts of light, soft wood. All material air-seasoned, kiln-dried and kept at an even temperature during manufacture. Material heated before gluing.
- WORKMANSHIP.

Workmanship of best cabinetwork, all joints mortised, tenoned and glued. Drawer sides dovetailed to front and back. Tops fastened to frames with buttons in slots, allowing expansion and contraction. Frame of tables independent of top, firmly constructed and thoroughly braced.
- FINISH.

Three coat, dull rubbed. Unless otherwise requested work is finished in antique oak, but we can make any kind of a finish.
- DESCRIPTION.

Standard Drawing Tables have a frame of braces about six inches from floor, insuring rigidity and providing foot rest for the draftsman. There are wide rails at the ends and back of table tops. Across the front there is a rubbing strip, and a flat rail dovetailed into the top of the legs. A guard $\frac{1}{4}$ " high runs along top of table at back to prevent pencils and papers from falling off. Vertical adjustment of tables Nos. 0 to 4 is secured by raising blocks.
Standard filing cases are made with same care and class of work as the tables. Drawers are dovetailed together, and not doweled or nailed. Drawers work smoothly. Sections are held in position in all directions.
- DRAWING BOARD.

Loose inclined drawing board is made of selected soft pine, $\frac{7}{8}$ " thick, with 2" x $1\frac{1}{4}$ " dovetailed hardwood ledges to prevent warping. Board is inclined by means of turned raising blocks $2\frac{1}{2}$ " high.
- TOOL TRAY AND FRAME.

Tray frame is $7\frac{3}{4}$ " x 18" with 4 compartments for scales, etc. Over this slides a tray $7\frac{3}{4}$ " x $7\frac{3}{4}$ " x 1" with five compartments for pencils, erasers, tools, etc. Made to fit in the small drawers of any tables if desired.
- LOCKS.

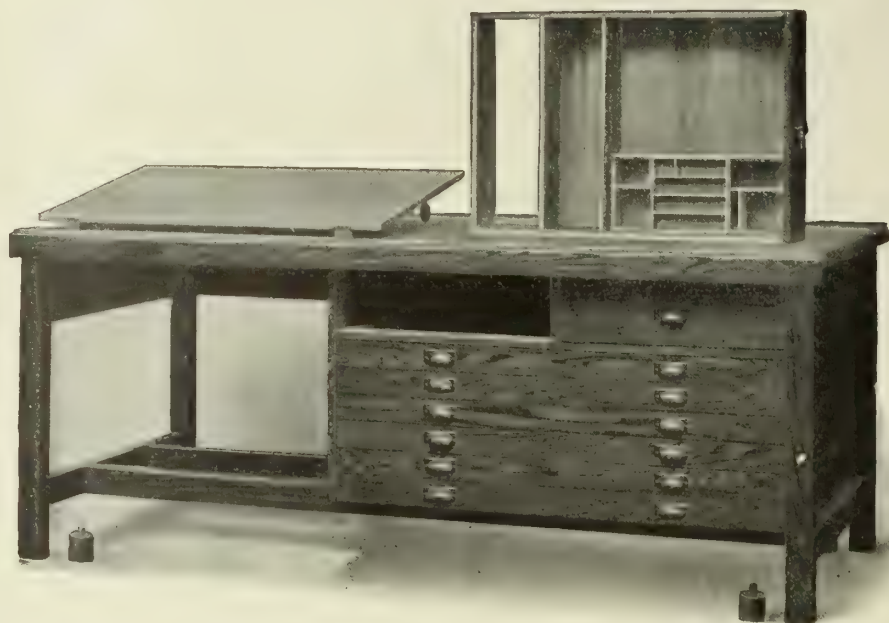
It is desirable to have one small drawer with lock. Two keys are furnished with each lock. Locks may be master-keyed for a number of tables.

Table	Size	Drawers	Price	Shipping Weight	Extras	Price
No. 0	39" x 84"	8	\$45.00	500 lbs.	Loose inclined board 32" x 44"	\$3.75
No. 0A	39" x 84"	3	33.00	350 lbs.	Loose inclined board 26" x 38"	2.70
No. 1	39" x 84"	8	42.00	400 lbs.	Tool tray and frame fitted in drawer	1.50
No. 1A	39" x 84"	3	30.00	300 lbs.	Lock—ordinary	.50
No. 2	34" x 72"	8	39.00	350 lbs.	Master-keyed lock, 2 keys each, 2 mas-	
No. 2A	34" x 72"	3	28.00	250 lbs.	ter keys with 8 or more locks	1.00
No. 3	33" x 62"	2	19.50	200 lbs.	Holding-down wires (each)	.10
No. 4	33" x 62"	6	28.00	250 lbs.	Label holders, per dozen	1.00

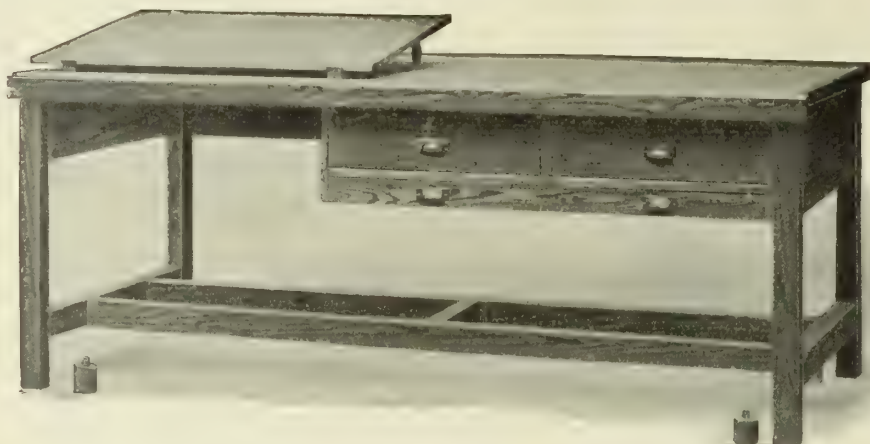
Prices are for plain table only, with raising blocks. Prices of special tables shown on third page quoted in quantities on application.

FILING CASES	STANDARD				DUST-PROOF			
	Drawers, 32 x 44		Drawers, 26 x 38		Drawers, 32 x 44		Drawers, 26 x 38	
	Price	Weight	Price	Weight	Price	Weight	Price	Weight
Section of 6 drawers 2" deep	\$22.00	160 lbs.	\$20.00	125 lbs.	.....	.....	.....	.....
Section of 4 drawers $3\frac{1}{2}$ " deep	20.00	160 lbs.	18.00	125 lbs.	.....	.....	.....	.....
Section of 7 drawers $1\frac{1}{2}$ " deep	.....	.....	.....	.....	\$30.00	200 lbs.	\$27.00	175 lbs.
Loose cap	4.50	45 lbs.	3.75	30 lbs.	4.50	50 lbs.	3.75	30 lbs.
Plain base	3.00	35 lbs.	2.50	25 lbs.	3.00	40 lbs.	2.50	25 lbs.
Base with 4" deep drawer	6.75	80 lbs.	5.50	60 lbs.	.....	.....	.....	.....

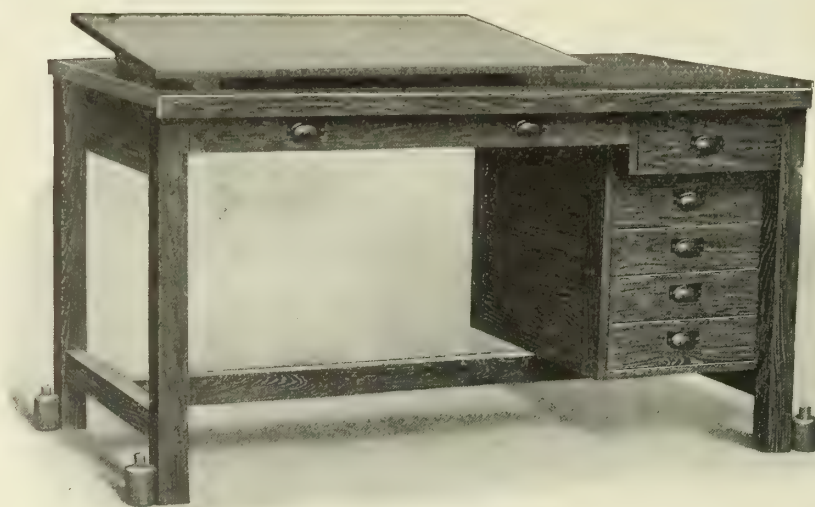
Filing Cases are not fitted with holding-down wires unless ordered as extras.
All prices are f. o. b. cars Toledo, and are subject to change without notice.
Goods shipped by freight, crated, set up ready for use.
Our 48-page catalogue, with fuller information and illustrations, sent upon request.
Designs furnished for special work upon receipt of information.



Style No. 0—Top 39" x 84", 2 Drawers 21" x 24" x 4"; 6 Drawers 32" x 44" x 2"
 Style No. 1—Top 39" x 84", 2 Drawers 18" x 24" x 4"; 6 Drawers 26" x 38" x 2"
 Style No. 2—Top 34" x 72", 2 Drawers 18" x 24" x 4"; 6 Drawers 26" x 38" x 2"



Style No. 0-A—Top 39" x 84", 2 Drawers 21" x 24" x 4"; 1 Drawer 32" x 44" x 2"
 Style No. 1-A—Top 39" x 84", 2 Drawers 18" x 24" x 4"; 1 Drawer 26" x 38" x 2"
 Style No. 2-A—Top 34" x 72", 2 Drawers 18" x 24" x 4"; 1 Drawer 26" x 38" x 2"



Style No. 4—Top 33" x 62" 1 Drawer 26" x 38" x 2"; 1 Drawer 12½" x 24½" x 4";
 4 Drawers 13¼" x 24½" x 3½"
 Style No. 3—Same as No. 4 without 4 Drawers 13¼" x 24½"

THESE ARE STANDARD TABLES AND CASES CARRIED IN STOCK
 All drawer dimensions are inside dimensions



Standard Sectional Filing Case made in the following sizes:

Section of 6 drawers 26" x 38" x 2"
 Section of 6 drawers 32" x 44" x 2"
 Section of 4 drawers 26" x 38" x 3½"
 Section of 4 drawers 32" x 44" x 3½"

Loose cap and base. Base either plain or with 4" deep drawer



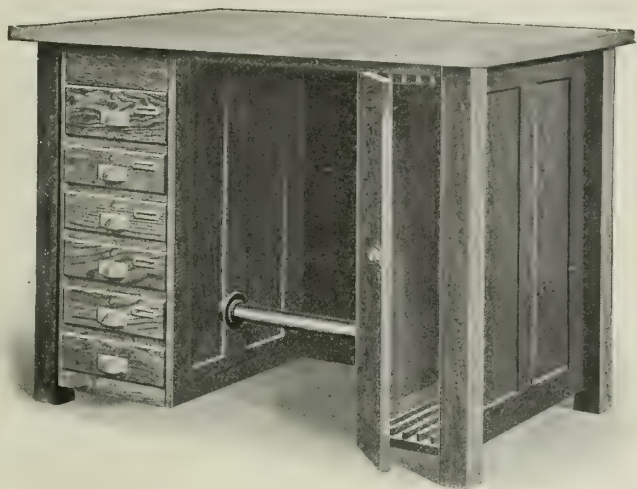
Dust-Proof Sectional Filing Case

Similar to Standard Case. A sliding door covers the front of each section, leaving an air space between the drawer fronts and door. Made in two sizes:

Section of 7 drawers 26" x 38" x 1½", loose cap and plain base

Section of 7 drawers 32" x 44" x 1½", loose cap and plain base

Holding down wires will double the capacity of a drawer



College Special—Top 34" x 52", 5 Drawers 11" x 20" x 3 $\frac{1}{8}$ ";
1 Drawer 11" x 20" x 4 $\frac{3}{8}$ "

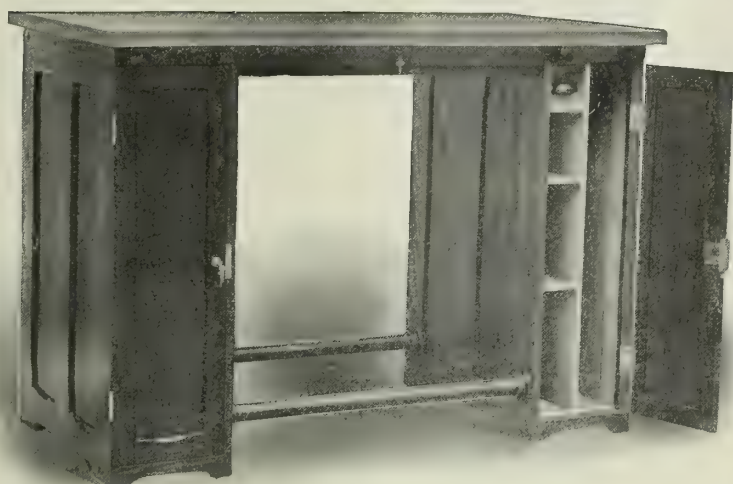
Drawing board cabinet for five boards. Other styles similar



Style No. 10—Top 30" x 36", 4 drawers 6 $\frac{1}{4}$ " x 27" x 3 $\frac{3}{4}$ "

Drawing board cabinet for four boards

Can be built with 2, 4, 6, or 8 drawers, and with 1 or 2 cabinets for from 4 to 16 boards



The "Rensselaer"—Top 30" x 54", 1 drawer at top 28 $\frac{1}{2}$ " x 22" x 1 $\frac{1}{4}$ "
Two side cabinets, each containing 1 drawer 18" x 4 $\frac{1}{2}$ " x 3 $\frac{3}{4}$ "; three
book shelves; 1 board space 33 $\frac{3}{4}$ " x 24 $\frac{1}{4}$ " x 4"



Style No. 7—Top 30" x 40", 2 drawers 26" x 33" x 3"

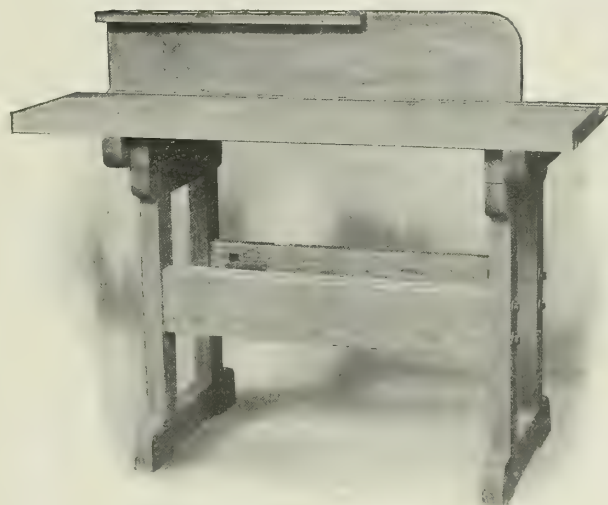
Style No. 9—Top 30" x 40", without drawers

Style No. 8—Top 30" x 48", 2 drawers 19 $\frac{1}{2}$ " x 26" x 4 $\frac{1}{4}$ "



The "Academic"—Top 24" x 36", Slope 4"
1 drawer 12 $\frac{1}{2}$ " x 16" x 2 $\frac{1}{2}$ "; 1 tool tray about
12" x 6 $\frac{7}{8}$ " x 1"

Space for books



Work Bench—Style "A"—Top 20" x 48"
Top can be set at two heights, 32" and 30"

Recess at back of top for tools.
Various styles of benches made

STANDARD TABLES, FURNISHED ONLY IN QUANTITIES

All drawer dimensions are inside dimensions

L. & C. HARDTMUTH

MANUFACTURERS OF

"Koh-I-Noor" Pencils and Tracing Cloth

34 East Twenty-Third Street

NEW YORK, N. Y.

TELEPHONE, 3179 GRAMERCY

TELEGRAPHIC ADDRESS, "HARDTMUTH," NEW YORK

FACTORIES

BUDWEIS, BOHEMIA

MANCHESTER, ENGLAND

BRANCH HOUSES

LONDON

VIENNA

DRESDEN

BUDAPEST

PRAGUE

MILAN

PARIS

PRODUCTS.

"KOH-I-NOOR" PENCILS and TRACING CLOTH.

DESCRIPTION AND QUALITY.

The "Koh-I-Noor" Pencil, manufactured by L. & C. HARDTMUTH is the standard of pencil quality among architects and draughtsmen who want the best tools with which to do their work. It is hexagonal in form, yellow in color, and highly polished. The wood is the best selected cedar, free from knots or uneven grain, insuring a smooth, even point. The graphite is the best procurable, scientifically treated, highly compressed, and entirely free from either hard or soft spots. These valuable characteristics are recognized as making it a distinctive pencil product, entirely free from the objectionable features which mar so many other pencils. Critical draughtsmen recognize the "Koh-I-Noor" as the acme of pencil production and use no other. The growth of the firm's business in America during the past ten years demonstrates this beyond question. These valuable characteristics are potent factors, and unquestionably are of sufficient importance to be worthy the attention of any architect or draughtsman who wants to be certain that his work is to be always satisfactory.

VARYING DEGREES.

The "Koh-I-Noor" pencil is made in seventeen degrees of hardness designated as follows: 6B, 5B, 4B, 3B, 2B, B, HB, F, H, 2H, 3H, 4H, 5H, 6H, 7H, 8H, 9H. The B's are soft and the H's hard. In addition, there are two copying degrees, and this wide variety insures exactly the right pencil for whatever purpose it may be required or whatever paper it may be used upon. Each "Koh-I-Noor" is the same as every other of similar degree and each pencil can be sharpened to a needle point without danger of breaking either in sharpening or in use, and the softest grades can be used with a broad point without danger of smearing.

ADVANTAGES.

Architects, engineers, and draughtsmen will appreciate the advantages of the "Koh-I-Noor" pencil and will be satisfied with no other after they have once used it. A good working, always reliable pencil is not so common that users can afford to ignore one which is always ready for instant use, with no broken points and no split wood. Every draughtsman will appreciate the value of a pencil that never has a broken point. To be insured against this annoyance removes much of the difficulty to which draughtsmen are subjected. To have a pencil which will not give way under the increased pressure that is sometimes required to give emphasis to a line, is to be freed from a larger proportion of the troubles of drawing. If a "Koh-I-Noor" does break it is for a sufficient reason and one generally beyond the control of the user.

COST.

The first cost is more than any other pencils, but cost is a relative attribute which depends upon wearing qualities, and the pencil which lasts the longest will be the cheapest in the end. Low-priced pencils which last only a short time are more expensive in the long run than the higher-priced ones which outlast them many times. In this, as in many other mat-

ters, the higher-priced pencil will prove the cheaper and will give greater satisfaction in use.

PENCIL PLEASURE.

Pleasurable use is something every purchaser of any sort of tool has a right to expect, and this quality will be found an important feature of the "Koh-I-Noor" pencil. This should be reckoned as one of the pencil's assets. The attitude of users too often has been that a pencil is a small thing and it has mattered little what it was so long as it made a mark. Gradually the influence of the "Koh-I-Noor" has changed all that and has established a standard by which all pencils are compared, invariably to the detriment of the other kind. It might be said with truth that there are now only two pencils, "Koh-I-Noor" and the other. The constantly increasing sales of "Koh-I-Noors" are eloquent testimony to the truthfulness of this observation. As applied to the pencil world the "Koh-I-Noor" leads; all others are followers.

COPYING PENCILS.

Architects and draughtsmen sometimes want a copying pencil for making permanent records. The copying pencil made by this firm is quite as reliable as their other pencils. The lead is smooth and even. The color is bright, and it copies easily, all features which will commend it to any user who may need a pencil for copying purposes.

IMITATIONS.

The popularity of the "Koh-I-Noor" pencil has encouraged imitations and a number of pencils have been put on the market resembling it in appearance, but in no wise approaching it in quality. There need be no mistake. Every "Koh-I-Noor" pencil has the name plainly stamped upon it.

" KOH-I- NOOR " TRACING CLOTH.

Architects and other draughtsmen who are looking for a perfect tracing cloth should investigate the cloth made by L. & C. HARDTMUTH. It has a superior surface to work on, and its erasing qualities surpass those of any other cloth made. It is evenly transparent, insuring perfect blue-print reproductions and is not marred by troublesome pin holes. It is unaffected by atmospheric changes, hence it does not dry up or crack. In practice it dries quickly, reducing danger of smearing and other troublesome features connected with the use of other brands of tracing cloth. Any medium can be used upon it, pencil, ink, or water colors, without danger of unpleasant consequences. It is used in the draughting offices of leading government engineers, and of the foremost architects and engineers, building contractors, electrical corporations and others where quality is the first consideration.

SIZES.

"Koh-I-Noor" Tracing Cloth is made in 24-yard rolls, 30, 36, 42, 48, and 54 inches wide. It is sold only in sealed air-and dust-proof packages.

SAMPLES.

Samples of "Koh-I-Noor" Tracing Cloth will be mailed free upon application if they can not be obtained from your dealer. These samples are miniature rolls, reproducing the large roll.

FACILITIES.

The firm of L. & C. HARDTMUTH was established in 1790. Their works, operated by skilled workmen, contain all the latest machinery and appurtenances for the manufacture of their products. Recent increases in the capacity of their works have assured ample production capacity to care for their steadily increasing trade. Their facilities for successfully conducting a great business are beyond question, and the quality of their products has been attested by the award of prize medals at all Expositions, including the grand prize at the Paris Exposition of 1900 and at Milan in 1906.



ROLL OF
" KOH-I-
NOOR "
TRACING
CLOTH

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80 William Street
NEW YORK, N. Y.

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CONTRACTORS and ENGINEERS for CONSTRUCTION WORK as follows:

Warehouses, Factories, Coal Pockets, Trestles, Water Works, Dams, Irrigating Systems, Retaining Walls, Bridges. Residences, Bungalows, Company Houses. Sewers, Pavements, Sidewalks, Curbs. Docks, Bulkheads, Piers. Fireproof Stairs, Floors, Partitions, Roofs.

We furnish competent designing, contracting or supervising Engineering Service in all of the above lines.

We design and erect complete Manufacturing Equipments.



PRODUCTS.

Manufacturers of CEMENT and CONCRETE PRODUCTS as follows:

Roofing Tile, Floor Tile, Sewer Tile, Structural Tile. Floor Units, Building Blocks, Beams, Stucco Blocks, Plain or Glazed Brick. Artificial Stone, of stock or special size and design. Fence Posts, Telegraph and Trolley Poles, Piles, Posts. Ornamental Castings, Monuments, Garden Furniture, Vases, Porch Columns, and Railings. Composition Flooring, "Porcela" Marble, Fireproof Wall Finish, Waterproofing.

Manufacturers and Dealers in REINFORCING MATERIAL, MACHINERY, TOOLS and SUPPLIES for Concrete Workers as follows:

Plain and Patent Bars, in stock lengths or cut, bent and assembled, to order. Wire Cloth, Expanded Metal, Bolts, Pipe, Wire. Mixing, Conveying and Hoisting Machinery. Drying Cars, Tracks, and Industrial Railway Equipment. Barrows, Shovels, Tampers, Trowels, Finishing Tools. All grades of Cement, Colors, Paints, Waterproofing. Form Clamps, Moulds, Block-Machine Equipment. Also, Asbestos Cement Products—Shingles, Sheathing, Wall Boards, Flooring. Fireproof Metal Doors, Sash and Trim.

Miners and Shippers of SAND and CRUSHED STONE:

Concrete Sand in all grades, White Quartz Sand, Facing Sand, Blasting Sand, Fire Sand, Glass-Maker's Sand, Concrete Gravel in all grades, Asphalt and Roofers' Gravel.

Crushed Stone in all sizes; Crushed Marble, Granite, Quartz and Marble Dust.

FACILITIES.

Our shipping facilities are unsurpassed, both by water and rail.

SPECIAL CIRCULARS.

Detailed circulars on the several constructions and products of the AMERICAN CONCRETE COMPANY will be mailed free upon request.

" AMERICAN " CONCRETE SYSTEMS.	Besides general Concrete Construction Work the AMERICAN CONCRETE COMPANY have succeeded in perfecting various inventions and in combining the same into comprehensive systems of light, rapid and inexpensive Concrete Construction, suitable for country houses, city dwellings, apartment houses, and structures of any kind not designed to carry heavy floor loads. The " American " Systems provide for the use of monolithic steel-reinforced concrete in the construction of walls, floors, roofs, stairs, porches, columns and all other parts of buildings as mentioned above, except for the interior trim. This we furnish of wood or metal, as may be desired. By a number of special details for Dwelling-House Construction we provide attractive and serviceable buildings at a reasonable cost and in very short time.
" AMERICAN " FACE SHINGLES.	For those who prefer an artistic shingle effect for the walls of country houses to a smooth concrete finish, we vary our system by furnishing an inexpensive but strong steel framework for the walls, which can be erected by unskilled labor, to be covered with " American " fireproof and weather-proof face shingles, made in various colors. In these cases we employ for the inner-wall construction such parts of our systems as may seem most desirable.
" AMCONCO " CONCRETE ROOFING TILE.	In this tile we introduce a new roof covering of demonstrated value and many advantages. It has had the most severe tests for a number of years and has proven in every way durable and absolutely weather-tight. The latter point is secured by an ingenious method of interlocking the tiles. They are designed for laying in diamond shape on the roof, and the effect is very ornamental. The tile is furnished in natural cement—gray, slate color, red, brown, and green.
ADAPTABILITY.	" Amconco " tile is adapted for sloping roofs of every class of buildings. It weighs 675-690 pounds per square; it is therefore no heavier than slate and much lighter than burnt clay tiles, and can be used for ordinary houses without extra expense. Not being subject to corrosion it is well adapted for stables, factories, and chemical works. It makes a fireproof and cool roof and can also be used for the side walls of houses with like advantage.
QUANTITY AND PRICE.	Each tile covers one square foot, laid on the roof, one hundred tiles thus making a square of roofing, laid. The price for the tiles is \$10.00 per square. They cost less to lay than slate or clay tiles and, being automatically interlocking, can be put on by inexperienced workmen.
PROTECTION.	All processes and systems of the AMERICAN CONCRETE COMPANY, including also the " Amconco " Roofing Tile, are fully protected by patents and trade-marks. Contractors desiring to use them can do so under license from the company.
CO-OPERATIVE SERVICE.	We shall be pleased to furnish Architects, Engineers and others interested, with information on all matters pertaining to the Concrete Industry, and to submit plans and estimates for our constructions and special materials at short notice and free of charge.

FRANK B. GILBRETH

General Contractor for Architectural and Engineering Construction

MAIN OFFICE
60 Broadway
NEW YORK, N. Y.

SERVICES.

We are GENERAL CONTRACTORS for all classes of ARCHITECTURAL and ENGINEERING CONSTRUCTION where speed is of the essence of the contract in any part of the world.

We build CONCRETE DAMS, REINFORCED-CONCRETE DAMS ("Ransom" Patent), and undertake contracts for CONCRETE CONSTRUCTION generally.

We are sole agents for the PACKET SYSTEM of BRICKLAYING, the PACKET SCAFFOLD and CORRUGATED CONCRETE PILES which we use in our work for rapid construction.

SCOPE.

Our experience includes the construction of complete manufacturing plants, residential, office and industrial buildings, power stations, dams, retaining walls, canals, entire industrial towns, throughout the United States, as well as Canada. Our work has been in brick, stone, steel, reinforced concrete, and all other building materials.

RAPID CONSTRUCTION.

For the past fifteen years our Organization has made a specialty of large works where speed of construction has been the first consideration; not speed at the sacrifice of cost, nor at the sacrifice of high-class workmanship, but speed, *dependable speed*, due to a long experience in filling speed requirements.

Every part of our Organization is built up and governed with the idea of eliminating unnecessary delays and getting things done on schedule time.

We do engineering for architects and engineers only, never for owners.

We do no financing for promoters, although we have many times brought promoters and financiers together, resulting in the successful development of good propositions, to their mutual advantage.

We have no Operating Department for the operation of plants after they are constructed.

We have ready, instantly available, a loyal, highly trained general contracting organization, with a proud record of over twenty-four years of actual experience in getting things done quickly and in accordance with the desires of the engineer.

DEPENDABLE SPEED.

This is the Era of Specialists, and *we have specialized on rapid construction*. To insure speed we have secured exclusive agency for the "Packet System of Bricklaying" and for the "Packet Scaffold," which give the quickest and most economical results in Brickwork. See "Engineering News," August 5, 1909, page 152.

We have the general agency for the "Corrugated Concrete Piles," which save money and time, even when pile foundations are not necessary for stability.

We have been awarded the exclusive contract for building Reinforced Concrete Dams in accordance with the invention and patent of William M. Ransom, C. E., of Providence, R. I. After a long experience of building many of the largest dams in this country, we do not hesitate to recommend the "Ransom" Reinforced Dam as *superior to any other design of dam for economy, safety, and speed of construction*. We build also other types of dams and all work in connection therewith.

We solicit correspondence with engineers who have projects where speed of construction is the first consideration.

Ninety per cent of our contracts are repeat orders from previous customers. Complete information regarding our past records for previous customers upon request.

BASIS ON
WHICH WE
WORK.

Under our form of contract a small percentage of the entire cost of the work constitutes our remuneration. The total amount of our profit is fixed at the outset of the work.



CONCRETE DAM ACROSS SARANAC RIVER, CADYVILLE, N. Y., CONSTRUCTED FOR THE INTERNATIONAL PAPER CO.

REFERENCES.

The following is a partial list of plants and buildings we have constructed on the cost-plus-a-fixed-sum basis:

Columbian Rope Company's Plant, Auburn, N. Y.
 Factory for Walter M. Lowney Co., Montreal, Can.
 Plant for Yale & Towne Mfg. Co., Stamford, Conn.
 Gymnasium for Dr. Sargent, Harvard University
 Massachusetts Institute of Technology, Boston, Mass.
 New England Confectionery Co., Boston, Mass.
 Z. & W. M. Crane, Dalton, Mass.
 Dalton Power Co., Dalton, Mass.
 Auburn Hame Co., Auburn, N. Y.
 American Can Co., Lubec, Me.
 International Paper Co., Berlin, N. H.
 International Paper Co., Cadyville, N. Y.
 International Paper Co., Piercefield, N. Y.
 St. Croix Paper Co., Spragues Falls, Me.
 Roper Hospital, Charleston, S. C.
 Kursheedt Mfg. Co., Brooklyn, N. Y.
 Simmons Hardware Co., Sioux City, Iowa
 Canal at Garvins Falls, N. H.
 Residence for C. B. Alexander, 58th St., New York, N. Y.
 Ray Memorial Library, Franklin, Mass.
 Shoe Manufacturing Plant for John J. Lattemann,
 Brooklyn, N. Y.

Columbia Electric Vehicle Co., Boston, Mass.
 Rumford Falls Power Co., Rumford Falls, Me.
 Steam & Power Co., Boston, Mass.
 Lowell Bleachery Co., Lowell, Mass.
 Houghton County Street Railway Co., Houghton, Mich.
 Boston Manufacturing Co., Waltham, Mass.
 Bay Road Construction Co., Syracuse, N. Y.
 Piper Building, Baltimore, Md.
 Oneida Community Co., Ltd., Oneida, N. Y.
 Paper Plant for H. G. Lowe, Ridgefield, N. J.
 Boston Molasses Co., Boston, Mass.
 Seattle Electric Co.'s Power Plant, Georgetown, Wash.
 First World Shoe and Leather Fair Exposition Buildings,
 Boston, Mass.
 St. Clair Building, San Francisco, Cal.
 Citizens' Bank, Alameda, Cal.
 Heywood Bros. & Wakefield Co., Wakefield, Mass.
 H. C. White Co., North Bennington, Vt.
 Cluett, Peabody & Co., Troy, N. Y.
 Concrete Dam, Walter Baker Co., Milton, Mass.
 Concrete Canal, Lehigh Coal & Navigation Co.,
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Factory and Warehouse Brokers

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BROKERS and SELLING AGENTS of FACTORIES and MANUFACTURING PLANTS either in operation or ready for occupancy. We operate in all parts of the country and are Exclusive Selling Agents for some of the largest estate in the United States.

ADVANTAGES OF OUR SYSTEM.

Plants often remain idle a considerable time and depreciate, and in many instances this is caused by the inactivity or incompetency of the agent or party negotiating the sale. This is due to the fact that he has no particular interest in it or has a number on his books at the same time, or possibly the plant is listed with too many agents or that they do not know where to go to find a purchaser.

We make a specialty of this business and keep in touch with contemplated changes in large concerns and know what properties are to be bought to bring about these changes and also which are to be sold.

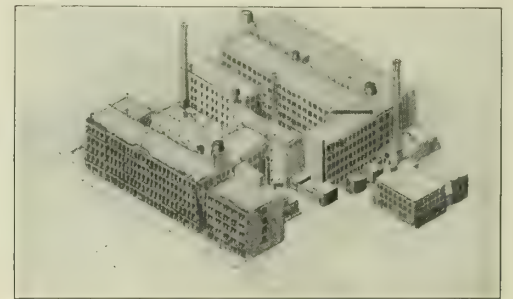
CLOSING A DEAL.

Having all the information and facilities, the most important item is the closing of the deal.

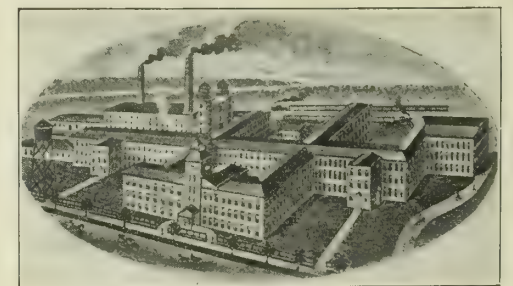
We bring the principals together only to sign a deed for the transfer of the property or to sign a check for the payment of it.

When we undertake the sale or purchase of a plant we must know the price it is to be sold for or what a purchaser will pay for it.

This is the basis upon which we work, as we infer that the parties of either side know what they will take or what they will pay for a property. We make a deal on the original terms and figures as submitted to us.



WESTERN WHEEL WORKS, CHICAGO, ILL.



MONTROSS CASKET WORKS,
HAGERSTOWN, MD.

ABILITY.

Ability is usually gauged by past performances and on this question we are willing to stand by what we have accomplished.

SALES.

The illustrations show the class of properties in which we deal and of which we have recently negotiated the sale.

During the years 1908 and 1909 we have handled the sales of properties to the extent of \$1,000,000.

REFERENCES.

Those contemplating placing their properties in our hands will most likely desire to know something of our responsibility. This applies equally to both sides.

We shall be pleased to refer prospective clients, upon application, to men high up in Banking Interests in Chicago, as well as those owning and operating plants throughout the United States.



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RAMBLER FACTORY, CHICAGO, ILL.

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CABLE ADDRESS, "STEEL, NEW YORK"

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BRANCH OFFICES

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SERVICES.

GENERAL CONTRACTORS and ENGINEERS for Office Buildings, Factories, Schools, Churches, Residences, Power-Houses, Country Houses, Monumental Work, Armories, and Bank Buildings; REINFORCED-CONCRETE CONSTRUCTION from our own design.

We build everywhere, United States or abroad, our construction being always characterized by the same successful and rapid results.

ESTIMATES.

Our knowledge of costs gained from long experience enables us to advance accurate preliminary information to architects or owners upon request.

REFERENCES.

The following is a partial list of representative buildings constructed by us:

BUILDING	LOCATION	OWNER	ARCHITECT
Fireman's Insurance	Newark, N. J.	Fireman's Insurance Co. of Newark	Marvin, Davis & Turton
Exchange National Bank Building	Colorado Springs, Colo.	Exchange National Bank	Shepley, Rutan & Coolidge
State Savings Bank Building	Butte, Mont.	State Savings Bank	Cass Gilbert, Link & Hare
Y. M. C. A. Building	23rd Street, New York, N. Y.	Young Men's Christian Association.	Parish & Schroeder
State Bank	Hartford, Conn.	State Bank	Benjamin Wistar Morris
Stock Exchange	Baltimore, Md.	Baltimore Stock Exchange	Howells & Stokes
Banking House No. 1	Cedar Street, New York, N. Y.	Harvey Fisk & Sons	Clinton & Russell
Banking House No. 2	Cedar Street, New York, N. Y.	Harvey Fisk & Sons	Clinton & Russell
German-American Building	Liberty Street and Maiden Lane New York, N. Y.	German-American Insurance Co.	Hill & Stout
Hartford State Armory & Arsenal	Hartford, Conn.	State of Connecticut	Benjamin Wistar Morris
Masonic Temple	Brooklyn, N. Y.	Brooklyn Masonic Guild	Lord & Hewlett
Home Club	45th Street, New York, N. Y.	Home Club Co.	Gordon, Tracy & Swartwout
Cameron Building	34th Street, New York, N. Y.	Margaret Cameron	Clinton & Russell
Edificio de la Mutua	Mexico, D. F. Mex.	Mutual Life Insurance Co.	DeLemos & Cordes
College Buildings	Beirut, Syria	Presbyterian Society	Howells & Stokes
Telephone Building	New York, N. Y.	New York & New Jersey Telephone Co.	Eidlitz & McKenzie
Power House	Jersey City, N. J.	Hudson & Manhattan Railroad Co.	Robbins & Oakman
Converter Station	Christopher Street, New York, N. Y.	Hudson & Manhattan Railroad Co.	Robbins & Oakman
Ideal Building	Denver, Colo.	Dome Investment Co.	Fallis & Stein
Symes Building	Denver, Colo.	Symes Estate	Hunt & Hunt
Vermont Block	Salt Lake City, Utah	Church of Jesus Christ of Latter Day Saints	Monson & Schaub
Felt Building	Salt Lake City, Utah	Salisbury Co.	R. Kletting
Golden Hill Building	New York, N. Y.	Golden Hill Building Co.	Aug. O. Sheppard, Jr.
Residence, Pliney Fisk	Rye, N. Y.	Pliney Fisk	Cram, Goodhue & Ferguson
Residence, Anson Phelps Stokes	Collenders Point, Conn.	Anson Phelps Stokes	Howells & Stokes
Residence, Robert Bacon	Westbury, L. I.	Robert Bacon	John Russell Pope
Residence, Augusta E. Stetson	7 West 96th Street, New York, N. Y.	Augusta E. Stetson	Hunt & Hunt
Residence, R. T. Wainwright	Rye, N. Y.	R. T. Wainwright	James Pickles
East Side Club House	New York, N. Y.	Care of Everett P. Wheeler	Howells & Stokes
Fitzgerald Building	New York, N. Y.	Care of Winthrop E. Dwight	Hunt & Hunt
Alvin Building	Fifth Avenue, New York, N. Y.	Jos. Fahys & Son	Hunt & Hunt
Iron Age Building	New York, N. Y.	David Williams	Radeliffe & Kelley
Martin Laboratory	Hoboken, N. J.	Stevens Institute of Technology	Ackerman & Partridge
Smelter Buildings	Aguascalientes, Mex.	American Smelting & Refining Co.	Company's Engineer
Dike	Hackensack Meadows, N. J.	New Jersey Dock Improvement Co.	Whitney-Steen Co., Engineers
Addition to St. Paul's Gymnasium	Concord, N. H.	St. Paul's School	Parish & Schroeder



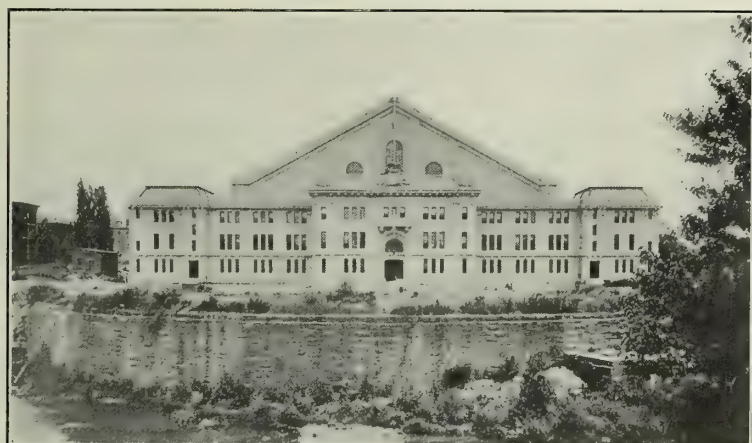
GERMAN-AMERICAN INSURANCE
CO., NEW YORK, N. Y.
HILL & STOUT, Architects



CAMERON BUILDING, NEW
YORK, N. Y.
CLINTON & RUSSELL, Architects



FIREMENS INSURANCE BUILD-
ING, NEWARK, N. J.
MARVIN, DAVIS & TURTON, Architects



HARTFORD STATE ARMORY AND ARSENAL, HARTFORD, CONN.
BENJAMIN WISTAR MORRIS, Architect



EDIFICIO DE LA MUTUA, MEXICO, D. F.
MEXICO
DE LEMOS & CORDES, Architects



HOME CLUB, 45TH STREET,
NEW YORK, N. Y.
GORDON, TRACY & SWARTWOUT,
Architects



EXCHANGE NATIONAL BANK,
COLORADO SPRINGS, COLO.
SHEPLEY, RUTAN & COOLIDGE, Architects



MASONIC TEMPLE, BROOKLYN, N. Y.
LORD & HEWLETT, Architects
PELL & CORBETT, Associate Architects

AMERICAN STEEL AND WIRE CO.

Manufacturers of Wire Rope

CHICAGO, ILL.

NEW YORK, N. Y.

DENVER, COLO.

SAN FRANCISCO, CAL.

WORCESTER, MASS.

PRODUCTS.

We make all kinds of WIRE ROPE from PURE SWEDISH IRON, CRUCIBLE CAST STEEL, and PLOW STEEL.

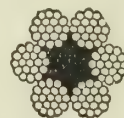
WIRE ROPE.

Our Wire Rope, made from the finest quality of metal, has the requisite strength and flexibility, perfect form and accurate lay that insure a long life, with absolute safety under the most severe usage.

The following illustrations and descriptions show some of the uses to which our Wire Rope can be put:

CRUCIBLE CAST-STEEL HOISTING ROPE

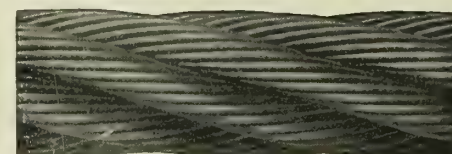
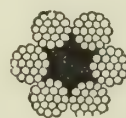
—For all hoisting, this is a general-purpose rope. Contractors, coal and ore mines, specify this rope more than any other. It is strong and flexible, and will run over sheaves or drums of moderate size.



CRUCIBLE CAST-STEEL HOISTING ROPE

SWEDISH-IRON ELEVATOR HOISTING ROPE

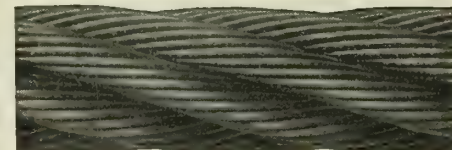
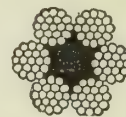
—For passenger and freight elevator use this rope is universally used. One rope is sufficiently strong to safely lift an average load of passengers, but four ropes are used in general elevator practice, thus giving a very large factor of safety.



SWEDISH-IRON ELEVATOR HOISTING ROPE

PLOW STEEL AND MONITOR HOISTING ROPE

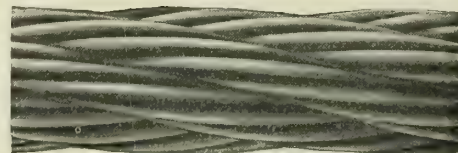
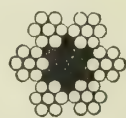
—For logging, derrick hoisting, stump pulling and dredging, and for heavy loads and hard service this is the favorite rope.



PLOW STEEL AND MONITOR HOISTING ROPE

HAULAGE ROPE OF CRUCIBLE CAST STEEL

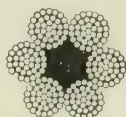
—Adapted for haulage systems and on inclined planes where the sheaves and drums are large. Frequently used in rope tramways, also for sand lines in oil-well drilling. The wires are large and well calculated to resist surface wear, hence most suitable for above service.



HAULAGE ROPE OF CRUCIBLE CAST STEEL

SPECIAL FLEXIBLE STEEL CRANE ROPE

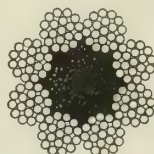
—A favorite with all crane users. The special quality of this rope, combined with its form of construction, gives it great flexibility. It is durable and very strong.



SPECIAL FLEXIBLE STEEL CRANE ROPE

EXTRA FLEXIBLE STEEL HOISTING ROPE

—Where the load is light and evenly distributed and the drums small this rope has found much favor. Made in crucible, plow steel, and monitor grades.



EXTRA FLEXIBLE STEEL HOISTING ROPE

WIRE ROPE
CONTINUED.

GALVANIZED IRON OR STEEL GUY ROPE—For supporting derricks, for ferrying, and for general standing rope service. It is not designed to be run over drums or sheaves.

AMERICAN GALVANIZED SPECIAL FLEXIBLE STEEL TOWING HAWSER—Repeatedly demonstrated to be superior to any other, and is known the world over. Made with 37 extra-galvanized specially drawn wires to each strand.

IRON ELEVATOR HAND ROPE—A wonderfully flexible rope for hand rope on elevators, steering rope for vessels and other uses where the maximum of flexibility is required. Not designed to be subject to much frictional wear.

FLAT ROPE—A remarkably strong hoisting rope, used to a great extent by the large mines of the West. Is composed of a number of wire ropes called "flat rope strands," of alternate right and left lay, placed side by side, then secured or sewed together with soft Swedish-iron wire, thus forming a completed rope.

TRACK STRAND FOR AERIAL TRAMWAYS—For overhead haulage this strand presents a very smooth surface for the travelers to run upon. Made in different qualities for the large and varied uses of tramways. Correspondence solicited on the special subject of tramway construction and operation in connection with American wire rope.

GALVANIZED STEEL WIRE STRAND—For guying stacks, telegraph and telephone poles, for signal strand, for suspending trolley wire and as messenger strand for telephone cables. Made of seven steel wires twisted into a single strand, either galvanized or extra galvanized.

EXPERIENCE.

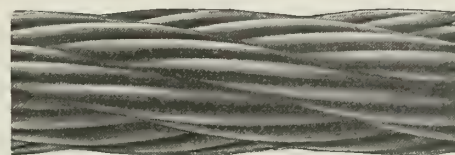
We have been making Wire Rope in our Worcester plant for over a generation, so there is no mastery of the art or research that has not been employed to bring it to the highest possible efficiency. This is recognized all over the world, as there is no country that does not use American Wire Rope.

CO-OPERATION
AND ORDERS.

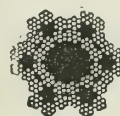
We carry all kinds of American Wire Rope in stock, so that any particular style can be supplied on short notice, by telegraph or mail order. We also carry it in any length from one to a thousand feet or more. We are at all times pleased to quote prices for quick delivery on our Wire Rope and Electrical Wire and Cables, or to send full descriptive catalogues upon request.

GUARANTEE.

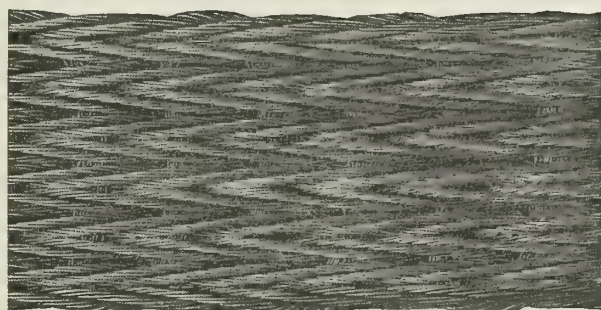
We guarantee our American Wire Rope, Electrical Wires and Cables to be the most perfect that skill and experience can produce.



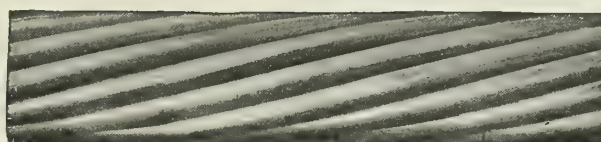
GALVANIZED IRON OR STEEL GUY ROPE

AMERICAN GALVANIZED SPECIAL FLEXIBLE
STEEL TOWING HAWSER

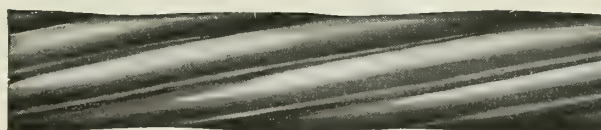
IRON ELEVATOR HAND ROPE



FLAT ROPE



TRACK STRAND FOR AERIAL TRAMWAYS



GALVANIZED STEEL WIRE STRAND

BRODERICK & BASCOM ROPE CO.

MANUFACTURERS OF

Wire Rope and Aerial Wire-Rope Tramways

805-809 North Main Street

ST. LOUIS, MO.

BRANCHES

SEATTLE, WASH. NEW YORK, N. Y.

WORKS

SEATTLE, WASH. ST. LOUIS, MO.

PRODUCTS.

We make all kinds of WIRE ROPE from a $2\frac{1}{4}$ " diameter "YELLOWSTRAND POWER-STEEL," having a breaking strain of 470,000 pounds, to a $\frac{1}{16}$ " diameter IRON CORD with a breaking strain of 140 pounds; also, PATENT AUTOMATIC AERIAL WIRE-ROPE TRAMWAYS.

VARIOUS GRADES OF WIRE ROPE.

"YELLOWSTRAND POWERSTEEL" WIRE ROPE

—The real economy of Yellowstrand Rope lies in its tremendous durability. The wires used are from 75 per cent to 100 per cent stronger than the best crucible steel, and have a tensile strength of from 240,000 to 260,000 pounds per square inch. Each is carefully tested three times before being used. All weak or imperfect wires are discarded. It is a thoroughly pliable steel rope. Wear and crystallization caused by bending over sheaves and drums are reduced to a minimum. You need this strong, tough, durable rope for drilling lines, sand lines, tubing lines, and for heavy hoisting, mining, steam logging, and all extra heavy work.



REGISTERED TRADE-MARK

PATENT STEEL WIRE ROPE—Especially recommended for quarrymen, contractors, and bridge builders; in fact, anywhere that a strong flexible rope is desired. The wires in this rope are about 25 per cent stronger than the ordinary crucible steel and are the result of more than twenty years' experience.



REGISTERED TRADE-MARK

PLOUGH-STEEL HOISTING ROPE—Used for all heavy work, such as logging, stump pulling, dredging, etc., and is next to "Powersteel" Rope in strength.

CRUCIBLE CAST-STEEL ROPE—We can supply this in any lengths and sizes desired. It is an excellent rope for contractors' use.

STANDARD ELEVATOR HOISTING ROPES—Used for passenger or freight elevators; are the result of over a quarter of a century's experience. They are absolutely uniform, and we have many testimonials showing where our elevator ropes have outlasted those of other makes. It would pay you to investigate this grade of rope before purchasing any other.



SWEDES IRON HOISTING ROPE

**WIRE SASH
AND BELL
CORD.**

We also make Wire Sash and Bell Cords from $\frac{1}{16}$ -inch diameter to $\frac{1}{4}$ -inch diameter, and Galvanized Ropes of all kinds and description.

EXPERIENCE.

We have been making Wire Rope for over a quarter of a century, and our "Yellowstrand" Rope has given universal satisfaction wherever used. We pride ourselves on having the most complete testing department of any manufacturer in the country, and invariably reject each and every wire that does not reach our requirements for tensile and torsional strains, limit of elasticity, and per cent of elongation.

TERRITORY.

We have agents in almost all the large cities of the United States. Our Yellowstrand Magazine, published monthly, gives a list of firms who carry our rope. This can be obtained without charge by writing to us. It tells all about wire rope.

**AERIAL
WIRE-ROPE
TRAMWAYS.**

Broderick & Bascom's Patent Automatic Aerial Wire-Rope Tramways were the *only* tramways awarded a Gold Medal at the Lewis and Clark Exposition.

They are absolutely safe, the buckets being held by a perfect clip, that will not slip under any conditions.

They are equipped with the *only* rope awarded a Grand Prize at the St. Louis Exposition, 1904, and require the minimum cost for maintenance.

They are absolutely automatic, being equipped with Self-Dumping, Self-Righting and Self-Locking Buckets, performing all the above operations without the assistance of an attendant.

Our Tramways are especially adapted for transporting Fuel, Coal, Ore or Merchandise from one point to another, over any length of line and over any kind of ground, there being practically no difficulties presented by natural formation which can not be overcome by Our System.



AERIAL WIRE-ROPE TRAMWAY



AERIAL WIRE-ROPE TRAMWAY

STANLEY HOISTING COMPANY

MAIN OFFICE

620-630 West 25th St., 13th Ave. 24th to 25th Sts.

NEW YORK, N. Y.

FACTORY

RANDOLPH AVE., UNION AND GARFIELD STS.
JERSEY CITY, N. J.

TELEPHONE, 611 BERGEN

TELEPHONES, 1254-1783 CHELSEA

BRANCHES

BRONX BRANCH, 366-368 East 146th Street
TELEPHONES—50 MELROSE
3838 MELROSE

BROOKLYN BRANCH, Cor. North 4th and Roebling Streets
TELEPHONE, 2542 GREENPOINT

PRODUCTS.

Manufacturers of and agents for all kinds of HOISTING ENGINES, BUILDERS' HOD and BARROW ELEVATORS, DOUBLE-ACTING ELEVATORS of every description, CHAIN MACHINES (with or without power); also, PUMPS for DRAINING FOUNDATIONS, CONCRETE MIXERS, with or without boilers, MORTAR MIXERS, LOCOMOTIVE and VERTICAL BOILERS, for sale or to rent.

QUALITY OF MANUFACTURE.

The material used in the construction of our machines is the best, and each part is tested and guaranteed before it leaves the shop. Our success among Builders and Masons is owing to the quality of our products, both in workmanship and durability. Architects, Engineers or General Contractors who recommend our machines do so with the assurance of good service and prompt attention.

STANLEY KEROSENE ENGINE

We are the exclusive owners of the Stanley Kerosene Engine (see Figs. 6 and 7), which can be attached to any of our Chain Machines and operated at an expense of 31 cents a day.

This engine is complete in every detail and has proved very satisfactory where it has been used.

No engineer is necessary; in fact, its construction is so simple that a boy can operate it. It will hoist 30,000 bricks per day, with mortar to lay them.

We urgently call the attention of Engineers, Builders, and Masons to this engine. Its small cost of maintenance, its many uses and general adaptability where small power is needed, make it indispensable to those engaged in building operations.

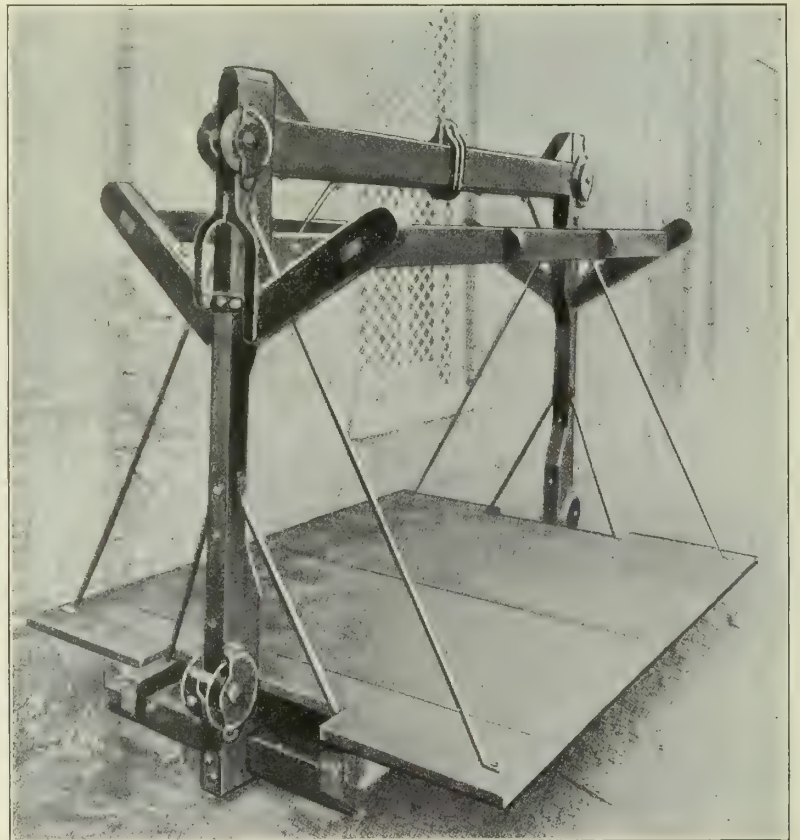


FIG. 1. COMBINATION ELEVATOR
For Two Wheelbarrows and Six Hods

HOISTING
ENGINES.

We also supply Hoisting Engines of all sizes, either for use with our elevators or for other construction purposes. We will be pleased to submit plans and full information concerning this line, upon request.

We are agents for the Lidgerwood Hoisting Engines and have them in all sizes.

ELEVATORS.

The following elevators constitute our standard styles and sizes: Special sizes built to order:

Hod capacity	Brick capacity per day	
4	40,000	with mortar to lay them
6	60,000	
8	80,000	

Double Wheelbarrow Elevators for carrying two wheelbarrows; capacity 90,000 bricks per day, with mortar to lay them.

Single Wheelbarrow Elevators; capacity 45,000 bricks per day, with mortar to lay them.

Combination Elevators for carrying six hods and two wheelbarrows; capacity 110,000 bricks per day, with mortar to lay them.

These machines consist of 1 elevator, 1 head-piece, 2 legs and 3 sheaves, guides, bell, bell rope, cable and cable clamp.

The Wheelbarrow Elevators can also be arranged for carrying hods, when they are so ordered.

Double-Acting Elevators (Fig. 3), one up and one down, interdependent, for carrying one or two wheelbarrows; capacity for single wheelbarrow machine 100,000 bricks per day, with mortar to lay them; two-wheelbarrow machine, capacity 200,000 bricks per day, with mortar to lay them.



FIG. 2. COMBINATION ELEVATOR



FIG. 3. METHOD EMPLOYED TO INSTALL A DOUBLE-ACTING ELEVATOR ON THE OUTSIDE OF A BUILDING, FOR REPAIR WORK

These machines have all the latest improvements, and many of the objectionable features of other machines of this character have been eliminated.

When a hod machine is ordered, a sufficient number of hods is always sent to complete the work.

CHAIN MACHINES.

Our Chain Machines (Figs. 4 and 5), worked by hand power, have met with unprecedented success in all parts of the country. Their simplicity and compactness (see Fig. 4), combined with the ease with which they can be assembled and operated, have strongly appealed to Masons, Builders and Contractors.

They are self-oiling and therefore do not have to rely upon the attention of a negligent workman. Each part of our machines is so affixed that they can be erected ready for operation at very short notice.

The capacity of the hand-power Chain Machine is 20,000 bricks per day, with mortar to lay them.

These machines consist of one top with gears, shafts and crank handles, one bottom, chain and sufficient hods to complete the work.

FOUNDATION PUMPS.

Our Pumps for Draining Foundations are strongly built and are of great simplicity of construction. All unnecessary parts have been done away with. Their pumping capacity is greater in comparison to the power used than any other make on the market.

We also supply all the necessary equipment and include same in our prices.

We supply these pumps in all sizes.

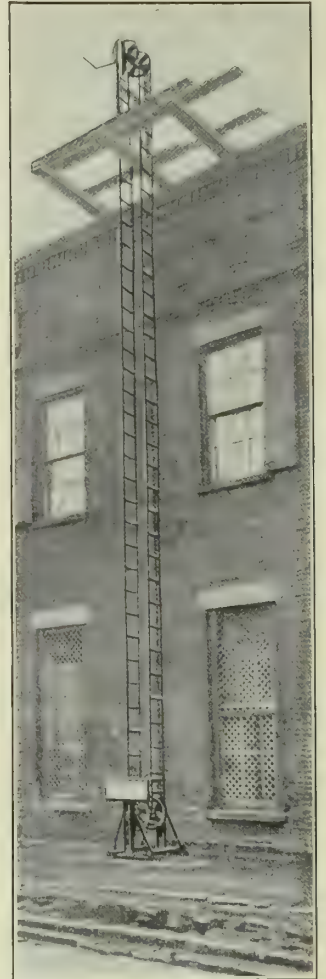


FIG. 4. CHAIN MACHINE (HAND-POWER) IN USE

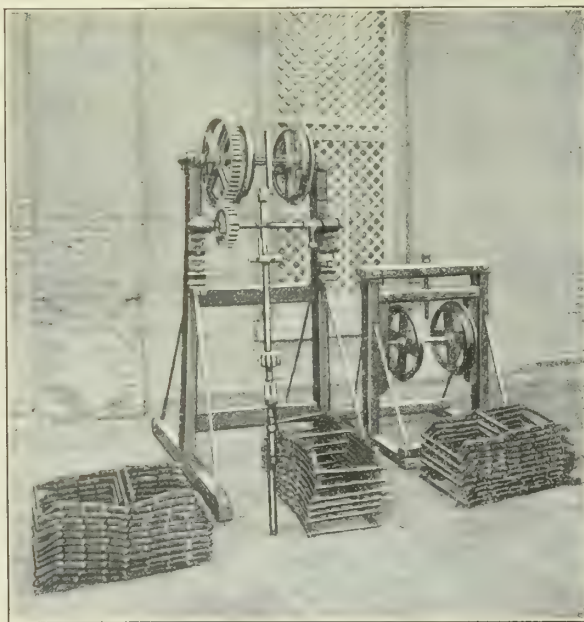


FIG. 5. SHOWING THE SMALL SPACE NECESSARY FOR STORAGE OF A CHAIN MACHINE

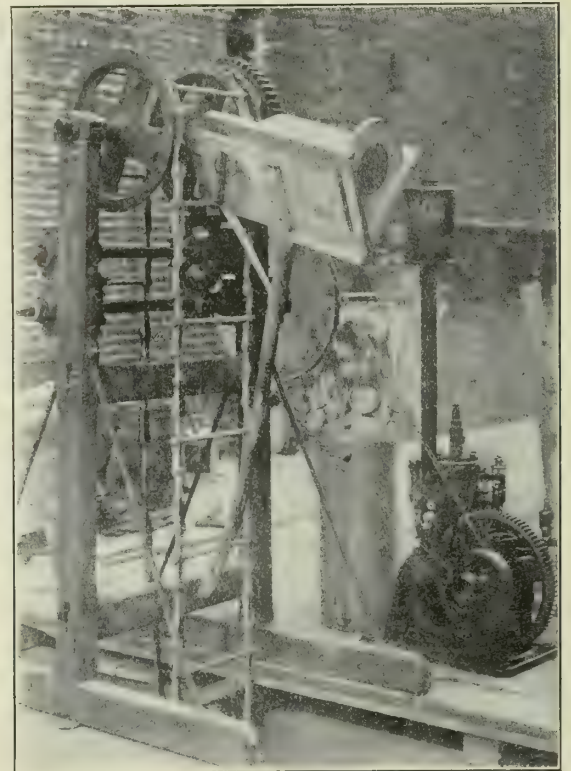


FIG. 6. THE STANLEY KEROSENE ENGINE (Side View) Showing the simplicity and lack of complicated parts

DUPLICATE PARTS.

We can duplicate entirely or in part any machine that has been obtained from us. They are all of standard sizes and makes, easily assembled, adjusted and regulated.

FACILITIES.

Our plant covers 35,000 square feet, and we are in a position to execute any order for special machines with unusual promptness and despatch.

Our machines are for sale outright or to rent. We keep continually on hand a stock of machines and elevators, etc., of all kinds, for which there is a constant demand.

INSTALLA- TION.

Machines ordered for out-of-town work are installed by us per arrangement with the purchaser or builder.

SPECIFICA- TIONS.

In order to protect their clients, architects should be careful to specify our goods as those made and handled by the "STANLEY HOISTING COMPANY" of New York.

Care should also be taken to mention sizes and capacities of machines wanted.

REFERENCES.

We refer by permission to the leading Builders, Architects and Contractors in the United States, by whom our machines are used in all their building operations.

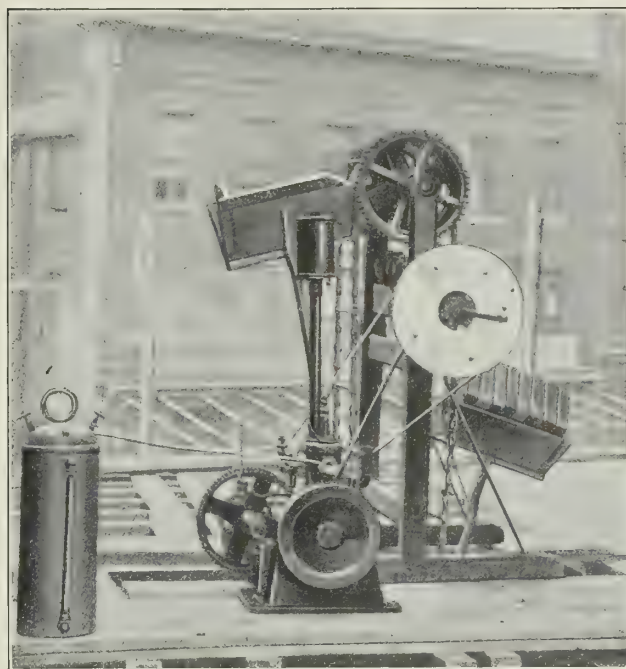


FIG. 7. THE STANLEY KEROSENE ENGINE
Showing its connection to the top of the Chain Machine

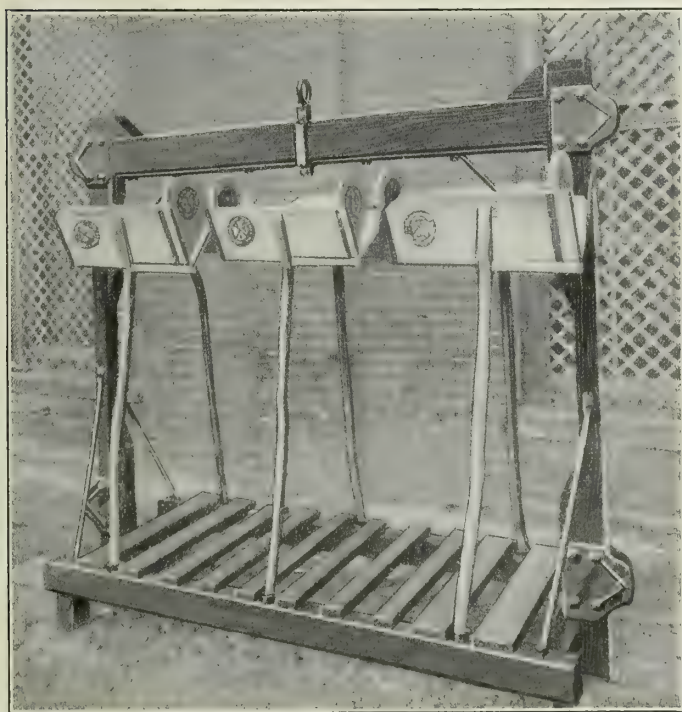


FIG. 8. SIX-HOD ELEVATOR

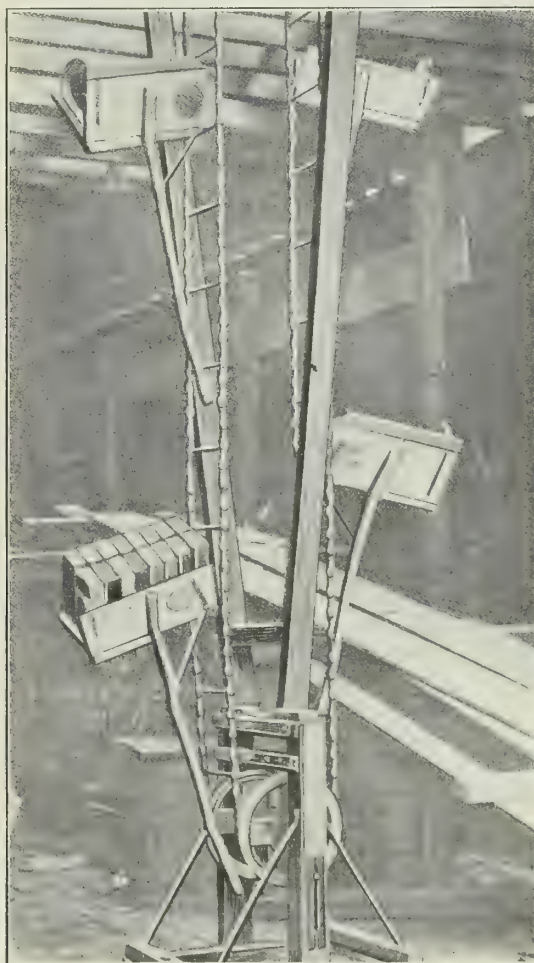


FIG. 9. BOTTOM OF CHAIN MACHINE

ERNST WIENER COMPANY

Railroad Specialists for all Industries

52 Church Street
NEW YORK, N. Y.

1540 First National Bank Building
CHICAGO, ILL.

PRODUCTS.

We are manufacturers of RAILWAY MATERIALS for all INDUSTRIAL PURPOSES, including AUXILIARY RAILWAY EQUIPMENTS for BUILDERS and CONTRACTORS, PORTABLE and PERMANENT TRACK LAYOUT, RAILS, CAST-IRON PLATE TRACK, SWITCHES, FROGS, TURN-TABLES, TRACK SCALES, TUBS, CARS and LOCOMOTIVES; COMPLETE RAILWAY EQUIPMENT for MINES, QUARRIES, FOUNDRIES, FACTORIES, LUMBER YARDS, PLANTATIONS, etc.

ECONOMY OF
AUXILIARY
EQUIPMENTS
DURING CON-
STRUCTION.

The saving of labor, the speedier transportation of supplies, concrete and all other building material, by the use of auxiliary or portable equipments during the construction of buildings and the making of foundations, are becoming permanent factors in the building trades. A contractor owning an equipment of this character has an overwhelming advantage over his competitors. The saving of labor alone will pay for the investment in a short time.

PERMANENT
EQUIPMENT.

We have given special consideration to the permanent equipment of buildings: in boiler rooms, for the transportation of coal, ashes and ash can; in storage rooms, for the transportation of merchandise, supplies, boxes, waste paper, etc.; in factories, for the transportation of the raw and finished product, and in power plants, foundries, printing plants, etc.

Equipments used for auxiliary purposes during the construction of a building can be installed as a part of the permanent equipment of the building.

STANDARD
AND SPECIAL
EQUIPMENT.

We carry large stocks of standard material and can make prompt deliveries.
We are prepared to build special equipment to meet special conditions.

CO-OPERATIVE
SERVICE.

We are at all times pleased to furnish architects, engineers, and contractors with complete catalogues, descriptive matter, tables, prices, etc., of our standard products. We will also furnish blue-prints and prices on special equipment.

DISCOUNTS.

Discounts on prices quoted in tables will be given upon request.

INDUSTRIAL TRACK, 20" OR 24" GAUGE, OR 21½" GAUGE
FOR OUTSIDE FLANGED WHEELS

Weight of Rails Per Yard	Price per foot of Track complete	Carrying capacity per 4 wheel car
12 lbs.	2½ to 4 tons	\$0.33
16 "	3½ " 5 "	0.68
20 "	4½ " 8 "	0.75

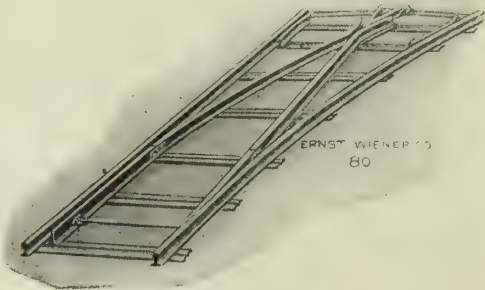
PORTABLE SWITCHES COMPLETE

Kind of Switch	For 20-inch or 24-inch gauge track						For 21½ gauge track for outside flanged wheels	
	9' long, 12 ft. radius Made of rails, lbs. per yard			15' long, 30 ft. radius Made of rails, lbs. per yard			8' long, 12 ft. radius Made of rails, lbs. per yd.	
	12	16	20	12	16	20	12	16
	Price			Price			Price	
Right or left ..	\$27.00	\$30.00	\$33.00	\$37.50	\$45.00	\$49.50	\$30.00	\$33.00
Two-way	30.00	33.00	37.50	40.50	48.00	59.00	33.00	36.00
Three-way	67.50	75.00	82.50	90.00	105.00	120.00	72.00	78.00



NO. 76. SECTION OF STANDARD
INDUSTRIAL TRACK

Mounted on corrugated steel ties. This track is used for transportation purposes during construction, or for permanent work after building is finished



NO. 80. RIGHT- OR LEFT-HAND SWITCH
(Figure shows a Right-Hand Switch)

ILLUSTRATIONS. We give below illustrations, sizes, capacity and cost of a few representative styles of our equipment for general use. In orders and correspondence they may be referred to by number:

CAST-IRON PLATE TRACK, AS SHOWN IN FIG. 96

Gauge of Track, inches	Width inches	5th Straight Section		One-unit Curved Section		Two-unit Curved Section		Three-unit Curved Section		Right or Left Hand Switch		Symm. Switch		Three-way Switch	
		Weight lbs.	Price	Weight lbs.	Price	Weight lbs.	Price	Weight lbs.	Price	Weight lbs.	Price	Weight lbs.	Price	Weight lbs.	Price
20	23 3/4	235	\$12.75	125	\$ 9.75	225	\$16.50	325	\$21.00	490	\$34.50	450	\$42.00	750	\$78.00
24	27 3/4	250	13.50	145	12.00	245	19.50	345	24.00	610	42.00	580	51.00	900	90.00
21 1/2	25 1/2	232	12.75	140	12.00	240	19.50	340	24.00	500	39.00	460	48.00	775	84.00

Switches have a curvature of 3 units and are 7 ft. 3 in. long.

CAPACITIES OF STANDARD TURNTABLES, AS SHOWN IN FIG. 94

Diameter of turntable, in.....	40	44	44	52	60	84
Gauge of track, in.....	20	24	24	24	24	24
Track space taken up, in.....	41 1/2	45 1/2	45 1/2	53 1/2	61 1/2	86
Depth from bottom to top of plate, in.	4 3/8	4 5/8	3	5 1/8	5 1/2	6 3/8
Capacity, tons.....	2 to 3	2 to 3	3	4 to 5	5 to 6	6 to 7
Weight, lbs.....	700	800	800	1225	1400	3400
Price.....	\$63.75	\$67.50	\$67.50	\$93.75	\$112.50	\$285.00

STANDARD DOUBLE-SIDE ALL-STEEL DUMP CAR (ROCKER TYPE) FIG. 173

Capacity Cubic Feet	Gauge of Track inches	Overall Dimensions			Diameter of Wheels inches	Diameter of Axles inches	Thickness of Plates		Weight lbs.	Price
		Length	Width	Height			Sides inches	Ends inches		
18	24	6' 9"	4' 0"	3' 8"	12	1 3/4	1 1/8	1 1/8	900	\$81.00
27	"	7' 4"	4' 2"	3' 11"	"	"	"	"	950	86.25
40	"	8' 1"	4' 11"	4' 5"	14	2	"	3 1/8	1,325	105.00
27	30	7' 7"	4' 2"	3' 11"	12	1 3/4	"	1 1/8	1,000	90.00
40	"	8' 1"	4' 11"	4' 7"	14	2	"	3 1/8	1,425	116.25
54	"	8' 8"	5' 3"	4' 10"	"	2 1/4	3 1/8	1 1/4	1,675	135.00
40	36	8' 1"	4' 11"	4' 8"	"	2	1 1/8	3 1/8	1,500	120.00
54	"	8' 8"	5' 3"	4' 11"	"	2 1/4	3 1/8	1 1/4	1,770	138.75

Provided with a strong brake working on all four wheels of the car and platform for the brakeman \$30.00 extra per car.

STANDARD PLATFORM CAR, AS SHOWN IN FIG. 38

Gauge of Track Inches	Size of Platform		Height to top of car Inches	Diam. of Wheels Inches	Wheel Base Inches	Capacity of Car	Weight Lbs.	Price	Remarks
	Length	Width							
20	4' 9"	3' 0"	15	12	18	2 1/2—3 tons	550	\$42.00	*Is provided with two stake pockets on each side
24	5' 0"	3' 4"	15	12	20	2 1/2—3 tons	550	43.50	
24	6' 0"	4' 0"	15	12	20	2 1/2—3 tons	640	48.00*	

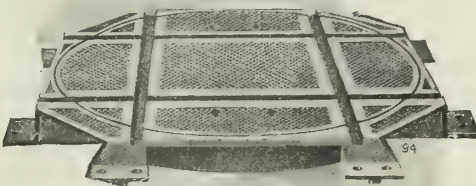
STANDARD CHARGING CARS, AS SHOWN IN FIG. 73

Capacity Cu. Ft.	Gauge of Track Inches	Inside Dimensions of Body Inches			Height to bottom of car Inches	Height to top of car Inches	Diameter of Wheels Inches	Weight Lbs.	Price
		Length	Width	Depth					
22	20 & 24	54	40	18	14	32	12	715	\$82.50
40	20 & 24	60	46	24	16	40	14	965	97.50

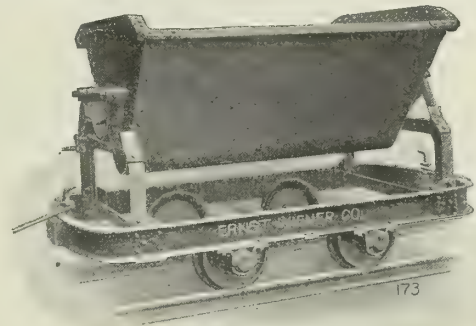
These measurements are exact, but it is necessary to state specifically if a certain dimension has to be adhered to. Roller Bearings, extra, \$12.00 per car.



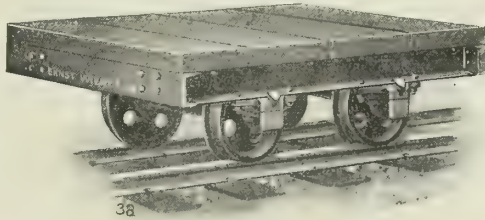
NO. 96. CAST-IRON PLATE TRACK
For use in boiler rooms and power stations; with checkered top to prevent men from slipping



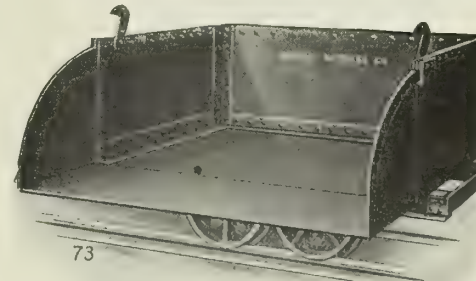
NO. 94. CAST-IRON TURNTABLE
Turning on steel balls, which run in machine-turned groove—it stops automatically after every quarter of a turn



NO. 173. DOUBLE SIDE DUMP CAR
Made entirely of steel. Operates very easily and has automatic locking device



NO. 38. PLATFORM CAR WITH STEEL FRAME AND WOODEN PLATFORM



NO. 73. CHARGING CAR FOR BOILER ROOMS
From which coal can be shoveled directly into boilers. Can be built with either side or end discharge, either on one or both. Also for use without tracks

THE ASHLAND STEEL RANGE & MFG. CO.

MANUFACTURERS OF

United States Standard Concrete Machinery

MAIN OFFICE AND FACTORY

Miller Street

ASHLAND, OHIO

EXPORT OFFICE

NEW YORK, N. Y., B 21 Produce Exchange

TELEPHONE 625

PRODUCTS.

CONCRETE MACHINERY, primarily the "UNITED STATES STANDARD" CONTINUOUS CONCRETE MIXER; the "UNITED STATES STANDARD" CEMENT BLOCK MACHINE, and other CEMENT WORKING MACHINERY.

BLOCK MACHINE.

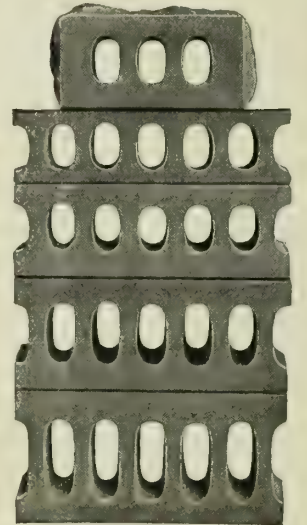
Our "United States Standard" Cement Block Machine is of the face-down type. Its construction is unique in that it produces blocks with six small oval cores, with cross bonds every four inches, making the strongest block built. This construction also enables us to use wet material without danger of the sides of the block sagging.

EQUIPMENT.

This consists, in part, of the following: A complete line of rock-face plates, 4, 6, and 8 inches wide, and 4, 8, 12, 16, 20, and 24 inches long; rock circular plates, 12 and 24 inches long; rock adjustable angle-plates, 4, 6, and 8 inches wide, adjustable to any angle from 10 to 50 degrees; rock-face porch piers and chimney blocks, 12, 16, 20, and 24 inches square; gable-blocks, joist-blocks, door-jambs, etc. For bevel-face blocks we furnish plates 6 and 8 inches wide in all the various lengths and thicknesses above enumerated. For plain-face blocks, our equipment provides for an endless variety of styles and sizes. For fancy designs we have a beautiful set of bush-hammered and corrugated plates in all lengths, widths, and sizes.

COMPLETE-NESS.

With our regular equipment you can make blocks of eight different thicknesses, referring now to the thickness of the wall. First, four thicknesses of veneer blocks, 3, 4, 5, and 6 inches thick. Second, four thicknesses of hollow blocks, 6, 8, 10, and 12 inches thick. All of these in six lengths, three widths, and rock, bevel, plain, broken ashlar, bush-hammered and corrugated faces. In short, the "United States Standard" provides for everything within the province of the most modern and up-to-date cement block machine.



DIFFERENT THICKNESSES OF "UNITED STATES STANDARD" CEMENT BLOCKS



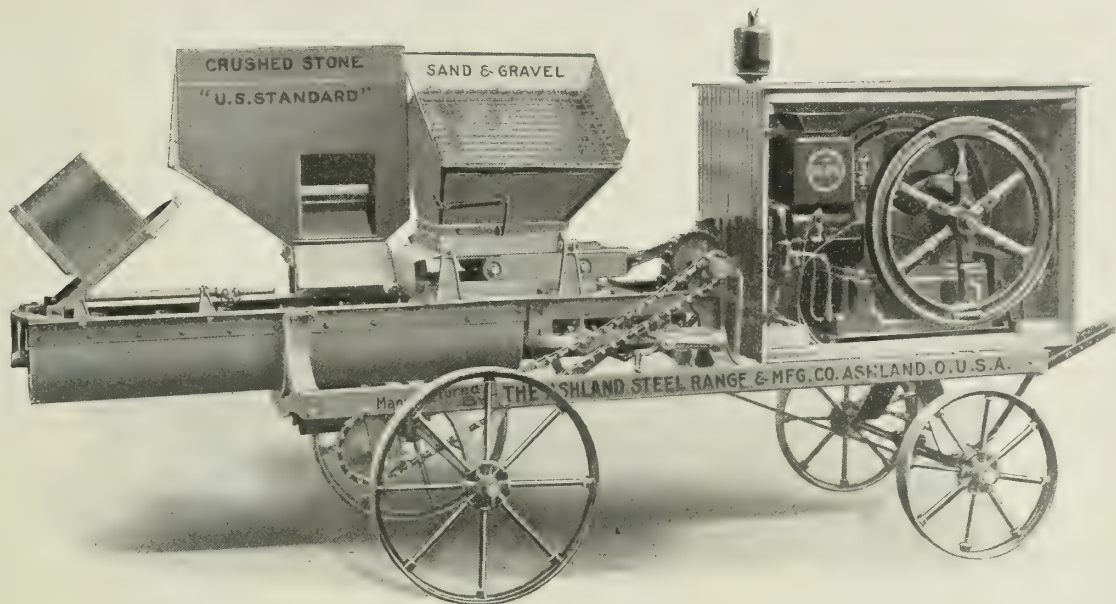
"UNITED STATES STANDARD" CEMENT BLOCK MACHINE

- SPEED.

For speed we challenge competition. Three men with one "United States Standard" block machine and one "United States Standard" Mixer have made over four hundred 8 x 8 x 24-inch blocks in ten hours. This claim is attested by responsible parties.
- SIMPLICITY.

Being exceedingly simple it is very durable and seldom gets out of repair. Owing to this fact even an amateur, after receiving a few hints on the most essential points, has no trouble in operating it.
- DEMANDS OF BUILDING CODES.

For size, amount of hollow space, crushing strength, etc., all "United States Standard" blocks fully meet the most stringent requirements of building codes.



"UNITED STATES STANDARD" CONTINUOUS CONCRETE MIXER

- THE "UNITED STATES STANDARD" CONTINUOUS CONCRETE MIXER.

This Mixer is made in three patterns and is the acme of perfection for the small and medium operator. Our "United States Standard" Junior is a two-hopper mixer for cement and sand or gravel. Capacity 20 to 50 cubic yards per day. Our "United States Standard" Senior A is also a two-hopper mixer but built heavier than the Junior and is intended for heavier work. Our "United States Standard" Senior B is a triple-hopper mixer, having a separate hopper and measuring device for cement, sand, and crushed stone. Capacity 50 to 90 cubic yards per day.
- ACCURATE AUTOMATIC MEASURING.

The measuring of ingredients must be uniformly accurate in order to produce uniform concrete of the highest quality at the lowest cost. The measuring device of the "United States Standard" Mixer, for both cement and sand, consists of square boxes provided with adjusting plates operated with thumb-screws. These measuring boxes can be closed entirely or the adjusting plates can be opened to any desired distance. For every inch you withdraw the adjusting plate of the sand hopper you obtain a measuring capacity of 30 cubic inches. For every inch you withdraw the adjusting plate of the cement hopper you obtain a measuring capacity of 8 cubic inches. By opening your sand box 7 inches and your cement box 5 1/4 inches, you would obtain for each revolution 210 cubic inches of sand and 42 cubic inches of cement, which would be five parts sand to one part cement. Any other proportion can be secured with equal accuracy. Our measuring device for crushed stone is unique, and the most accurate yet invented.
- ALL INQUIRIES ANSWERED.

As a fine piece of machinery, embodying the most practical and up-to-date working principles, the "United States Standard" Concrete Mixer solicits your interest. Upon receipt of your inquiry we will mail you full particulars. If interested, write for our descriptive catalogue which will be sent free.

CROPP CONCRETE MACHINERY CO.

Manufacturers of "Cropp" Concrete Mixer

304 Oxford Building and 84 La Salle Street
CHICAGO, ILL.

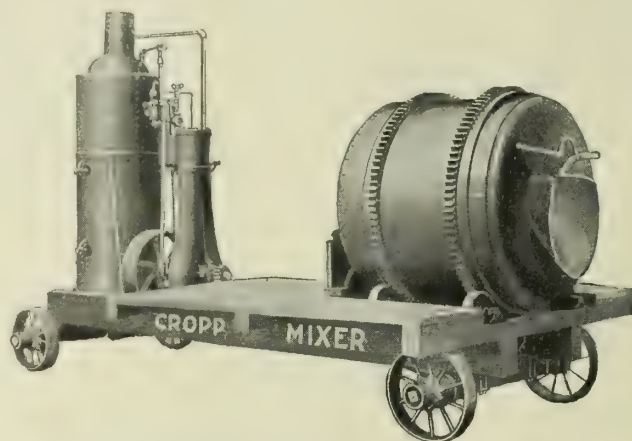
PRODUCT. The "CROPP" CONCRETE MIXER.

DESCRIPTION. In designing our Mixer our object has been to meet the requirements of the contractor in whatever circumstances he may be placed to do the work, and we have accomplished this result. The "Cropp" Mixer is specially designed for street work, but is equally well adapted for every other line of concrete work.

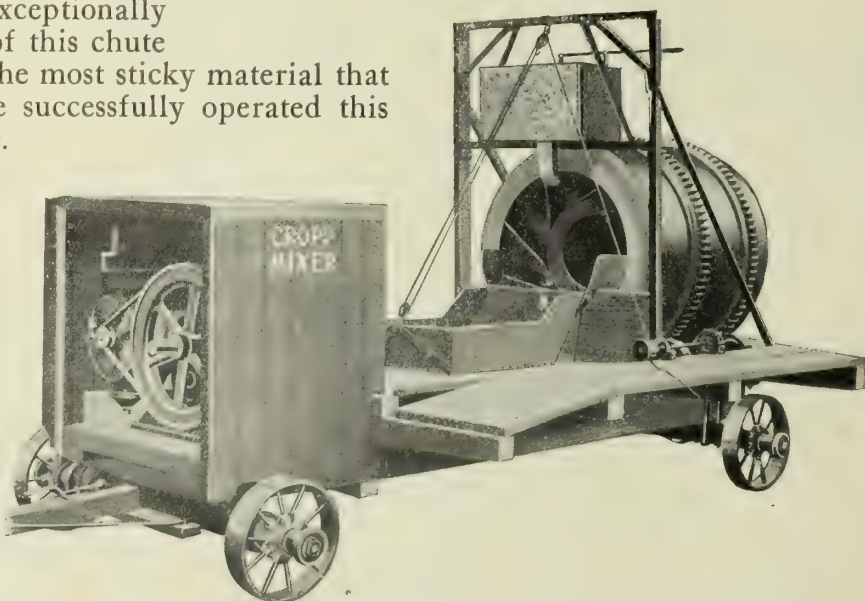
CHARGING. The distinguishing feature of our 1909 Model is the specially low charging arrangement. The platform is only twenty-four inches above the ground. This allows the drum to be loaded at its base instead of above its center, by which method more than one half of the diameter of the drum is saved.

DISCHARGING. The drum is provided with a stationary chute and a door pivotally mounted on one side which is operated by a lever from the outside, the latter drawing back against a blade secured to the inner surface of the drum within the path of the door. By the use of an additional blade, lying at an angle at the axis of the drum and uniting with the first main blade to serve as a guide for the material, the drum is revolved and quickly discharges the material out through the chute, which is high enough to effect an exceptionally high discharge. By means of this chute we are able to operate with the most sticky material that we have yet seen. We have successfully operated this mixer in Asphalt Westrumite.

The adjoining illustration shows our machine mounted with a gasoline engine and equipped with a charging pan. It is so constructed that the men can dump into it from both sides, thus saving considerable time. They can do this while the batch is being mixed, thus saving about one half of the time usually consumed. We furnish this equipment at a small additional cost.



"CROPP" MIXER MOUNTED WITH A STEAM ENGINE



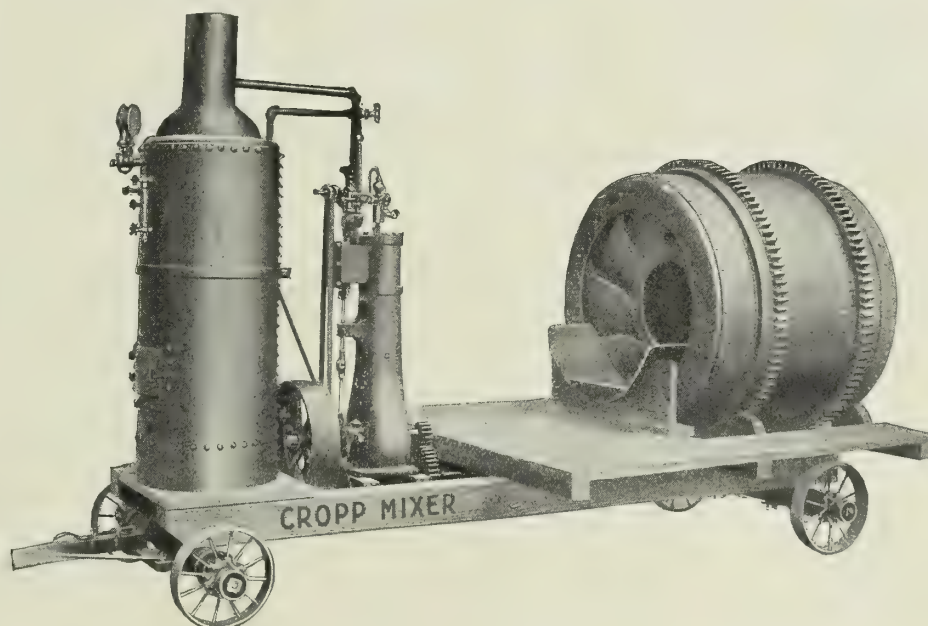
"CROPP" MIXER MOUNTED WITH A GASOLINE ENGINE

TABLE OF SIZES AND WEIGHTS OF THE "CROPP" MIXER

	Size of Batch each Mixer will hold	Total Capacity, cubic feet	Horse-power Required	Weight on Skids	Weight on Trucks	Weight of Gasoline Engine	Weight of Steam Engine and Boiler
No. 1	Cement, 1 cu. ft. Sand, 3 cu. ft. Stone, 6 cu. ft.	10	5	2100	2800	3500	4600
No. 2	Cement, 1½ cu. ft. Sand, 4½ cu. ft. Stone, 9 cu. ft.	15	6	2200	2850	3600	4900
No. 3	Cement, 2 cu. ft. Sand, 6 cu. ft. Stone, 12 cu. ft.	20	7	2250	3000	3800	5100
No. 4	Cement, 3 cu. ft. Sand, 9 cu. ft. Stone, 18 cu. ft.	30	8	2600	3300	4200	5800
No. 5	Cement, 4 cu. ft. Sand, 12 cu. ft. Stone, 24 cu. ft.	40	10	2700	3400	4400	6200

INTERIOR
CONSTRUC-
TION.

The interior of the drum is fitted with a plow and blades, the plow being in the center and the blades firmly fixed to the revolving sides. The plow being V-shaped divides the material and throws it upon the blades, and these being fixed at an angle throw it back. This action joined to the revolving motion thoroughly integrates the contents and produces a perfectly mixed batch of concrete in the minimum of time.

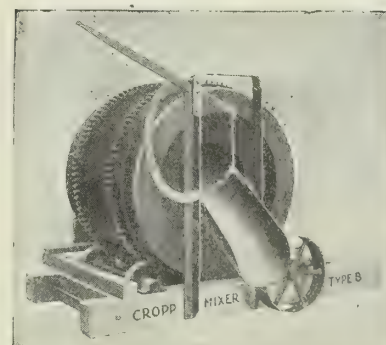


"CROPP" MIXER MOUNTED WITH BOILER AND ENGINE

SUPERIORITY.

Some of the reasons why the "Cropp" Mixer is superior to all others are the following:

- (1) Because it has no surplus weight.
- (2) Because it is easier to keep clean.
- (3) Because clogging is absolutely impossible.
- (4) Because of its low charging platform, requiring no scaffolding, hoists or mechanism.
- (5) Because of its high and rapid discharge features.
- (6) Because it takes the least power.
- (7) Because it is equally well adapted for street work, sidewalk work, and general contractors' work.
- (8) Because of its high economy in charging.
- (9) Because of its superior mixing qualities.
- (10) Because it will mix and discharge Asphalt Westrumite, which no other mixer will do.
- (11) Because this perfect mixer will stand crowding and will not spill.
- (12) Because it can be crowded to one half of the diameter of the drum, equal to one and one half of its rated capacity, and will not spill under the charge.



"CROPP" MIXER, SHOWING
DISCHARGE END

Shows our latest discharge. All material when overcharged is returned into the Mixer, preventing spilling

IDEAL CONCRETE MACHINERY CO.

SOUTH BEND, IND.

CANADIAN FACTORY: LONDON, CANADA

PRODUCTS.

Manufacturers of CONCRETE MACHINERY, including BLOCK MACHINES, "IDEAL" MODELS A and E, SPECIAL SILL and LINTEL MACHINES, BRICK and VENEER BLOCK MACHINES; MOULDS, Plain and Ornamental, for every variety of concrete stone known to the architect, including SIDEWALK, STEP, SILL, SPINDLE, BALL, COLUMN, CAPITAL, PIER, VASE and POST; FACE-PLATES and other accessories for blocks; WATER-TABLES, CIRCLE BLOCKS, CHIMNEY BLOCKS, ADJUSTABLE OCTAGON SHAPES, SILLS, CAPS, and fractional parts of blocks from one inch to the full capacity of machine.

The above includes the plates necessary for making FRIEZE, BELT, COURSE and SILO BLOCKS, FENCE POST and CEMETERY CORNERS; also, FEED-TABLES, BLOCK CARRIERS in wood and iron, SMOOTHING and COMPRESSION TOOLS, AUTOMATIC TAMPING MACHINES, DIVIDING PLATES, and PALLETS of all sizes.

BLOCK MACHINE CAPACITY.

Model A "Ideal" Machines will make blocks in any combination of sizes from 4, 6, 8, 10, and 12 inches wide, 4, 6, and 8 inches high, and in any length up to 16 inches (including mortar joints), each size showing the proper marginal effect.

Model E "Ideal" Machines reproduce the above described effects up to 24 inches in length.

"IDEAL" FACE-DOWN PRINCIPLE.

The Face-Down "Ideal" Principle produces a concrete block with a face richer than the body of the block, thereby making the face close-grained and impervious to moisture. It also permits the use of permanent color or waterproofing in the facing.

ECONOMY OF MATERIAL.

Face-Down "Ideal" Concrete Stone represents the maximum of strength and minimum of cost. This is obtained by the use of coarse aggregate for the body of the block, with rich facing material.

PERFECT AMALGAMA- TION. AVAILABILITY.

The facing is placed loose in the mould and the coarse material added. The tamping bonds both, thereby insuring perfect amalgamation of facing and body.

Any reliable contractor who owns or controls one or more "Ideal" Machines can furnish concrete stone or blocks in all possible shapes, sizes, and faces. We will put architects in any part of the world in touch with reliable contractors and artificial stone manufacturers who control the necessary "Ideal" equipment and can turn out high-class product.

STONE EFFECTS.

A very important feature of the "Ideal" Face-Down Principle is the production of a great variety of stone effects by introducing crushed granite, marble, limestone, colored cement, or other substances in the facing only thereby relieving "Ideal" Blocks of that monotonous effect complained of by architects and others. With our method natural stone effects are secured.

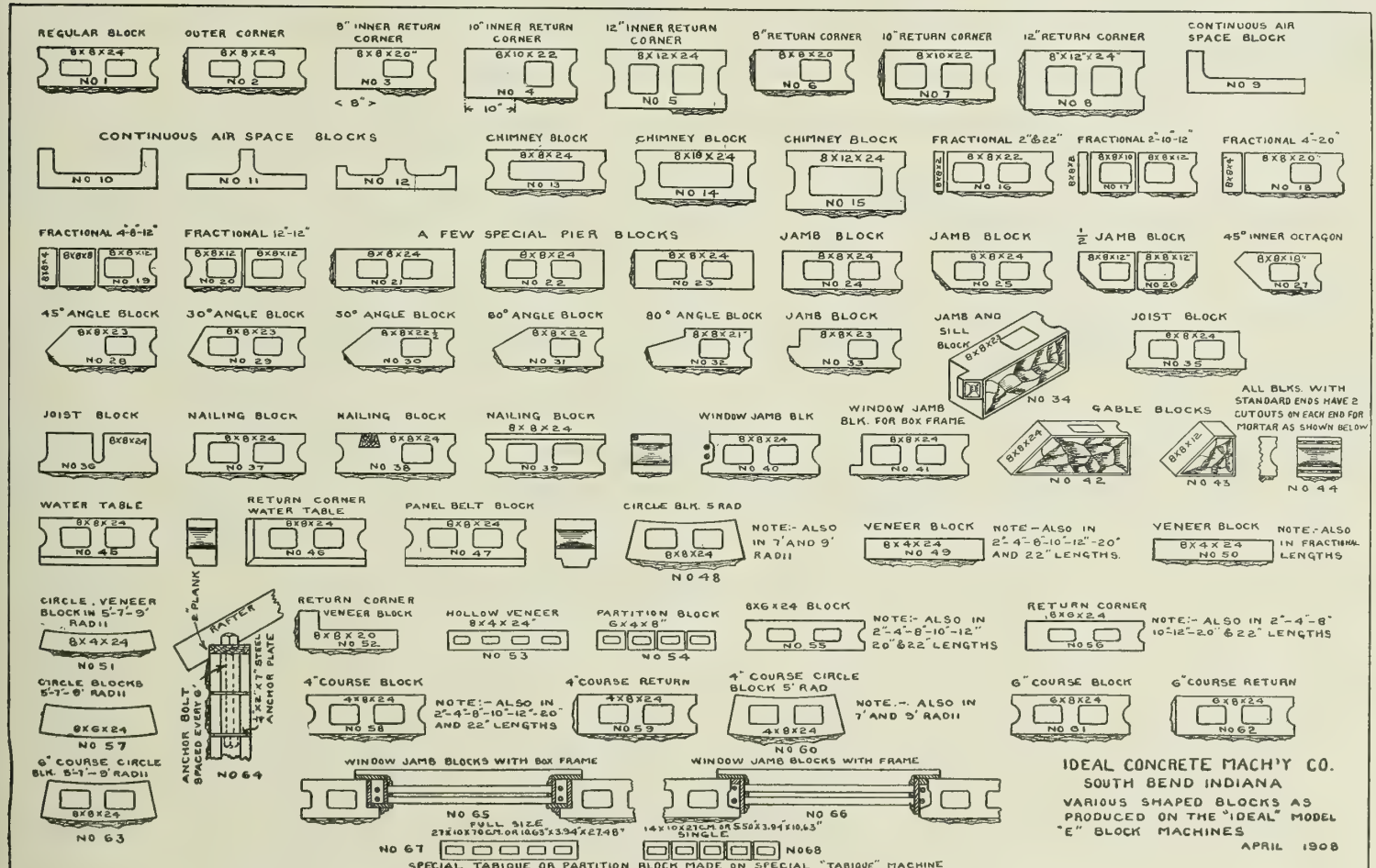
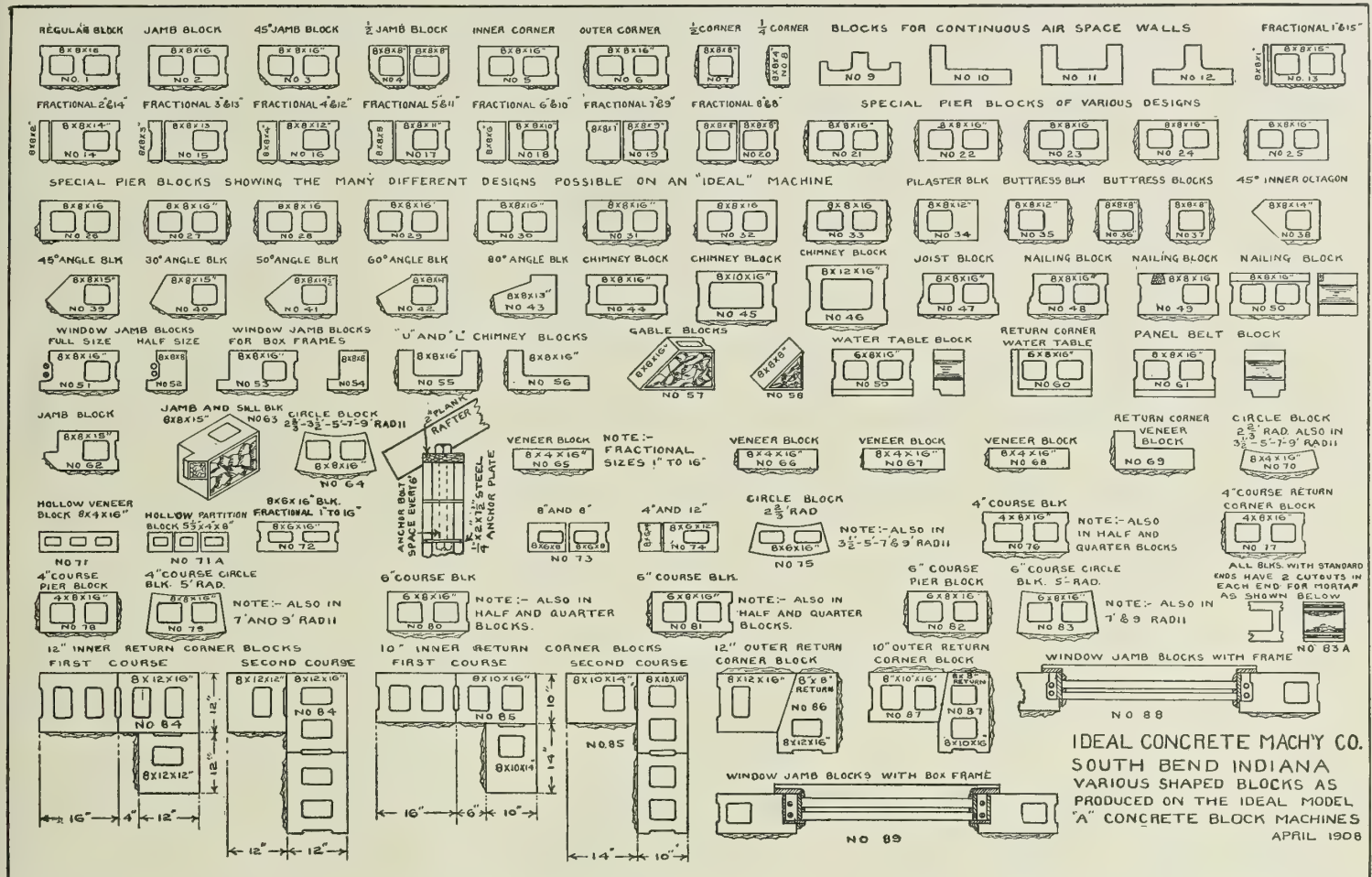
FIREPROOF STUCCO CONSTRUC- TION.

The beautiful effects obtained by stucco in residence construction have their greatest development in "Ideal" Concrete Blocks as a base.

The usual stucco-finished house, with stucco or metal lath fastened to wood, is a flimsy fire trap, perishable and expensive.

Erect walls of "Ideal" Concrete Blocks and provide thereby a base to which stucco will adhere forever. It is low in cost, strong and solid as if hewn from stone, everlasting, and proof against fire, heat, and cold.

Special plates are provided which make blocks that readily take stucco finish. Both blocks and stucco being made of similar material they naturally adhere with great tenacity without the danger of rust and cracks so liable when metal lath is used. "Ideal" Blocks for stucco base can be made, at low cost, of very coarse material.



DATA
" IDEAL "
CONCRETE
BUILDING
BLOCKS.

DATA, "IDEAL" CONCRETE BUILDING BLOCKS

CHARACTER OF BLOCK	NET SIZE IN INCHES			Weight in lbs.	Displace- ment of 100 Blocks in cubic feet	Material for 100 blocks in cubic yards of concrete	Number of blocks per cubic yard of wall	Per cent of voids	Number of brick dis- placed by one block	Number of blocks per 100 square feet	Quantities and Proportions
	Height	Width	Length								
Solid Veneer.....	7¾ x	4 x	15¾	37	29.63	1.05	92	.....	7.11	112	1 barrel = 3¾ cubic feet; 1 cubic yard = 7¾ barrels; 1 cubic yard sand and 3⅝ barrels cement = 2:1 mixture.
Hollow Veneer.....	7¾ x	4 x	15¾	29	29.63	.81	92	23.30	7.11	112	
Hollow Block.....	7¾ x	6 x	15¾	40	44.44	1.11	61	28.75	10.66	112	1 cubic yard sand and gravel and 1½ barrels cement = 5:1 mixture.
Hollow Block.....	7¾ x	8 x	15¾	50	59.26	1.41	46	32.58	14.22	112	
Hollow Block.....	7¾ x	10 x	15¾	68	74.00	1.90	37	27.61	17.77	112	Facing—1 part cement and 2 parts clean coarse sand.
Hollow Block.....	7¾ x	12 x	15¾	82	88.89	2.27	31	27.77	21.33	112	
Solid Veneer.....	7¾ x	4 x	23¾	56	44.44	1.58	61	....	10.66	75	Body—1 part cement, 2 parts sand, 3 parts gravel or broken stone, ¼ to ¾ inch in diameter.
Hollow Veneer.....	7¾ x	4 x	23¾	39	44.44	1.10	61	30.20	10.66	75	
Hollow Block.....	7¾ x	6 x	23¾	64	66.66	1.84	41	22.50	16.00	75	100 blocks 8x8x16 inches require 2.24 barrels cement. 0.68 cubic yard sand, and 1.06 cubic yards gravel or stone.
Hollow Block.....	7¾ x	8 x	23¾	84	88.85	2.19	31	30.38	21.33	75	
Hollow Block.....	7¾ x	10 x	23¾	104	111.10	2.73	25	30.72	26.66	75	Wall measurements for blocks in heights of 4, 6 or 8 inches and in lengths of 16 and 24 inches, include ¼-inch mortar joints.
Hollow Block.....	7¾ x	12 x	23¾	122	133.32	3.27	21	30.95	32.00	75	
Hollow 4-in. Course...	3¾ x	8 x	15¾	25	29.63	.70	92	32.58	7.11	224	Measurements are net for widths of blocks (thickness of wall).
Hollow 4-in. Course...	3¾ x	10 x	15¾	34	37.04	.95	73	27.61	8.88	224	
Hollow 4-in. Course...	3¾ x	12 x	15¾	41	44.45	1.13	61	27.77	10.66	224	Any shape shown on these plates, as well as any measurements given for regular blocks, may be had in any face specified.
Hollow 6-in. Course...	5¾ x	8 x	15¾	38	44.45	1.06	61	32.58	10.66	149	
Hollow 6-in. Course...	5¾ x	10 x	15¾	51	55.56	1.43	49	27.61	13.32	149	
Hollow 6-in. Course...	5¾ x	12 x	15¾	62	66.67	1.70	41	27.77	16.00	149	
Hollow 4-in. Course...	3¾ x	8 x	23¾	42	44.44	1.10	61	30.38	10.66	150	
Hollow 4-in. Course...	3¾ x	10 x	23¾	52	55.55	1.37	49	30.72	13.33	150	
Hollow 4-in. Course...	3¾ x	12 x	23¾	61	66.66	1.64	41	30.95	16.00	150	
Hollow 6-in. Course...	5¾ x	8 x	23¾	63	66.66	1.64	41	30.38	16.00	100	
Hollow 6-in. Course...	5¾ x	10 x	23¾	78	83.32	2.05	33	30.72	20.00	100	
Hollow 6-in. Course...	5¾ x	12 x	23¾	92	99.99	2.45	28	30.95	23.99	100	

Displacement of brick is based on common brick 2¼" x 4" x 8", including ¼" mortar joints.

CURTAIN
WALLS.

" Ideal " Concrete Blocks 4, 6, and 8 inches wide are successfully used in monolithic and reinforced-concrete buildings, pier trimming and curtain walls. The architectural effect is especially fine, combining solidity and beauty and producing a combination purely in concrete which is far more sightly than concrete and brick, less expensive, more rapid in construction, absolutely fireproof, and removing that misnomer—reinforced concrete—when bricks are used in curtain walls.

Any design of face can be used to harmonize with the architectural effect.

TESTING,
GRADING,
AND
RECTIFYING.

We are prepared to test sand, gravel, or other material for concrete and to designate such changes in the grading as may be necessary to make the best concrete possible.

In addition to making such tests, our engineering department is prepared to specify the most economical process and machinery for handling, grading or rectifying concrete material for making blocks and stone and for curing in air or in steam.

" IDEAL "
BLOCK AND
STONE
FATORIES.

Our engineering department is also prepared to furnish factory designs based upon a unit system of 200 blocks per day, which may be enlarged from a single machine to any number of machines by the mere addition of units, without changing the original plant.

SPECIAL
NOTICE TO
ARCHITECTS.

We have just developed a remarkable process for manufacturing concrete stone. Under this process we produce thoroughly waterproof, sound, durable stone of any color or any texture—Granite, Marble, Limestone, etc., and in pure white or gray. Every architect who has seen this material unhesitatingly pronounces it the *most remarkable* concrete he has ever seen.

We call this process "TYCRETE." We shall be glad to send samples and full information upon request.

UNION SPECIALTY MFG. CO.

MANUFACTURERS OF

The "Union" Brick Bonds and "Union" Brick Handlers

Arrott Power Building No. 3, Barker Place
PITTSBURG, PA.

PRODUCTS.

"UNION" COPPER, GALVANIZED-STEEL or BLACK STEEL BRICK BONDS or WALL TIES and "UNION" BRICK HANDLER.

DESCRIPTION.

The "Union" Brick Bond or Wall Tie is made from a solid piece of metal, without any cutting away. The bonding surface is formed as shown in Fig. 1.

Copper, Galvanized Steel or Black Steel are the materials used in these bonds, which are made in many styles to suit the various conditions described below.

The "Union" Brick Handler shown in Fig. 2 is an adjustable, self-locking carrier for ten bricks or less; no bolts or screws are required to set them to a given size. Each handler weighs five pounds.

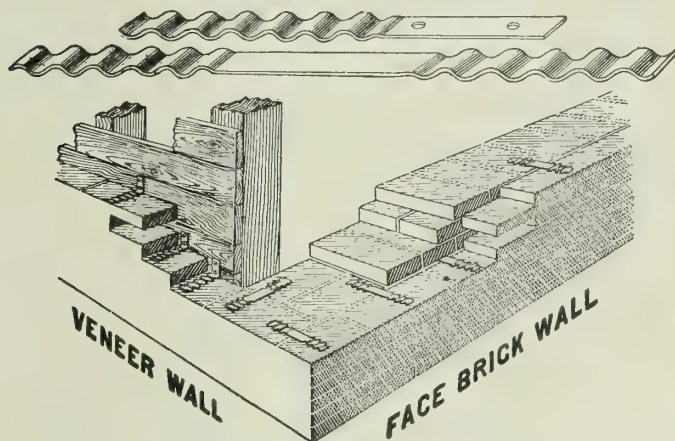


FIG. 1. "UNION" BRICK BONDS IN USE

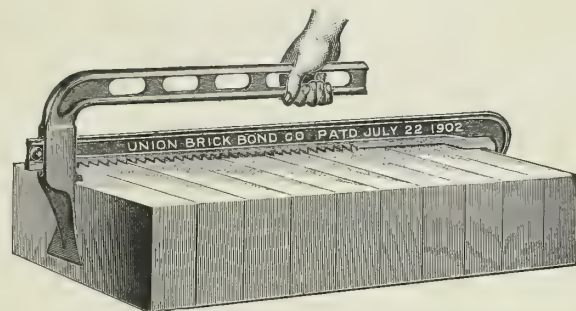


FIG. 2. "UNION" BRICK HANDLER

ADVANTAGES.

The form of the "Union" Brick Bond or Wall Tie gives it the largest possible bonding surface, as it grips the mortar on both sides over the whole surface. The bond is not weakened by having part of the metal cut away, nor are there any sharp points or angles to shear the mortar under strain.

These bonds are superior to wire bonds, because they contain 30 per cent more metal and insure a better bond by reason of their increased bonding surface, and still allow of closer joints being made than with other forms of bonds.

UTILITY.

"Union" Brick Bonds or Wall Ties are adapted for bonding pressed brick to common brick, hollow brick walls, brick veneering to wood sheathing, ashlar work to brick backing, veneer to old walls, etc. Their use requires less skill to make a solid wall than the old way of clipping the brick for a bond; they save the bricklayer's time and also a great many bricks.

STOCK SIZES OF "UNION" BRICK BONDS.

We carry in stock the following sizes of "Union" Brick Bonds or Wall Ties, which are put up 1,000 in a box:

Standard Face Brick Bond.....	7 $\frac{1}{4}$ "x $\frac{5}{8}$ "	Standard Hollow Wall Bond.....	12"x $\frac{3}{4}$ "
Standard Hollow Wall Bond.....	9"x $\frac{5}{8}$ "	Standard Hollow Wall Bond.....	12"x1"
Standard Hollow Wall Bond.....	10"x $\frac{5}{8}$ "	Veneering Face Brick to Wood Frame.....	
Standard Hollow Wall Bond.....	12"x $\frac{5}{8}$ "	Veneering Face Brick to Old Walls.....	

TERRITORY.

We are prepared to make a shipment of stock sizes to any part of the United States or Canada, immediately on receipt of order.

REFERENCES.

On application we will send a list of notable buildings on which "Union" Brick Bonds or Wall Ties have been used.

MARSH CO.

Concrete Mixing and Stone Crushing Machines and Plants

970 Old Colony Building

CHICAGO, ILL.

PRODUCTS.

THE "MARSH-DEXTER" CONCRETE MIXER; ROCK CRUSHERS, STEAM ROLLERS, STEAM SHOVELS, HOISTING ENGINES, WATSON DUMP WAGONS; "MARSH" WHEELBARROWS.

THE "MARSH- DEXTER" MIXER.

This machine was designed to meet a long-felt want. It is a splendid batch mixer of light weight, great simplicity and durability, and can be sold at popular prices.

It is of moderate size, in three capacities of $\frac{1}{4}$, $\frac{1}{3}$ and $\frac{1}{2}$ cubic yard Drum capacities, and in these sizes no batch mixer on the market can compare with it for rapidity of work, ease of operation, drum capacity per size, and durability; it is therefore specially suited to the needs of bridge and sidewalk building contractors and others who require an extremely portable machine of mechanical excellence and high performance.

FEATURES OF CONSTRUC- TION.

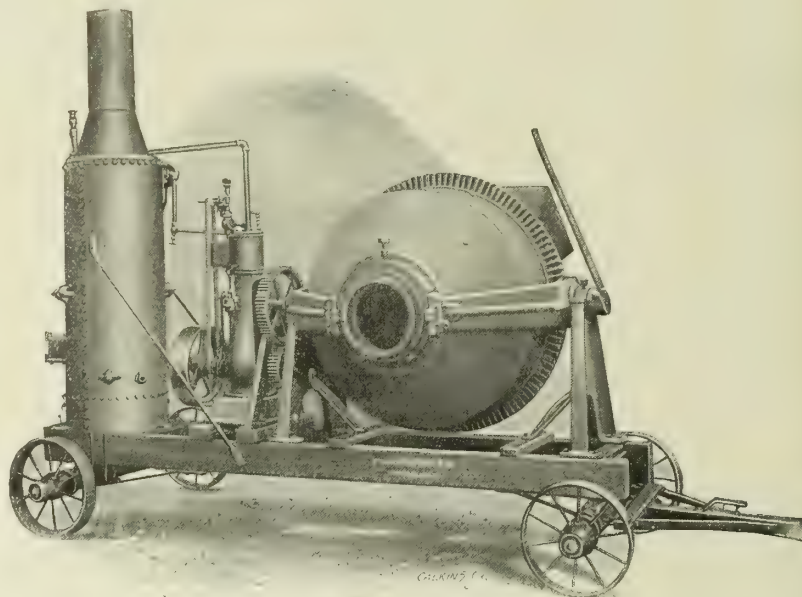
The drum is supported at the ends in a cradle on large ball-bearings of one-inch hardened steel balls running in steel-cap and cone-hardened ball races, interchangeable. This and other mechanical features make it possible to run this machine on but little over half the power required for other batch mixers of same capacity.

The blades in this mixer are of a serpentine form and are attached to the drum with brackets which leave ample space between blade and drum to prevent material collecting in corners. It is easily cleaned.

The peculiar form of the buckets keeps the concrete in continuous motion, ensuring a perfect mix in the least possible time. Many users report a batch per minute all day long in practical use. If it is desired to turn the drum over to deliver the product on the opposite side, this can be done in five minutes, a feature contained in no other batch mixer.

POWER.

The "Marsh-Dexter" Mixer is furnished complete on truck with and without power; with steam engine and boiler, gasoline engine or electric motor connected to mixer with gears or sprocket chain, at customer's option. A twelve-year-old boy can handle the outfit with ease. It requires less power than any other tilting mixer on the market.



"MARSH-DEXTER" MIXER

Also equipped with gasoline engine, electric motor or pulley for belt and with special automatic charging device

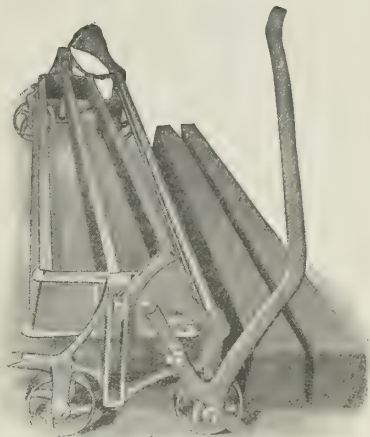
OUR
EQUIPMENT
PLANTS.

We were pioneers in the introduction of machine-mixed concrete and our experience in this line is unequaled by that of any other concern. Connected with us are engineers of special training in concrete subjects who have designed the " Marsh " line of appliances.

We furnish designs, estimates and working plans of complete plants for mixing and handling concrete; also, for stone crushers and other contractors' equipment. Write for special catalogue.

" MARSH-DEXTER " TILTING MIXER

	No. 0 ¼ yd.	No. 1 ½ yd.	No. 2. ¾ yd.
Standard charge, cubic feet {	cement	1	2
	sand	3	5
	stone	6	12
Total unmixed material	10	18	25
Mixed concrete per batch	8	12	16
Cubic yards of mixed concrete per hour	10	12	15
Horse-power required	4	5	7
Revolutions of drum per minute	18	16	16
Weight on skids with pulley	1400	1700	2500
Weight on trucks with pulley	1900	2150	3000
Weight on trucks with gasoline engine	2400	3000	4000
Weight on trucks with engine and boiler	3200	4000	5000



DUPLEX
POST
MACHINE.

The only practical Concrete Post Machine on the market. Posts can be made on the spot, where required, cured and set without transportation. Two men can make 300 posts per day at a cost of about one half that of the best cedar posts. No pallets are required with this machine. A boy can operate it. Any kind of reinforcing can be used and any kind of fasteners for holding the wire.

DUPLEX POST MACHINE
Shows machine lifted forward after making two posts ready to drop and make two more

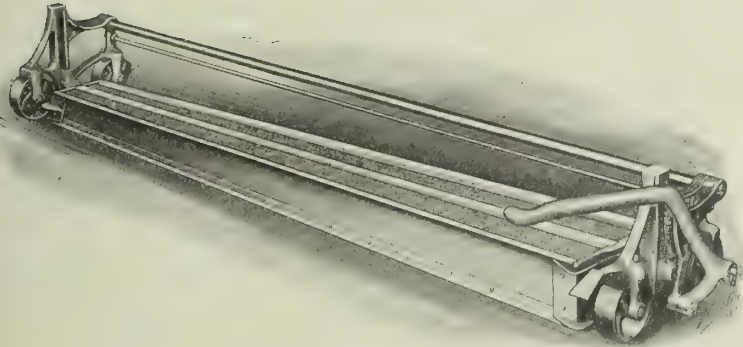
SIZE AND
PRICE.

The standard size machine makes posts 8 feet long, or shorter, 6 inches x 6 inches at the bottom and 4 inches x 4 inches at the top. Price complete \$60.00.

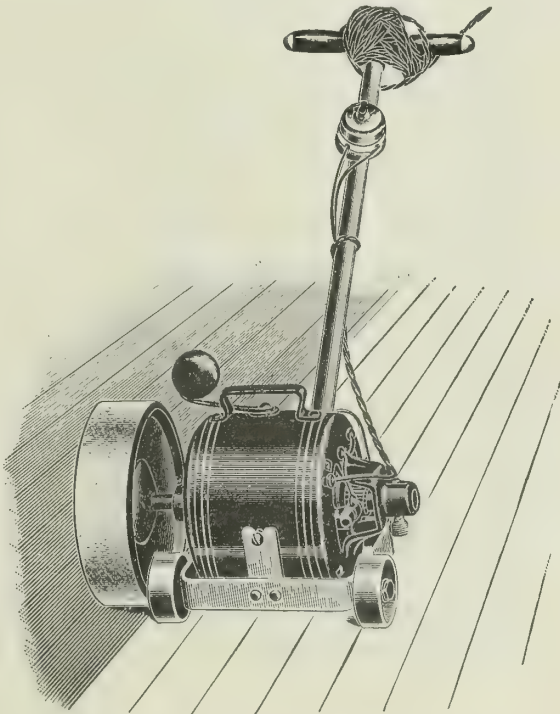
" HENDER-
SON " ELECTRIC
FLOOR
SANDER.

This is a tool for finishing off hardwood floors by machine-sandpapering them, a process in every way better, quicker and cheaper than hand work. The tool is light and strong; composed of a small motor and a direct-connected sandpaper drum mounted on trunnions on a two-wheel truck. The great speed of the drum enables the operator to move along briskly, running the roller over each joint of the flooring, evening up and smoothing it ready for the varnishing.

By tipping the handle the drum can be run on edge to pick out particular spots. Current can be supplied from any 110-volt lighting circuit. But we also make other voltage machines. This tool is guaranteed to be satisfactory in every respect. List price is \$150.00.



DUPLEX POST MACHINE
Shows machine with concrete tamped in ready to raise the mould off



" HENDERSON " ELECTRIC FLOOR SANDER

RAYMOND CONCRETE PILE COMPANY

140 Cedar Street
NEW YORK, N. Y.

135 Adams Street
CHICAGO, ILL.

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PITTSBURGH, PA., Union Bank Building
BALTIMORE, MD., Pratt and Concord Streets

PHILADELPHIA, PA., Land Title Building
ST. LOUIS, MO., 620 Chestnut Street

PRODUCTS
AND
SERVICES.

CONCRETE PILES made and placed in accordance with the Raymond System; CONCRETE PILES to meet any condition, and CONCRETE SHEET PILING.

We are also prepared to co-operate with Architects and Engineers in the design of DOCKS, BULKHEADS, PIERS, RETAINING WALLS, and other FOUNDATION WORK, and to execute the work.

RAYMOND
CONCRETE
PILES.

Raymond Concrete Piles are made by driving a tapering sheet-steel shell to refusal by means of a collapsible steel core, withdrawing the core and thereupon filling the shell with concrete.

The shell consists of circular sections that are formed by uniting the vertical edges of two pieces of 18 to 20 gauge sheet steel, bent into shape by a cornice brake. The diameters of the sections range in a decreasing ratio from the uppermost section to the point or boot. The latter is stamped from a single piece of 16-gauge stock.

The core is composed of three steel segments forming a tapering cylinder or cone. A driving cap is attached to the head of the core.

The shell is assembled by slipping the various sections composing it over the core, the segments of which are expanded at this stage. Placing the boot in position over the point of the core completes the shell. The sections overlap sufficiently to exclude any soil, water or other foreign substances that might gain admission into the shell while it is being placed.

After the core is encased in the shell, it is driven to refusal. The core is thereupon withdrawn by bringing the segments together, or "collapsing the core," as the operation is termed. The shell, which is of sufficient strength to retain its shape after the withdrawal of the core, remains permanently in the ground and forms a mould for the concrete.

Before being filled the shell is subjected to careful inspection. After this, thoroughly mixed concrete, composed of one part good Portland cement, three parts sharp sand, and five parts crushed stone or gravel of suitable size, is poured in, being carefully tamped until the shell is filled.

THE SHELL.

The distinctive feature of the Raymond System is the use of the steel shell as a form for the concrete. The shell protects the concrete from the back-pressure set up by the material penetrated, and also against the increased pressure caused by the driving of adjacent piles. It likewise prevents the admixture of any foreign matter with the concrete.

ADVANTAGES.

The advantages of Raymond Concrete Piles are: (1) A shell or form for every pile. This form remains permanently in the ground and assures perfection in each pile. (2) The tapering shape, developing the greatest bearing value. (3) Ease and simplicity of reinforcement, when necessary. (4) More rapidly placed than concrete piles of any other type. (5) Being placed without driving on the concrete, there is no possibility of fracture. (6) The driving of the shell to a determined resistance gives assurance of a definite bearing value.

ADAPTABILITY. The Raymond Concrete Pile is adapted for use in all work where it is necessary to use piling.

LETTERS PATENT. The Raymond Systems of Concrete Piling are fully protected by Letters Patent of the United States and all principal foreign countries.

SHAPE. Our experience bears out our contention that concrete piles of tapering shape are the best and most economical. In a straight pile the load is largely concentrated at the point, while in a tapering pile the load is distributed throughout its entire length. Thus where a tapering pile passes through a hard stratum at the surface into a softer underlying material, the bearing value of the hard upper stratum is fully developed due to the wedge-like action of the pile, while with a straight or nearly straight pile the bearing value of a hard surface stratum would be almost entirely lost.

CARRYING CAPACITIES. It is manifestly impossible to furnish a table that would show accurately the carrying capacity of Raymond piles due to the wide divergence in soil conditions in different localities.

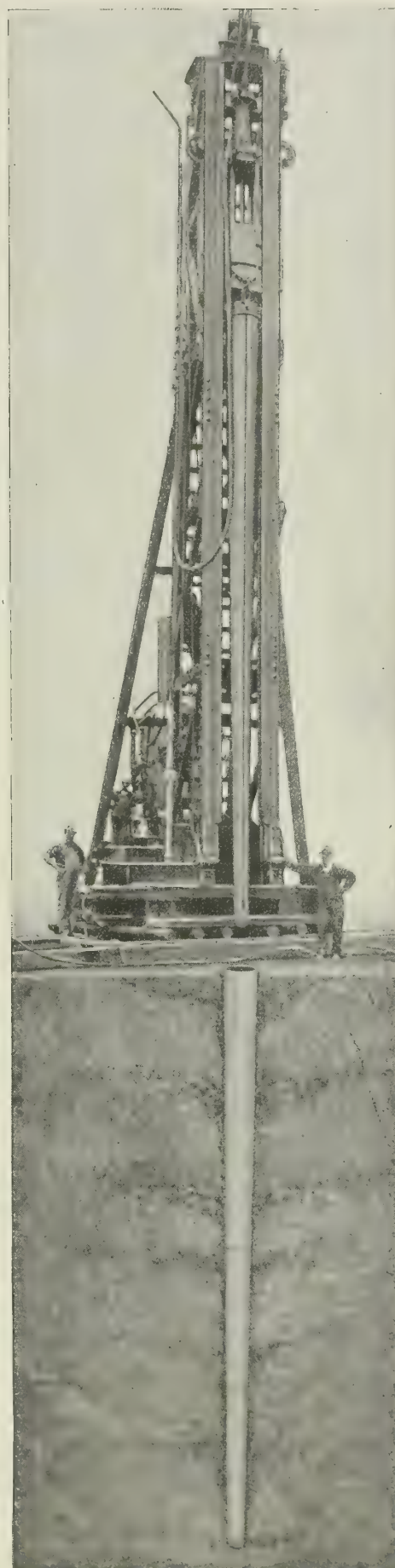
Tests which we have made and also those made by engineers and architects on our work indicate that from two to three times as much can be carried by a Raymond Concrete Pile as by an ordinary wood pile of the same length under the same conditions.

STANDARD SIZES. The standard sizes of Raymond Concrete Piles are shown in the following table:

20 feet long, 20 inches at the top and 6 inches at the point
25 feet long, 20 inches at the top and 8 inches at the point
30 feet long, 20 inches at the top and 8 inches at the point
35 feet long, 18 inches at the top and 8 inches at the point
40 feet long, 18 inches at the top and 8 inches at the point

Where rock or hard-pan is overlaid by a stratum of soft or unstable material and a pile must be considered as a column, it is, of course, desirable that the point be larger than where the pile depends upon frictional resistance to carry the load. For such cases we have designed cores that are more nearly straight. We are, therefore, prepared to accomplish the best possible results under any condition that may be encountered.

REINFORCING RAYMOND PILES. Reinforcing concrete piles is sometimes desirable. This is always a simple matter with Raymond Piles. After the shell is put in place, the insertion of the reinforcing material is done prior to the placing of the concrete. This is an extremely simple operation, requires no particular skill, and is done in plain sight.



METHOD OF MAKING AND PLACING RAYMOND CONCRETE PILES

COST.

It is not possible to make standard or fixed prices for Raymond Concrete Piles, as their cost varies according to local conditions. As they are made where they are used, such items as the cost of transporting the machinery to the site, the availability of the materials going into the piles and the general labor conditions of the locality are consequently influencing factors.

ECONOMY.

The initial cost of Raymond Piles is greater per lineal foot than that of wooden piles, but their use effects a great saving in excavating, sheet piling, shoring, and pumping, which are necessary where wood piling is used. Raymond Piles, due to their size and taper, possess practically the same carrying capacity as three ordinary wood piles of the same length. Consequently, to sustain a given load fewer Raymond Piles are necessary.

In the work done at the United States Military Academy at Annapolis, a saving of over \$27,000 was effected in the cost of foundations through the use of Raymond Piles. See following table:

WOOD PILES		
2,193 piles	at \$9.50	\$20,835.50
4,532 cu. yd. excavation.....	at .40	1,816.80
3,250 cu. yd. concrete.....	at 8.00	26,000.00
5,222 lb. I-beams	at .04	208.88
Shoring and pumping		4,000.00
Total cost		\$52,861.18

CONCRETE PILES		
855 piles	at \$20.00	\$17,100.00
1,038 cu. yd. excavation.....	at .40	415.00
986 cu. yd. concrete.....	at 8.00	7,888.00
Shoring and pumping		
Total cost		\$25,403.00
Difference in cost		\$27,458.18

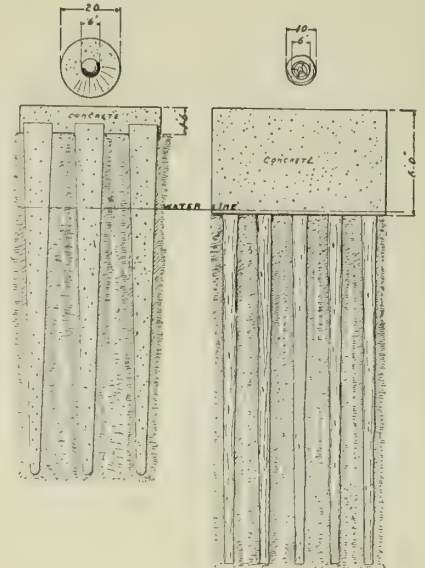
SAVING IN TIME.

Raymond Concrete Piles are placed more rapidly than any other type of concrete piles. Compared with wood piles the saving in time is considerable on account of the smaller number of piles required. In addition, the time required for excavating, pumping, and shoring, as well as the placing of additional masonry, is entirely eliminated.

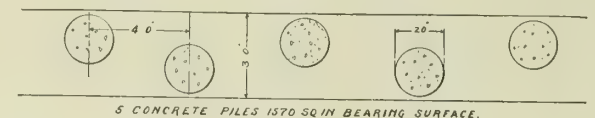
SPECIFICATIONS.

Architects and engineers wishing to be certain of securing Raymond Concrete Piles should specify them as such. However, if for any reason it is not desirable to mention the name specifically, the following should be incorporated in the specifications:

- (1) The use of a shell or form that remains in the ground, that is of sufficient strength and rigidity to withstand the back-pressure of the soil after the driving form has been withdrawn, and that can be easily inspected to ascertain its condition before the concrete is placed in it.
- (2) There shall be no driving on the concrete.
- (3) Proportions for concrete: One part good Portland cement, three parts sharp sand, and five parts crushed stone or gravel that will pass a 1½-inch ring.
- (4) Concrete to be thoroughly mixed and carefully tamped in the shells as they are filled.



RAYMOND CONCRETE PILES
CONTRASTED WITH WOOD



RELATIVE BEARING SURFACE OF RAYMOND
CONCRETE PILES AND WOOD PILES

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We are continually increasing our facilities for handling work throughout the United States.

As our equipment is widely distributed, we are prepared to promptly execute work at any point.

REFERENCES.

- James Knox Taylor, Supervising Architect, United States Public Buildings, Washington, D. C.
 S. S. Beman, Architect, Chicago, Ill.
 Raymond F. Almirall, Architect, New York, N. Y.
 Frederick W. Perkins, Architect, Chicago, Ill.
 Ernest Flagg, Architect, New York, N. Y.
 A. C. Cunningham, Civil Engineer, United States Navy, Washington, D. C.
 Richards, McCarty & Bulford, Architects, Columbus, Ohio
 Lawrence Ewald, Architect, St. Louis, Mo.
 Alfred Brooks Fry, Superintendent, United States Public Buildings, Washington, D. C.
 E. J. Yard, Chief Engineer, Denver & Rio Grande Railway, Denver, Colo.
 Esenwein & Johnston, Architects, Buffalo, N. Y.
 J. R. Savage, Chief Engineer, Long Island Railroad, Long Island City, L. I., N. Y.
 Jenney, Mundie & Jensen, Architects, Chicago, Ill.
 W. H. Lester, Engineer, Gulf Bag Co., New Orleans, La.
 MacKenzie & Goldstein, Architects, New Orleans, La.
 F. A. Burdett, Engineer, New York, N. Y.
 Babb, Cook & Willard, Architects, New York, N. Y.
 Charles S. Churchill, Chief Engineer, N. & W. Railway, Roanoke, Va.
 William F. Twining, Chief Engineer, Philadelphia Rapid Transit Co., Philadelphia, Pa.
 Palmer & Hornbostel, Architects, New York, N. Y., and Pittsburgh, Pa.
 Sanford & Brooks Co., Baltimore, Md.
 H. P. Padley, Engineer, C., St. P., M. & O. Railway, St. Paul, Minn.
 Samuel Hannaford & Sons, Architects, Cincinnati, Ohio
 Mauran, Russell & Garden, Architects, St. Louis, Mo.
 Cincinnati Gas & Electric Co., Cincinnati, Ohio
 South Buffalo Railway Co., Buffalo, N. Y.
 A. S. Kibbe, Engineer, American Railways Co., Philadelphia, Pa.
 Isaac A. Hopper & Son, New York, N. Y.
 Ford, Bacon & Davis, Engineers, New York, N. Y.
 Robert Willison, City Architect, Denver, Colo.
 Pond & Pond, Architects, Chicago, Ill.
 City Water Department, St. Louis, Mo.
 Northeastern Construction Co., New York, N. Y.
 F. S. Howell, Civil Engineer, United States Immigrant Service, Ellis Island, N. Y.
 B. Hustace Simonson, Architect, New York, N. Y.
 H. M. North, Engineer of Construction, L. S. & M. S. Railroad, Cleveland, Ohio
 West Jersey & Seashore Railroad (Pennsylvania System), Westville, N. J.
 Dwight H. Perkins, Architect, Chicago, Ill.
 Radcliffe & Kelley, Architects, New York, N. Y.
 Noel Construction Co., Baltimore, Md.
 New York & Richmond Gas Co., Staten Island, N. Y.
 Nicola Building Co., Pittsburgh, Pa.
 Charles W. Leavitt, Architect, New York, N. Y.
 Charles Montgomery Anderson, Architect, Baltimore, Md.
 Maynicke & Franke, Architects, New York, N. Y.
 Haskell & Barnes, Architects, Baltimore, Md.
 William Ferguson & Sons, Baltimore, Md.
 Oscar F. Lackey, Harbor Board Engineer, Baltimore, Md.
 C. M. Bartberger & Son, Architects, Pittsburgh, Pa.
 John T. Rowland, Architect, Jersey City, N. J.
 A. M. Felgate, Bridge Engineer, Cleveland, Ohio
 Bedford Stone & Construction Co., Indianapolis, Ind.
 Cramp & Co., Philadelphia, Pa.
 Ballinger & Perrot, Architects and Engineers, Philadelphia, Pa.
 G. A. Kimball, Chief Engineer, Boston Elevated Railway, Boston, Mass.
 Barnett, Haynes & Barnett, Architects, St. Louis, Mo.
 John Latenser, Architect, Omaha, Neb.
 William Garstang, Superintendent of Motive Power, Big Four Railway, Indianapolis, Ind.
 Philadelphia Warehousing & Cold Storage Co., Philadelphia, Pa.
 Joseph Johnson's Sons, Staten Island, N. Y.
 International Harvester Co., W. D. Price, Engineer, Chicago, Ill.
 Marietta Chair Co., Marietta, Ohio
 C. J. Rieger, Architect, Pittsburgh, Pa.
 William E. Walker, Architect, Chicago, Ill.
 Stephenson & Wheeler, Architects, New York, N. Y.
 S. B. Eisendrath, Architect, New York, N. Y.
 C. N. Monsarrat, Bridge Engineer, C. P. Railway, Montreal, Can.
 J. E. Schwitzer, Assistant Chief Engineer, Western Lines, C. P. Railway, Winnipeg, Can.
 F. W. Cowie, Chief Engineer, Harbor Commissioners, Montreal, Can.

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Our practical experience covers foundations constructed by Pneumatic Caissons, Open Caissons, Sheet-piling (either Wood or Steel), "Simplex" Concrete Piles, Hollow Steel Pipe filled with Concrete, Wooden Piles, Cofferdams, and various other approved methods. We undertake contracts for Foundations of all kinds and for all purposes.

In addition to FOUNDATIONS our scope embraces contracts for BRIDGE PIERS, MINING SHAFTS, TUNNELS, WATER-POWER CONSTRUCTION, POWER PLANTS, QUAYS, SEA WALLS, etc.

REFERENCES.

Foundations for buildings, Pneumatic Caisson Construction:

BUILDING	LOCATION	ARCHITECTS AND ENGINEERS	FOR WHOM
Municipal Fidelity and Casualty Bryant Stock Quotation Farmers Loan and Trust German-American Insurance Singer U. S. Realty Trust Co. of America Trinity Seligman	Brooklyn Bridge Terminal Liberty and Temple Streets Liberty and Nassau Streets 26-28 Beaver Street 20-24 Exchange Place, New York, N. Y. Maiden Lane and Liberty St., New York, N. Y. 155 Broadway, New York, N. Y. 115 Broadway, New York, N. Y. 37-41 Wall Street, New York, N. Y. 111 Broadway, New York, N. Y. William, South William and Stone Streets, New York, N. Y. Maiden Lane and William St., New York, N. Y. Rector and Greenwich Sts., New York, N. Y. New St. and Exchange Place, New York, N. Y.	McKim, Mead & White Eidlitz & McKenzie Henry Ives Cobb Clinton & Russell Clinton & Russell Hill & Stout Purdy & Henderson, Eng. Ernest Flagg F. H. Kimball Purdy & Henderson, Eng. F. H. Kimball & J. C. Levi, Weiskopf & Stern, Eng. Howells & Stokes Clinton & Russell Howells & Stokes	City of New York Fidelity and Casualty Co. C. L. Gray Construction Co. Thompson-Starrett Co. Farmers Loan & Trust Co. Whitney-Steen Co. Singer Manufacturing Co. George A. Fuller Co. George A. Fuller Co. George A. Fuller Co.
Royal Queen Insurance United States Express Commercial Cable Annex	14th Street and Sixth Avenue, New York, N. Y. 42 Broadway, New York, N. Y. 43 Exchange Place, New York, N. Y.	Cady, Berg & See Henry Ives Cobb Clinton & Russell, Arch., Purdy & Henderson, Eng.	George A. Fuller Co. Charles T. Wills Thompson-Starrett Co. Commercial Cable Telegraph Co.
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Whitehall Empire Washington Life Insurance Broad Exchange Johnstone Standard Oil American Surety North-Western Station Oliver First National Bank John G. Myers National Bank of Commerce Power-House			
SIMPLEX CONCRETE PILES			
Tuberculosis Infirmary Refuse Destructor Johnson Factory Blanchard Factory Ashcroft Mfg. Co. Alpaca Factory	Blackwell's Island, New York, N. Y. New Brighton, S. I. Spuytten Duyvil, N. Y. Long Island City, N. Y. Bridgeport, Conn. Holyoke, Mass.	R. F. Almirall J. T. Fetherston, Engineer Wyatt W. Taylor, Engineer Paul C. Hunter G. K. Hooper, Engineer S. M. Green, Engineer	Bottsford-Dickinson Co. McHarg-Barton Co. Isaac G. Johnson Co. George A. Fuller Co. J. F. Gallivan Building Co. Farr Alpaca Co.
VARIOUS APPROVED METHODS			
Cathedral of St. John the Divine National Park Bank Barclay Royal Baking Powder Woodhull St. Urban Apartment Ethical Culture	Amsterdam Avenue and Cathedral Parkway, New York, N. Y. 214 Broadway, New York, N. Y. Duane St. and Broadway, New York, N. Y. Fulton and William Sts., New York, N. Y. 35 West 31st Street, New York, N. Y. 89th St. and Central Park West, New York, N.Y. 64th Street and Central Park West	Heins & La Farge Donn Barber Stockton B. Colt Bruce Price Augustus N. Allen Robert T. Lyons R. D. Kohn	Cathedral Corporation Marc Eidlitz & Son Marc Eidlitz & Son Remington Construction Co. Thompson-Starrett Co. Peter Banner Marc Eidlitz & Son

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"CARBO" BLACK ENAMEL METAL PAINT for Roofs, Structural Iron, Waterproofing, Boiler Fronts, Smoke-Stacks, Bridges, Furnace Cupolas, Water and Gas Tanks.

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AND
ADAPTABILITY.

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"Carbo" Black Enamel Metal Paint is ever ready for use, either for hand application or spraying by machines; it works easily and freely under the brush.

"Carbo" is unsurpassed for water and dampproofing on structural concrete work.



TRADE-MARK

APPLICATION.

The following is an estimate on the quantity of paint needed for 800 square feet. One coat of "Carbo" is equal to two coats of graphite:

NATURE OF SURFACE	ONE COAT	TWO COATS
Old painted wood	2 3/4 gallons	4 1/2 gallons
Rusty metal	1 1/2 gallons	2 3/4 gallons
New metal surface	1 1/4 gallons	2 1/4 gallons

PACKAGE.

"Carbo" is put up as follows:

Barrels 50 gallons	Cans 10 gallons
Half Barrels 25 gallons	Cans 5 gallons
	Cans 1 gallon

PRICE.

Prices, estimates, and other information gladly furnished on request.

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TION.

Specify "Carbo" Black Enamel Paint, to be furnished by THE CHATFIELD & WOODS Co., Cincinnati, Ohio.

REFERENCES.

The Champion Coated Paper Co., Hamilton, Ohio, the largest paper mill in the world, has given "Carbo" a fair test, under most trying conditions caused by dampness, steam, and acid fumes, and finds "Carbo" entirely satisfactory, as do numerous other paper mills. Another immense plant, The Columbia Creosoting Co., Shirley, Ind., constructed of steel and iron, has given "Carbo" preference over higher-priced graphite paints.

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"Anti-Hydro" Cement Waterproofing

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LABORATORY AND WORKS
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CONSULTING and CONTRACTING ENGINEERS and manufacturers of "ANTI-HYDRO" CEMENT WATERPROOFING.

"ANTI-HYDRO."

"Anti-Hydro" is a solution which, when added to the water used in mixing Portland cement in the usual way, has the effect of rendering the cement in all kinds of masonry impervious to water, moisture, frost, gas, odors, etc. It acts on the cement while it sets, increases the natural density of that material, shrinks it, and in so doing draws together all the other constituents of a concrete, mortar, or stucco, intensifying the congestion so that their hygrometric natures are changed and capillary action and percolation prevented.

"ANTI-HYDRO"
TRADE-MARK

ADVANTAGES.

"Anti-Hydro" makes the texture of cement mixtures more uniform and composite, and in a large measure overcomes their non-resilience to strains and shocks; it increases their tensile strength fully 25 per cent and does not discolor them or retard their setting.

Cement coatings in which "Anti-Hydro" has been used are fireproof and non-conductors; their bond to brick, stone, concrete, and cement finished surfaces is perfect, adhering permanently against any head of water. They last indefinitely, continuing to get stronger as they get older; their durability and impermeability are positive and permanent. There are no decomposable ingredients used in their composition.

ECONOMY AND ADAPTABILITY.

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There is no extra labor or cost attached beyond the mere adding of the "Anti-Hydro" to the water used in the mixing. "A-H" does the work itself; it reduces the cost of waterproofing under any conditions by at least 50 per cent over old methods.

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Floors and walls treated with "Anti-Hydro" are absolutely dustless.

We are equipped to execute contracts supplying the Waterproofing known as "Anti-Hydro," the labor, and all materials for doing large Structural Waterproofing in any part of the country.

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Architects, contractors, and any one interested, are invited to write us for further details regarding "Anti-Hydro" and the work it has done.

REFERENCES.

The following is a partial list of references:

- | | | |
|--|---|--|
| Roebing Construction Co., New York, N. Y. | Augustus M. Ivans, New York, N. Y. | Wilson & Baillie Mfg. Co., Brooklyn, N. Y. |
| Thompson-Starrett Co., New York, N. Y. | A. R. Whitney Jr. & Co., New York, N. Y. | Standard Optical Co., Geneva, N. Y. |
| Degnon Contracting Co., New York, N. Y. | Automobile Club of America, New York, N. Y. | New Denechaud Hotel, New Orleans, La. |
| Geo. A. Fuller Co., New York, N. Y. | Scribner Press, New York, N. Y. | Sanguinet & Staats, Ft. Worth, Tex. |
| J. A. Zimmerman, New York, N. Y. | Abbott Gamble Co., New York, N. Y. | New Battle House, Mobile, Ala. |
| Hedden Construction Co., New York, N. Y. | Thos. B. Leahy Building Co., New York, N. Y. | Noel Construction Co., Baltimore, Md. |
| Public Baths, New York, N. Y. | Marc Eidlitz & Son, New York, N. Y. | McCay Engineering Co., Baltimore, Md. |
| Sixth Avenue Subway, New York, N. Y. | J. M. Howard, New York, N. Y. | Mooney & Monahan, Mobile, Ala. |
| Ernest Flagg, New York, N. Y. | J. G. White Co., Inc., New York, N. Y. | Fort Morgan, Mobile, Ala. |
| Milliken Brothers, Inc., New York, N. Y. | Nonpareil Cork Works, New York, N. Y. | Naval Academy, Annapolis, Md. |
| Cranford & McNamee, Brooklyn, N. Y. | John T. Brady, New York, N. Y. | Murphy Storage & Ice Co., Detroit, Mich. |
| Waldorf-Astoria Hotel, New York, N. Y. | Morgan Laundry Co., New York, N. Y. | Iroquois Construction Co., Buffalo, N. Y. |
| Starr Engineering Company, New York, N. Y. | Thain & Thain, New York, N. Y. | Atlanta Water & Electric Power Company, Atlanta, Ga. |
| Greenwood Cemetery, Brooklyn, N. Y. | R. D. Mershon, New York, N. Y. | H. Wales Lines Co., Meriden, Conn. |
| Steinway Tunnel | Kings County Refrigerating Co., Brooklyn, N. Y. | Fred T. Ley Building Co., Springfield, Mass. |
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Experience has proved that for cleaning the exterior stone of buildings the sand blast is the most economical and expeditious process known.

By our process, granite, limestone, terra cotta, brick, stucco work, etc., are returned to their original condition.

Old paint and rust are thoroughly removed from ironwork by means of the sand blast, giving the advantage of an absolutely clean surface for repainting.

We clean the most delicate traceries without injury.

We are specially prepared to handle such contracts as cleaning of vaults, mausoleums, tombstones, and all classes of cemetery work.

Our process of Sand-Blast Cleaning is protected by domestic and foreign patents.

The AMERICAN DIAMOND BLAST COMPANY'S methods make old buildings look like new.

ESTIMATES.

We will cheerfully submit estimates and furnish information upon application. We undertake contracts in any part of the United States and Canada.

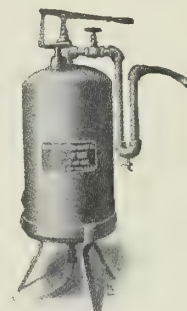
REFERENCES.

We append a partial list of buildings cleaned by the AMERICAN DIAMOND BLAST COMPANY'S method:

Singer Building, New York, N. Y.
New York Customs House
County Court House, New York, N. Y.
College of City of New York
City Hall, New York, N. Y.
Goelet Building, New York, N. Y.
Tribune Building, New York, N. Y.
Banking House of J. P. Morgan & Co.,
New York, N. Y.
Bank of New York
Williamsburgh Savings Bank, Brook-
lyn, N. Y.
Brooklyn Eagle
Manhattan Club, New York, N. Y.
Dauphin County Court House, Har-
risburg, Pa.
First National Bank Building, Bay
City, Mich.
Buffalo Evening News

Calumet Construction Company, New
York, N. Y.
Turner Construction Company, New
York, N. Y.
Tidewater Construction Company,
New York, N. Y.
Paterson Library, Paterson, N. J.
Commonwealth Trust Company, Har-
risburg, Pa.
New York Edison Company
Excelsior Terra Cotta Company, New
York, N. Y.
Albemarle Hotel, New York, N. Y.
New York & Pennsylvania Telephone
& Telegraph Co., Jamestown, N. Y.
S. Niewenhaus, New York, N. Y.
Evening Post Building, New York,
N. Y.
Hoboken City Hall, N. J.

Brooklyn Rapid Transit Company,
N. Y.
John Daniell Sons & Sons, New York,
N. Y.
Mercantile National Bank, New York,
N. Y.
Baldwin & Pennington, Baltimore, Md.
City Hall, Bridgeport, Conn.
Broadway Savings Bank, New York,
N. Y.
Hoffman House, New York, N. Y.
Federal Post Office Building Rochester,
N. Y.
American Concrete Steel Co., Newark,
N. J.
Indiana Court House, Indiana, Pa.
Chas. T. Wills, Inc., 156 Fifth Ave.,
New York, N. Y.
Greenwood Cemetery, Brooklyn, N. Y.



PORTABLE SAND-
BLAST MACHINE
No. 1. Sand Capacity,
250 pounds
No. 2. Sand Capacity,
650 pounds
No. 3. Sand Capacity,
2000 pounds

THE ANTAKWA COMPANY

MANUFACTURERS OF

Damp-Resisting Paints

403 Chamber of Commerce

CHICAGO, ILL.

LONG DISTANCE TELEPHONE, MAIN 636

PRODUCTS
AND
SERVICES.

"ANTAKWA" DAMP-RESISTING PAINTS: "ANTAKWA PLASTER KEY," "ANTAKWA MEDIUM," "ANTAKWA HEAVY," "ANTAKWA COLORLESS." Also, "ANTAKWA BLACK" PAINT for Structural Steel.

Where desired, we will contract for the application of our materials.



TRADE-MARK
(Anti-Aqua)

"ANTAKWA
PLASTER
KEY."

"Antakwa Plaster Key" applied to the inner walls of masonry dispenses with furring and lathing. Being plastic it expands and contracts in unison with the surface to which it is applied, and permits scratch coat of plaster to absorb sufficiently so as to form a perfect permanent bond between wall and plaster.

VERMIN-
PROOF.
PREVENTS
DISCOLORA-
TION.
INSULATION.

There being no space between wall and plaster, vermin are eliminated.

Being damp-proof, "Antakwa Plaster Key" prevents discoloration of plaster.

"Antakwa Plaster Key" used on interior of brick walls seals wall air-tight, transforming it from simply a wind-stop into a perfect heat and cold insulating barrier. The millions of air-cells in the brick permit cutting down very materially the radiation necessary for heating the building. The saving in the first cost of heating much more than pays for the applying of "Antakwa Plaster Key."

SAVING IN
SPACE.

"Antakwa Plaster Key" eliminates furring and lathing, resulting in a saving in space.

FIREPROOF
CONSTRUC-
TION.

Where the object is to secure a fireproof construction, "Antakwa Plaster Key" dispenses with metal lath on walls and ceilings, at a saving of about 50 per cent.

SPECIFICA-
TION.

For plastering direct to "Antakwa Plaster Key"—Surface to be clean and dry, and masonry to be pointed up to a reasonably smooth condition. Paint to be applied with a stiff brush, care being taken that no minute pinholes are left uncovered. After application of good continuous coat, a second or retouch coat to be given to bring surface to a uniform blackness. Plaster can be applied after 24 hours.

The following is a list of some of the architects who have used and are now using "Antakwa Plaster Key."

A. G. Brown
C. W. Rapp
C. F. Jobson
F. M. Barton
Huehl & Schmid
Tallmadge & Watson
George W. Maher

H. J. Gaul
A. W. Buckley
Patton & Miller
B. J. Hotton
J. H. Huber
Louis Guenzel
Wetherell & Gage

"ANTAKWA
MEDIUM."

"Antakwa Medium" is for the prevention of discoloration on marble, limestone, etc. Applied cold with a brush in the same manner as paint to unexposed parts of stone to within one inch of the exposed face, it prevents discolorations due to brick backing and chemical action due to the dampness in the mortar or cement in which stone is set. "Antakwa Medium" is more economical than non-staining cements.

SPECIFICA-
TION.

For prevention of discolorations on stone—Stone to be in a clean, dry condition. "Antakwa Medium" to be applied to all unexposed parts of stone to within one inch of face. Care to be exercised that no minute pinholes are left uncovered. After setting of stone and before backing is carried up, entire inner surface, including joints, to be thoroughly covered with "Antakwa Medium."

"ANTAKWA
HEAVY."

"Antakwa Heavy" is practically the same as "Antakwa Plaster Key" and "Medium," except as it is much heavier in body it is mopped on cold. It can be applied in conjunction with felt or burlap and is used for the prevention of the absorption of moisture from the ground soil.

Being possessed of great elasticity there is no danger of fracture from the settling of foundations.

SPECIFICA-
TION.

For Waterproofing Floors, Tops of Footings and Outside of Retaining Walls—Under bed of concrete, on floor, to be in a smooth, dry condition. On top of this to be applied two coats of "Antakwa Heavy," to cover not more than forty-five feet to the gallon, to be applied in such manner as not to leave any minute holes. After this application, put down layer of waterproof felt, to be pressed down so as to adhere to the "Antakwa Heavy." Care to be taken to lap six inches, and between laps sufficient "Antakwa Heavy" to be applied to cement them together. On top of this layer of felt two coats of "Antakwa Heavy" to be applied in same manner as first coats. This waterproof sheet to be carried across footings in same manner, only making it double, and on outside of footings leave lap of ten inches to afford continuous connection with waterproofing on the outside of retaining walls and through the floor.

For Waterproofing Retaining Walls—On outside of retaining walls to be applied two coats of "Antakwa Heavy," not to cover more than forty-five feet to the gallon, one coat, then a layer of waterproof felt, tacking same up if necessary, and lap ten inches with sufficient "Antakwa Heavy" to cement same together, and then apply two coats of "Antakwa Heavy" to it. Sufficient time to elapse between each coat to dry. Where there is a very great water pressure, increase the coating in the same manner.

TESTS.

The following report of tests was made by Robert W. Hunt & Co., Engineers:

CHICAGO, ILL., Sept. 28, 1907.

Gentlemen:

We beg to submit the following report of tests on a sample of your "Antakwa Heavy" received from you, for the purpose of demonstrating the adhesive and absorbent properties:

Absorbent or Waterproofing Tests—A common brick was given two good coats of the "Antakwa Heavy," allowing sufficient time for drying, and, after carefully weighing, was immersed in water for 72 hours. The amount of water absorbed was inappreciable.

A concrete cube was treated in the manner described above, and showed an absorption of but $\frac{4}{10}$ of one per cent in 72 hours. It should be stated that this cube, before being coated, was quite porous.

Adhesive Tests—The "Antakwa Heavy" was applied to different surfaces, such as wood, metals, plastered walls, etc., and in each case showed very good adhesive properties. It was also tested by first applying to a plastered wall, and, after allowing to dry, fresh plaster was applied on top of the "Antakwa Heavy." The plaster adhered perfectly, demonstrating not only the adhesion of it to plaster, but also of plaster to it.

From our examination of this material we would pronounce your "Antakwa Heavy" to be well adapted for waterproofing purposes and for the protection of metals, etc. It has excellent covering qualities, is easily applied, and dries satisfactorily.

Respectfully submitted,

(Signed) ROBERT W. HUNT & Co.

"ANTAKWA
COLORLESS."

"Antakwa Colorless" is composed of materials which are waterproof, air-proof and acid-proof. It is slightly heavier in body than water, and is applied with a brush. The material is first brushed on; it then penetrates the pores, being carried under the surface, doing away with the danger of abrasion, leaving surface in same condition as before treatment. Once carried into the pores it is as indestructible as the surface to which it is applied.

"Antakwa Colorless" is used for the damp-proofing of walls of brick, stone, or cement, preventing the penetration of moisture to plaster; for waterproofing swimming-pools, concrete reservoirs, fountains, etc.; for the treatment of cement or patent floors, preventing the absorption of moisture.

SPECIFICA-
TION.

Surface to be in a clean, dry condition. "Antakwa Colorless" to be applied in liberal quantities to seal the pores to as great a depth as possible, which will vary according to the porosity of the surface.

"ANTAKWA
BLACK,"
METAL
PAINT.

For the protection of structural iron or steel where a superior paint is desired.

"Antakwa Black," Paint, for metal work, is chemically inactive; it stops as well as prevents corrosion and is compounded in such manner as to retain its elasticity indefinitely, forming a rubber-like poreless film that is proof against the ravages of time. Corrosion is the simultaneous action of oxygen and dampness, and providing an air-tight moisture-proof film is the only practicable method of preventing corrosion. For brewery vats, condensers, brine pipes, or any purpose where an insulating paint is required, this paint is unsurpassed. "Antakwa Black" Metal Paint prevents the electrolytic action on steel.

THE AQUABAR COMPANY

Manufacturers of Cement Waterproofer

1228 Locust Street

PHILADELPHIA, PA.

PRODUCT.

"AQUABAR" CEMENT WATERPROOFER.

DESCRIPTION.

"Aquabar," as the name implies, is a bar against water. It is a colorless, thin paste. It is introduced into the concrete or cement mortar by being dissolved in the water before it is added to the dry aggregate. Being in the water, the "Aquabar" is thoroughly and uniformly distributed throughout the concrete.

"Aquabar" slightly retards the rapid setting of the cement but does not decrease its tensile strength. As the cement sets, the "Aquabar" becomes a hard, insoluble crystal. It fills all the pores, forming an absolutely damp and waterproof construction.

The composition of "Aquabar" is such that it will never evaporate or lose its obstructive qualities. It improves with age.

ADVANTAGES.

"Aquabar" renders concrete impermeable in all its parts without interfering with the ordinary construction or laying.

"Aquabar" can be used in waterproofing mass concrete, or in connection with cement mortar in waterproofing masonry of all kinds.

To use "Aquabar" practically no additional labor is required nor are skilled workmen essential. For you simply empty one can of "Aquabar" into each fifty-gallon barrel of water. Stir it with a stick. Use the solution in connection with the dry aggregate instead of the ordinary water. When a mixing machine is used, it is better to have two barrels instead of one. This saves delay by permitting the preparing of the solution in one barrel while using it from the other.

"Aquabar" is not expensive. The cost can be figured at about a dollar per cubic yard of concrete or one and one half cents per square foot of mortar one inch thick. Either method is practicable. But it is cheaper to waterproof a mass of concrete, as that is less than the cost of the necessary two coats of cement plaster.

APPLICATION.

Cement waterproofed with "Aquabar" may be applied as a surface coating or plaster in joints, in mass as a concrete, or a facing for concrete work. Cement slabs one inch thick have stood a water pressure of 60 pounds to the square inch without showing dampness.

"Aquabar" Mortar may be manipulated with as much freedom as water-mixed cement or mortar, permitting even greater deliberation in its application.

UTILITY.

"Aquabar" is used in constructing waterproof walls, floors, roofs, retaining walls, linings for cisterns, reservoirs, vats, cellar floors and walls, granaries, elevator pits, towers, sewers, conduits, subways, aqueducts, harbor work, ornamental work, cement blocks and artificial stone for all purposes.

"Aquabar" Concrete is a proof against pure acids. It can be used in chemical factories where acid-laden waste waters have to be carried away.

TESTS.

The following tests were made and results obtained by Dr. Charles F. McKenna, at his Chemical and Physical Laboratories, in New York:

Hydraulic Tests—The following experiments were made to determine the penetration by water through mortar treated with "Aquabar." Discs ten inches in diameter and one inch thick, made up of sand and cement in two different proportions and tempered in one set of experiments with water containing one twenty-fourth part of "Aquabar." The following are the results: Mixture, 1 cement, 3 sand, without "Aquabar," failed at 30 pounds and 20 pounds; with "Aquabar," failed at 50 pounds and 50 pounds. Mixture, 1 cement, 1 sand, without "Aquabar," failed at 40 pounds and 50 pounds; with "Aquabar," failed at 70 pounds and 80 pounds. (The discs broke at the pressure noted.)

The fracture in the case where pure water was used showed penetration of water through from one half to three fourths of the depth, and in the case of the discs made up of water and "Aquabar" the fracture showed less than a quarter of an inch of penetration of water. These discs had been allowed to harden for 28 days before they were tested.

Absorption Test—Discs allowed to harden 28 days in air:

Mixture	Weight, Dry	Weight after 36 hours in water	Absorption
Cement 1, Ottawa Sand 3, Water	3000 grms.	3155 grms.	155 grms. or 5.1 per cent
Cement 1, Ottawa Sand 1, Water	3239 grms.	3392 grms.	153 grms. or 4.7 per cent
Cement 1, Ottawa Sand 3, "Aquabar" 1, Water 24 parts	2997 grms.	3037 grms.	40 grms. or 1.3 per cent
Cement 1, Ottawa Sand 1, "Aquabar" 1, Water 24 parts	3054 grms.	3085 grms.	31 grms. or 1.0 per cent

The following tests were made on cement treated with "Aquabar," by Richard K. Meade, Chemical Engineer, Nazareth, Pa.:

Waterproofing Properties—Cubes of mortar were made by mixing sand and cement in the proportion of 3 to 1 respectively, using "Aquabar" for gauging the concrete. The cubes were three inches square, and were allowed to harden for two weeks in air. They were then immersed entirely in water for 24 hours, at the end of which they were removed from the water, dried with a towel and weighed. They were found to have absorbed only 1.1 per cent. of their weight of water.

Cubes of concrete made similar to the above, except that no waterproofing compound was used, when subjected to this test gained 9.4 per cent. in weight.

Small vessels of concrete, made from a mixture of one part cement and three parts sand, gauged with "Aquabar," allowed to float on water, are now, at the end of six weeks, still floating, having been continuously upon the surface of the water during this time. These vessels are cylindrical in shape, four inches in diameter and eight inches deep, with walls and bottom one quarter inch thick. They were loaded with lead slugs so that they are immersed in water to within one inch of the top. Their bottoms are dry inside, and the water has never percolated through the concrete to the inside of the vessels.

A vessel similar in shape to the above, but not waterproofed, placed in water, sank in two minutes, no slugs being in it to hasten the sinking.

A plate of the same concrete as that used for the cubes waterproofed with "Aquabar," four inches in diameter and one half inch thick, moulded into the end of a 4-inch pipe, allowed no water to percolate through it when subjected to a head of 50 feet.

A plate of un-waterproofed concrete subjected to this test allowed the water to squirt through in small jets.

Effect on the Strength of Concrete—Five sand briquettes were made up, both with and without "Aquabar," and subjected to the usual tensile-strength tests.

The average proportions used were 1 cement, 3 sand. The average results were as follows: With "Aquabar," 298 at end of 7 days, 400 at end of 28 days; without "Aquabar," 313 at end of 7 days, 421 at end of 28 days.

The differences are so slight that they may be neglected, as a sand mortar showing 298 pounds in seven days and 400 pounds in 28 days is strong enough for the most exacting concrete work.

Effect on Steel—A piece of bright steel plate embedded in concrete, waterproofed with "Aquabar," showed at the end of 28 days, on removal, no signs of pitting or corrosion and had lost nothing in weight. It was bright and free from rust.

Conclusions—The experiments under the heading "Waterproofing Properties" clearly show that "Aquabar" is an efficient waterproofing agency, not only for concrete building blocks, cement bricks, cement roofs, etc., but also for cisterns, stand-pipes, deep reservoirs, cement conduits, etc., when the concrete work must be waterproof under pressure of water.

"Aquabar" does not attack or rust steel, and may be used safely with concrete in which expanded metal, rods, bars, etc., are to be embedded.

Froehling & Robertson, of the Richmond Testing Laboratory, tested "Aquabar" as a waterproofing compound and obtained the following results:

Soundness Tests—Neat cement pats gauged with "Aquabar" and subjected to the standard normal and accelerated tests developed no deterioration in soundness.

Effect on Setting Time—Pats of neat cement gauged with "Aquabar" took about 10 per cent longer to develop initial set than the same cement gauged with water, and a similar slight increase in the setting time was noted in mortar pats composed of one part cement and three parts sand.

Effect on Strength of Mortar—Standard sand briquettes (1 cement, 3 sand) gauged with "Aquabar" and water respectively, gave the following results for tensile strength:

Strength—Average of 6 briquettes: Gauged with "Aquabar," 238 pounds at end of 7 days, 352 pounds at end of 28 days; gauged without "Aquabar," 245 pounds at end of 7 days, 357 pounds at end of 28 days.

Effect on Iron and Steel—Pieces of bright iron and steel embedded in cement mortar gauged with "Aquabar" during a period of six weeks remained absolutely free from dust or corrosion of any kind.

Waterproofing Properties (Absorption Test)—Test pieces of mortar composed of one part cement and three parts sand, one set gauged with "Aquabar" and another with water, were allowed to harden 28 days in air. After being weighed they were placed in water for 36 hours, then removed, wiped dry, and re-weighed. The waterproofed test pieces had absorbed 2.3 per cent of their weight of water, while those without the waterproofing had, on the average, increased in weight 8.8 per cent.

A second set of dry specimens with and without "Aquabar" was immersed for 24 hours in water containing an aniline dye, and on breaking it was found that in the waterproofed set the dye had only penetrated to a depth of about one eighth inch from the surface, while the other set was stained throughout its entire mass.

Percolation Test Under Pressure—Hollow cylindrical vessels with walls three fourths inch thick, made of one to three mortar, with and without "Aquabar," were subjected to a water pressure of 25 pounds per square inch. Under this pressure the water percolated freely through the untreated specimen, while that made with "Aquabar" remained dry on the outer surfaces.

From the foregoing experiments the following facts are clearly demonstrated:

First—The addition of "Aquabar" to the gauging water, in the proportion specified, produces a concrete practically impervious to water even under high pressure.

Second—"Aquabar" does not interfere with the soundness or setting qualities of the concrete, and its effect on the strength is so slight as to be negligible.

Third—"Aquabar" does not promote the corrosion of iron and steel, but, on the contrary, it affords additional protection to the reinforcement embedded in the concrete, by reason of its waterproofing properties.

From the results of these tests it is apparent that "Aquabar" is an excellent and easily applied waterproofing material for use in the construction of concrete reservoirs, tanks, stand-pipes, conduits, moisture-proof cellars and basements, etc., and is particularly well adapted to the requirements of the cement building-block and brick industry.

Estimates will be given on the amount of "Aquabar" needed for any particular piece of work and full information as to cost, etc.

The following are a few of the notable buildings which have been waterproofed with "Aquabar":

Young's Pier (cost \$1,000,000), Atlantic City, N. J., Captain John Young, owner
Athletic Base Ball Park (cost \$1,000,000), Philadelphia, Pa., William Steele & Sons Co., builders
Soldiers and Sailors Monument (cost \$500,000), Pittsburg, Pa., P. W. Finn, builder
Marine Officers' Building, U. S. Navy Yard, League Island, Philadelphia, Pa., B. Ketcham & Sons, builders
The United States Government Tunnel (Soldiers' Home), Hampton, Va.
"Ye College Inn" Entrance Exposition Grounds, Seattle, Wash., Graham & Meyers, Architects; Phil Dunne-vart & Co., Contractors

Homeopathic Hospital, Portland, Ore., Whidden & Lewis, architects, Hurley Mason Co., contractors
Foundation Walls and Basement Floors of Bank and Hotel Building for White & Dreyfus, Kansas City, Mo., Jackson & McIlvain, architects
Foundation Walls and Basement Floors of Warehouse for Bowercock Mills and Power Co., Lawrence, Kans., F. C. Cudworth, engineer
Residence, Stucco Columns, Mrs. Maynard, owner, Ridgefield, Conn., W. S. Miller, builder and architect
Residence, Mr. Phillips, Whitestone, L. I., N. Y., Craftsmen's Home Building Co., 27 West 34th Street, New York, N. Y.

CO-OPERATIVE
SERVICE.

REFERENCES.

C. L. BURNS

Improved Cement Coating

156 Fifth Avenue
NEW YORK, N. Y.

TELEPHONE, 5068 GRAMERCY

FACTORY
BROOKLYN, N. Y.

PRODUCTS.

BURNS' IMPROVED CEMENT COATING, IMPROVED CEMENT FLOOR PAINT, BRICK WATER-PROOFER, IMPROVED CEMENT COATING for Plaster, FULL and EGG GLOSS ENAMELS. These are improved Paints for Brick, Cement, Concrete, Stucco and Plaster.

DESCRIPTION.

Burns' Improved Cement Coating is an oil paint containing no white lead and it will retain its snow-white surface without turning yellow under the fumes of acids and gases. It is not a water paint nor does it contain anything in its composition that is used in making those paints and when applied to a damp surface it will dry out hard and white, leaving a surface without gloss that will not crack, peel or mildew. When once dry this Coating will not ignite even if flames should strike its surface and it is therefore a fire retardant. This Coating is also non-absorbent, therefore will not change color, even if its surface becomes wet; nor is it affected by steam or water originating from condensation. Burns' Improved Cement Coating is a finishing paint or coating, which is not intended to be used for water or damp-proofing where there is a pressure to overcome. While it will not hold back water, the usual washing with a hose, etc., will not penetrate the paint or cause it injury.

UTILITY, GENERAL.

Burns' Improved Cement Coating is a finishing body coat, that is manufactured especially for use on brick, cement, concrete, plaster and stucco, for both interior and exterior use. It can be used on iron and wood for interior use only, and its absolutely fireproofing qualities especially adapt it for the coating of interior woodwork in mills and factories. Its durability and low cost make it desirable for hospitals, laboratories, lavatories, garages, stables, factories, engine rooms, refrigerating plants, basements, rear air and light courts, etc.

UTILITY, EXTERIOR OF STUCCO HOUSES.

Burns' Improved Cement Coating has proven by actual tests to be the best and most durable exterior finish for plaster and stucco built houses. With one coat it will produce an even color surface and relieve the difficulty now found in the large light and dark spots, which the completed surfaces of stucco nearly always develop, and as it dries out flat and does not show brush marks, it will not impair the stucco effect which the architect wishes to preserve.

EXTERIOR BRICK WALLS.

This Coating can be applied to a new exterior brick wall, and will not scale or peel as the usual lead and oil paints will under like conditions. It covers with one coat, on the ordinary brick wall, a surface equal to that covered by two and three coats of lead and oil paint; it is cheaper in cost, and has by practical tests shown it will outwear any paint of the lead and oil nature.

INTERIOR WALLS OF FILTER BEDS. MILL WORK.

It is of especial value for use on the interior walls of concrete constructed Filter Beds, as it is not harmed by the continual dampness with which it has to contend.

What should strongly recommend this Coating for mill and factory work is the fact that it is sanitary and fireproof, and that surfaces painted with Burns' Improved Cement Coating will not experience the scaling, chipping and dropping of loose particles, when the jar of the machinery begins to be felt. This paint also leaves a surface that can be painted with any other paint if the future demands such a thing.

COLORS.

Burns' Improved Cement Coating is made in white as its standard color; but we can manufacture, under order, shades to match any natural cement color or stucco, brick red, or cream, and in fact any color that can be made in other paints.

ENAMEL OR GLOSS FINISH.

There are conditions found in lavatories, bathrooms, kitchens, etc., which make the flat finish of Burns' Cement Coating undesirable. To meet these requirements we manufacture a high-grade Enamel, in either full or egg gloss, which when used over one or two coats of Cement Coating gives a fine and durable finish which costs but little in excess of the usual lead and oil paints.

The Enamel Finish can be applied to any interior work where Burns' Improved Cement Coating is used as a base.

SHIPPING SIZES.

Burns' Improved Cement Coating, Burns' Improved Cement Coating for Plaster, and Burns' Full and Egg Gloss Enamels are put up in shipping sizes as follows: Barrels of 50 gallons each; half barrels of 30 gallons each; kits of 5 gallons each; cans of 1 gallon each.

CO-OPERATIVE SERVICE.

Sample color cards, small cans of the paint and advertising matter will be forwarded to architects, engineers or owners upon application.

ENDORSE- MENT.

Burns' Improved Cement Coatings and Enamels have been thoroughly tested and endorsed by some of the best architects and engineers in the City of New York.

DIRECTIONS FOR USE ON BRICK, CEMENT, CONCRETE, AND STUCCO.

Burns' Improved Cement Coating is a liquid paint that is sent to the consumer ready prepared for the work where it is to be used. Thinning of the paint is expressly cautioned against. If it is necessary to thin it for some unexpected reason, we supply directions for a suitable thinner. If any foreign liquid is used to dilute the paint, it will destroy its good properties and produce results that are unsatisfactory.

Apply with a clean 4-in. wall brush, keeping the brush full and flowing on the paint. Allow 24 hours between each coat. Keep all packages well corked up, and do not expose their contents to the air if not ready for use. The paint does not settle hard, but when exposed to the air it will thicken. Remove all skins that may form with a knife and do not stir them into the paint.

FOR USE ON PLASTER.

Burns' Improved Cement Coating for Plaster is manufactured under a special process to meet this condition. When the paint is to be used on hard finished plaster, please so state when ordering. On rough or sand finished plaster walls, one coat of Burns' Improved Cement Coating will give first-class results.

SPECIFICA- TIONS.

Ordinary Brick Walls, Exterior and Interior—Use one coat of Burns' Improved Cement Coating (C. L. BURNS, 156 Fifth Avenue, New York), to cover not more than 140 square feet to the gallon, and to be applied as supplied from the factory. Where the bricks are old and weather beaten, use two coats, the second coat to cover not more than 250 square feet to the gallon.

Cement Construction, Exterior and Interior Smooth Hard Finish—One coat of Burns' Improved Cement Coating (C. L. BURNS, 156 Fifth Avenue, New York), to cover not more than 150 square feet to the gallon, and to be applied as supplied from the factory.

Rough Finish—One coat of Burns' Improved Cement Coating (C. L. BURNS, 156 Fifth Avenue, New York), to cover not more than 120 square feet to the gallon, and not less than 100 square feet to the gallon, and to be applied as supplied from the factory.

Stucco Finish—One coat of Burns' Improved Cement Coating (C. L. BURNS, 156 Fifth Avenue, New York), to cover not more than 110 square feet to the gallon, and to be applied as supplied from the factory.

Plaster, Hard-Finished—Three coats of Burns' Improved Cement Coating for Plaster (C. L. BURNS, 156 Fifth Avenue, New York), first coat to cover not more than 450 square feet to the gallon, allowing 24 hours between each coat for drying, and to be applied as supplied from the factory.

Plaster, Rough-Cast or Brown-Coat—One coat Burns' Improved Cement Coating (C. L. BURNS, 156 Fifth Avenue, New York), to cover not more than 120 square feet to the gallon.

Enamel Finish for Brick Walls, in all cases where not exposed to the weather—One coat of Burns' Improved Cement Coating (C. L. BURNS, 156 Fifth Avenue, New York), to cover not more than 140 square feet to the gallon. Allow 24 hours for paint to dry, then apply one coat of Burns' "Full Gloss" Enamel to cover not more than 300 square feet to the gallon. It takes 48 hours for this Enamel to dry hard.

Cement Construction, Rough Finish—One coat Burns' Improved Cement Coating (C. L. BURNS, 156 Fifth Avenue, New York), to cover not more than 120 square feet to the gallon. Allow 24 hours to dry, then apply one coat Burns' "Full Gloss" Enamel, to cover not more than 300 square feet to the gallon, and to be used as supplied from the factory.

Cement Construction, Smooth, Hard-Finish—One coat of Burns' Improved Cement Coating for Plaster (C. L. BURNS, 156 Fifth Avenue, New York), to cover not more than 150 square feet to the gallon. Allow 24 hours to dry, then apply one coat of Burns' "Full Gloss" Enamel, to cover not more than 300 square feet to the gallon. Where an extra fine job is wanted, use two coats each Burns' Improved Cement Coating and Burns' "Full Gloss" Enamel. This will give a finish that is superior to the usual high-class enamel work.

We manufacture an Enamel with a dull "Egg Gloss" to be used where a dull gloss enamel is wanted in place of the Burns' "Full Gloss" Enamel.

Imitation Tile on Keene's Cement, King's Windsor or Adamant Plaster—The plaster should be trowelled as smoothly as possible, and while wet scored to the depth of $\frac{1}{8}$ inch to $\frac{1}{4}$ inch as desired.

Apply three Coats of Burns' Improved Cement Coating for Plaster, allowing 24 hours between each coat for drying. To be used as it comes from the factory. Lightly sandpaper the last coat of Burns' Improved Cement Coating for Plaster, and then apply one coat of Burns' "Full Gloss" Enamel, flowing same on with its full body.

If a finish with heavier gloss is desired, apply an extra coat of Burns' Improved Enamel, after lightly sandpapering the first coat. All joints should be lined up with Burns' Improved Cement Coating.

NOTE—Use Burns' Improved Cement Floor Paint to prevent "dusting" in new cement-laid floors. Specify three coats.

Use Burns' Brick Waterproofer on exterior brick walls that are above surface level, that require treatment for air and waterproofing. Used with unqualified success in application to walls of cold storage plants. Specify three coats to cover from 80 to 100 sq. ft. to the gallon.

CERESIT WATERPROOFING COMPANY

OFFICES

Commercial National Bank Building

CHICAGO, ILL.

AGENCIES IN ALL PRINCIPAL CITIES

EUROPEAN OFFICES AND FACTORY
UNNA, KOENIGSBRONN, GERMANYFACTORY
MAHER AND CANAL STREETS
CHICAGO, ILL.

PRODUCTS.

Manufacturers of "CERESIT," a cement waterproofing.

USES.

"Ceresit" is used in two ways. First, to damp-proof and waterproof cement mortar coatings which are to be applied to walls, floors or roofs of buildings, foundations, tunnels, reservoirs, swimming-pools, or any structures through which it is desirable to prevent the penetration of dampness and water.

Second, to damp-proof and waterproof structures being built of concrete, while they are in course of erection, by using "Ceresit" in the concrete itself without necessity for coatings of any kind.



Castle of the German Emperor at Posen,
Built in 1908



Hospital at Düsseldorf, Germany



Grand Opera House at Kiel, Germany
Stage basement over twenty feet below
lake level



Cigarette Factory at Dresden, Germany
Largest building of its kind in the world

ILLUSTRATIONS OF TYPICAL BUILDINGS WHERE OUR MATERIAL HAS BEEN USED

METHODS OF
USE.

"Ceresit" is a cream-white paste of about the consistency of butter. It is used by putting it into the water with which cement mortar or concrete is to be mixed; one part of "Ceresit" to twelve parts of water.

After the "Ceresit" is put into the water it dissolves at once.

Continued on next page

The waterproofing principle of the "Ceresit" being now combined with the water it is carried through every particle of the mortar or concrete, rendering the same completely proof against the penetration of water or of moisture even under heavy hydrostatic pressure.

To make perfectly plain the ease and simplicity of the use of "Ceresit" we repeat: To twelve parts of water add one part "Ceresit," stir, and this mixture will thoroughly waterproof and damp-proof any cement mortar or concrete with which it is mixed.

ADVANTAGES.

It is well known that the expense of mixing waterproofing powders, or the applying of waterproofing washes, or dissolving a waterproofing paste in hot water, usually amounts to considerably more than the cost of the waterproofing material itself. "Ceresit" does away with these drawbacks, and is the only waterproofing material in existence which does not require any additional labor expense or any expert help. Consequently its use is remarkably economical, no skilful mixing is required, and errors are practically impossible.

Hot water is not required.

"Ceresit" will dissolve in water of any temperature at which concrete and cement mortar can be safely mixed.

"Ceresit" has no odor, either during the work or at any time.

"Ceresit" does not darken the natural shade of cement.

"Ceresit" does not waterproof merely the surface, but waterproofs the mortar or concrete all through, so that in event of the surface being chipped or scratched by accidental violence no harm is done.

"Ceresit," by completely filling all voids in the work, adds to the strength of the cement.

"Ceresit" gives an elasticity to cement work which makes the structure proof against wide changes in temperature and impervious to the action of frost.

"Ceresit" renders all cement work immune to the action of gases of any kind.

PACKING.

"Ceresit" is put up in five and ten gallon jacketed cans and in barrels.

LITERATURE AND PRICES.

Literature and prices will be sent upon request. We will estimate the amount of "Ceresit" needed for any kind of work. We are prepared to fill and deliver orders to all parts of the world. "Ceresit" has been officially tested and accepted by the German Government, and hundreds of the most prominent Government buildings, tunnels, tanks, bridges, reservoirs, dams, etc., all over the world, have been waterproofed with our material.

Our material has stood the test of practical use for more than twenty years, always giving excellent results.

References will be gladly furnished, if desired.

SPECIFICA- TIONS.

Material—All inferior surfaces of all exterior walls shall be waterproofed with "Ceresit."

The concrete floor (in mass) throughout the basement or sub-basement shall be waterproofed with "Ceresit."

Workmanship—The walls must be clean from all lime, dust, dirt and grease spots before the cement mortar coat, waterproofed with "Ceresit," is applied.

THE ELATERITE PAINT AND MANUFACTURING CO.

Paints and Preservative Materials

DES MOINES, IOWA

BRANCH OFFICES IN PRINCIPAL CITIES

PRODUCTS.

Manufacturers of "DES MOINES ELATERITE" PAINTS, including METAL and WOOD PRESERVATIVES, HEAT-RESISTING, ACID-RESISTING and MARINE PAINTS. Also of WATER-PROOFING and BONDING MATERIALS, as described elsewhere in this Catalogue.

PIGMENT, NATURE'S OWN PRE- SERVATIVE.

The pigment base of "Des Moines Elaterite" is a pure carbon ore, known to geologists as "mineral rubber," because of its extreme elasticity and insulating properties. It has intense adhesive qualities; is insoluble in the strongest acids or solvents; is heat-resisting, the application of heat only making it tougher and more adhesive; is absolutely waterproof.

This pigment is not ground, but through treatment by a special solvent process is converted into a liquid and combined with the carrying oils, providing a perfectly smooth liquid. There is no settlement of the body and the painted surface receives a continuous, non-porous coat of the rubbery pigment which retains all its natural elasticity and pliability. The intensely adhesive quality of the pigment takes away all dependence upon the carrying oils, upon which ground pigment paints must entirely depend for permanency.

NO. 10, METAL PRE- SERVATIVE.

No. 10 "Des Moines Elaterite," for all metal surfaces, forms a tough, impervious, extremely adhesive protective coating. The rubbery character of the pigment gives an elasticity which meets the extremes of contraction and expansion and prevents brittleness. Its insulating property absolutely prevents the destructive effects of electrolysis; its acid-resisting character protects the metal against the corrosive effects of acids, gases and fumes; its smooth liquid character provides a continuous, unbroken protecting blanket of the adhesive, waterproof, non-conducting, acid-resisting, rubbery pigment.

TESTS.

After a series of the most severe tests of "Des Moines Elaterite," Robert W. Hunt & Co., Inspection and Testing Engineers, Chicago, made the following report:

"Specimens of 16-gauge sheet steel about 12 inches long by $\frac{1}{2}$ inch wide were given two coats of the paint, time being allowed between coats for drying. These specimens were then subjected to different tests as follows: Immersion in 50 per cent sulphuric acid solution for 3 days; paint very little affected. Immersion in 50 per cent hydrochloric acid solution for 3 days; paint not affected. Immersion in 50 per cent nitric acid solution for 3 days; paint slightly affected. Immersion in 50 per cent caustic soda solution for 3 days; paint checked and shriveled somewhat, but did not break. Immersion in concentrated brine solution for 3 days; paint not affected. Exposure to strong fumes of sulphuric acid, hydrochloric acid, nitric acid and sulphuretted hydrogen, singly and mixed, under different conditions for several weeks; paint entirely unaffected. The paint is easily applied, has excellent covering qualities, is impervious to water and atmospheric changes, and in our opinion is well adapted for use as a protective coating. The tests covered a period of several weeks."

NO. 20, WOOD PRE- SERVATIVE.

No. 20 "Des Moines Elaterite," because of waterproof and acid-resisting character, adhesive and permanently pliable qualities, absence of dependence upon carrying oils for permanency, is a permanent protection for all wooden surfaces, completely excluding dampness and preventing dry-rot, mildew and fungous growths.

NO. 35, FOR SMOKE- STACKS AND BOILERS.

No. 35 "Des Moines Elaterite" is a combination of a heat-resisting and intensely adhesive pigment and a process of manufacture which gives a complete pigment covering and eliminates entirely the dependence upon carrying oils for permanency, which renders all ordinary paints of extremely short life on hot surfaces. This paint will not blister or peel, and the only effect of heat is to make it more adhesive and give it greater pliability.

NO. 40, ACID- RESISTING.

No. 40 "Des Moines Elaterite" is specially adapted to use where extreme acid or fume conditions exist, because its pigment, called by geologists an "insoluble material," is not affected by the strongest acids or fumes. No other paint compares with it in permanency under severe conditions.

OTHER NUMBERS.

No. 45 Marine "Des Moines Elaterite," exclusively for a protection against fouling and sea-water growths, and No. 50 Waterproofing "Des Moines Elaterite," for waterproofing canvas, prepared roofings, etc., are carefully designed to meet these special uses.

COLOR.

"Des Moines Elaterite" is made in black only.

COVERING CAPACITY.

The perfectly smooth liquid character and extreme elasticity of "Des Moines Elaterite" give it very great covering capacity. Per gallon, it will cover from 450 to 650 square feet on metal; from 150 to 250 square feet on wood; from 100 to 200 square feet on canvas or prepared roofings.

PRICES AND REFERENCES.

Prices, references, and any other information will be gladly furnished.

THE ELATERITE PAINT AND MANUFACTURING CO.

Waterproofing and Bonding Materials

DES MOINES, IOWA

BRANCH OFFICES IN PRINCIPAL CITIES

PRODUCTS.

Manufacturers of CEMENT WATERPROOFING, "DES MOINES ELATERITE" and "ELATERITE" WATERPROOFING GUM. Also of PRESERVATIVE PAINTS for every class of surfaces, as described elsewhere in this Catalogue.

DESCRIPTION.

No. 60 Cement Waterproofing "Des Moines Elaterite" is both a waterproofing and a bonding material. Its base is an intensely adhesive, extremely elastic, non-porous, acid-resisting, absolutely waterproof pure carbon, known as "mineral rubber." It seals the pores of cement, brick or stone, destroys capillary attraction and provides a continuous film which completely shuts out dampness. Besides giving permanency as a waterproofing its intensely adhesive quality gives its bonding character. Plaster coats are applied directly over it, the adhesive quality binding the plaster firmly and permanently.

ADVANTAGES.

Its advantages are: Intensely adhesive, permanent character; extreme resistance to all acids, preventing disintegration; permanent pliability and elasticity, preventing breaking of the waterproof film from hair cracks or expansion and contraction; smooth liquid character, providing a continuous, rubbery blanket; absolute waterproof character, sealing the surface against passage of dampness; combination of waterproofing and bonding, permitting doing away with lath or furring, economizing room, saving in labor and material costs.

USES.

Applicable for every character of waterproofing uses in connection with cement, concrete, brick or stone construction, buildings, reservoirs, swimming-pools, bridges, basement floors, etc.; as a backing for stone to prevent discoloration; as a bonding for plaster on walls, ceilings, metal I-beams or wooden partitions, beneath tiling or cork linoleums, or between new and old cement.

HOW APPLIED.

It is applied cold, spreads rapidly with broad, flat brushes, no hot swabbing or layers of felt required, and any workman can apply it.

COVERING CAPACITY.

One gallon will cover from 125 to 200 square feet, one coat, or from 80 to 100 square feet, two coats, on cement, brick, or stone, depending on porosity; from 400 to 500 square feet on metal and from 250 to 300 square feet on wood.

BUT ONE SPECIFICATION NECESSARY.

There is no necessity for the architect specifying a different material for outside foundations, inside walls, basement floors and bonding if No. 60 Cement Waterproofing "Des Moines Elaterite" is specified. It meets every waterproofing requirement in construction work. And the money advantage in purchasing a large quantity of one material adapted to all waterproofing uses, rather than a small quantity of a half dozen with limited adaptation, will be apparent.

"ELATERITE" WATERPROOFING GUM. PRICES AND REFERENCES. SPECIFICATION.

This is a solid material, applied hot. Used for filling spaces about sidewalk prisms or cracks in concrete construction, for waterproofing bridges and other uses to which a liquid material is not adapted.

Prices, references and any other information will be gladly sent on request.

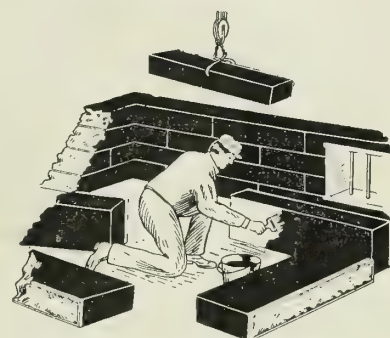
Apply two coats of No. 60 Cement Waterproofing "Des Moines Elaterite" to outer foundation walls, over basement floor and over the inside of all exposed walls (and over ceilings and all concrete walls if structure is of concrete). Plaster to be applied when last coat is "set" but still "tacky." Basement coat to receive a safety coat of cement mortar.



APPLYING PLASTER COAT DIRECTLY TO WATERPROOFING AND BONDING COAT OF "ELATERITE"



APPLYING "ELATERITE" TO OUTSIDE OF FOUNDATION WALL



PROTECTING STONE FACING FROM DISCOLORATION WITH "ELATERITE"

HYDREX FELT AND ENGINEERING CO.

Makers of Waterproofing Felts, Cements and Compounds
Engineers and Experts in Waterproofing Problems

120 Liberty Street

NEW YORK, N. Y.

CABLE, "HYDREX, NEW YORK"

BRANCH OFFICES

CHICAGO, ILL., Railway Exchange Building

RAHWAY, N. J.

WASHINGTON, D. C., 1314 F Street, N. W.



REGISTERED
TRADE-MARK

PRODUCTS AND SERVICES.

We are the makers of "HYDREX" WATERPROOFING FELT, "HYDREX" (HOT) COMPOUND and "HYDREX" PRESERVATIVE PAINT.

The materials are standard in National, State, Railroad and Private Specifications, and are being used in the largest and most important work.

As Engineers and Experts in Waterproofing Problems we are prepared to make estimates, plans and specifications for rendering waterproof any kind of construction.

Method (i. e., design and application) is as important as material. We have long specialized both. Consultation in advance of adoption of final plans earnestly recommended.

FACILITIES.

Our facilities are ample for the execution of any contract, however large; and our operations have no territorial limitations.

The name "Hydrex" is given to all our products, a description of which follows:

"HYDREX" FELT.

"Hydrex" Waterproofing Felt is made especially for waterproofing underground structural work, such as foundations (including pits of all kinds), tunnels, subways, solid floor bridges, masonry arches, retaining walls, reservoirs, swimming-pools, etc.

It is also particularly adapted for floors and roofs.

Because it is waterproof in itself, i. e., one sheet being absolutely impervious to water and air, "Hydrex" is unequalled for insulating—lining and sheathing—one layer being used under floors, stucco, clapboards, slate, tile, tin, shingles, etc.

"HYDREX" (HOT) COMPOUND.

"Hydrex" Waterproofing Felt does not become dry, brittle or porous, but indefinitely retains its life and flexibility. It is the highest grade felt of its kind and for its purpose on the market. *Contains no tar.*

Cemented together in layers with "Hydrex" Compound it is the basis of the "Membrane Method" of Waterproofing, which in every test has excelled for Toughness, Elasticity and Strength—the first essentials in any waterproofing fabric or system.

THE "MEMBRANE METHOD."

The "Membrane Method" is a natural method whereby the waterproofing readily conforms to the final conformation of the surrounding concrete—of which it is practically independent, so as to yield to settlement, contraction, expansion, jar, shocks, etc.

DIRECTIONS.

For waterproofing foundations, tunnels, floors, roofs, reservoirs, etc., use from two to six layers of "Hydrex" Felt (according to conditions) cemented together with "Hydrex" Compound.

For damp-coursing, use one or two layers of "Hydrex" Felt in combination with "Hydrex" Compound.

For sheathing and insulating, use one layer of "Hydrex" Felt, edges lapped two inches and tacked.

Samples of each material sent free on request.

"HYDREX" PRESERVA- TIVE PAINT.

"Hydrex" Preservative Paint is a heavy, durable coating for exterior or interior surfaces of brick, stone and concrete. Plaster strongly adheres to it. It is a preservative for structural steel, and is extensively used on metal and felt roofs. Very low in price.

HYDROLITHIC CEMENT COMPANY

138 Jackson Boulevard

CHICAGO, ILL.

PRODUCTS.

We manufacture and sell PORTLAND HYDROLITHIC CEMENT (Process and Material Patented).

WATER- PROOFING.

Hydrolithic Waterproofing is accomplished with a true waterproofing Portland cement that should not be confounded or classed with mixtures in cement plasters and concretes compounded of powders, pastes, and bituminous liquids, which are now being extensively advertised as dependable mediums for waterproofing. All of these can not be the only dependable waterproofing—not all at the same time, at any rate. We claim that with the exception of a cement made in Germany, Hydrolithic is the only high-class, direct and rational means of cement waterproofing. Our cement has been subjected to the most rigorous tests and never yet has failed to waterproof thoroughly any surface upon which it has been applied.

COMPOSI- TION.

Hydrolithic Cement is not a hybrid, a mechanical mixture of a large bulk of one finely powdered substance with but an insignificant amount of another finely pulverized material, the office of which is to diffuse itself so intelligently throughout a mass, that is one hundred and fifty times its own bulk, that it will perfectly fill all the crevices and unoccupied spaces of that mass. In correctly mixed and placed cement work there should be no unoccupied spaces, but should any exist there is neither intelligence nor power of locomotion, in such inanimate material as these powders, to hunt out and infallibly place themselves within all of the interstices, or water conduits, that will occur in the general run of concrete and other cement constructions. To be convinced of this, let any one note the unevenness of the effects of these powders in cement blocks or in whatever cement structure they may be used. And let him also observe how, a year or two following their employment, their effects as waterproofing mediums have entirely disappeared from the mass they were supposed to serve for endless ages.

In Hydrolithic Cement every atom holds within its own constitution a waterproofing principle that is as inseparable from it as are any of the principles and characteristics which distinguish Portland cements.

It is ground to a fineness of 98 per cent upon a standard 100-mesh sieve, so that it gives no chance for unoccupied interstices, nor admits of any uncemented vacancies in any mass in which it is used.

If Hydrolithic Cement were an engineer its high-class efficiency would place it on an even footing with the greatest of that great profession the success of whose works has again and again astonished the world. This product is the original "Winslow's" Hydrolithic Cement. All others of a waterproofing character and offered as Hydrolithic Cement are illegal imitations, and are infringements of United States Patent No. 913794. All would-be purchasers of them are warned against their use.

UTILITY.

Hydrolithic Cement is used either in the mass construction (concrete) or to surface concrete and masonry with a waterproof coating that will serve as a wearing surface upon floors, or as a plaster finish upon wall areas. As a coating it is mixed with sand in the proportions of 1 to 2, respectively, and may be applied to the outer or earth side of walls and

there connected with the floor waterproofing by extending the latter through the wall, or footing, section. The advantages to be secured with its application to the interior wall surfaces of basements, tunnels, etc., are so superior to those of an outside application—and its ability to hold to an interior position against any stress has been so thoroughly established that these make the interior surfaces the preferred locations for it.

Upon surfaces of the interior it is always in view and immediately accessible should there ever be need of repairs from any cause, which can always be made with but trifling expense.

It is not essential when applying it to interior walls that the surfaces should be dry and free from seepage, for it is quite possible to make such application to walls through which water may be streaming.

When skilfully applied a Hydrolithic Coating can not be scaled or pushed from its position upon interior surfaces either by frost or by any degree of hydrostatic pressure. So long as the structures carrying it hold stably together just so long will the waterproofing serve with results that will be “dry as the desert, permanent as the pyramids.”

After three days of indurating a coating becomes as hard and incompressible as granite so that it may be placed beneath column bases or those for grillages. As a grout used to embed grillages it will serve dependably as a sure protection of the steel against corrosion and electrolysis.

Hydrolithic Waterproofing delays no other work. Used in the mass the waterproofing is completed when the mass has been cast in the forms, while in the coating it can be applied just prior to the placing of the machinery, or it may progress along with other operations.

In mass construction, when that is planned for not more than an average thickness of twenty-four inches, the use of Hydrolithic Cement in the place of ordinary Portland cements for mixing the concrete, will reveal a cost that, when compared with those of a similar construction, but in which some other high-grade Portland has been employed in its mass, and to which a plaster has been applied for its waterproofing, will be as 5 is to 8 with the price of Portland cements at \$1.15 delivered and the proportions for the concrete mixing at 1-2-4.

CO-OPERATIVE SERVICE.

We are engineers as well as manufacturers of waterproofing and our staff is at the disposal of our customers to render assistance in an advisory way, gratis. We can supply experts when wanted, but we issue gratis to customers, engineers and architects a treatise on waterproofing, and if the instructions therein are followed the services of an expert will only be required for problems of unusual difficulty.

GUARANTEE.

We will guarantee the results to be obtained with Hydrolithic Cement upon any job the plans and specifications for which have been approved by us, and further providing that the work may be directed by an expert to be furnished by us who shall have full authority to conduct the work in his own way.

TESTIMONIALS.

— What builders with national reputations say of Hydrolithic Cement and its work:

June 10, 1908.

GENTLEMEN—We beg to acknowledge receipt of your valued favor of June 6th and to advise you that we have used Winslow's Hydrolithic Cement, as applied by Winslow, in the basement, sub-basement and subway of the M. F. Building and the O. Y. S. Street Building with excellent results.

Yours very truly,

June 17, 1908.

GENTLEMEN—In answer to your inquiry concerning the waterproofing material of the Winslow Company, would state that we have used their waterproof coatings in a number of instances and always with entire success. In the last instances where we had occasion to adopt this material there was a considerable water pressure on the opposite side of the wall and the coating proved an entire success, and it has always done, as far as our experience goes, all that the Winslow Company claim for it.

Very truly yours,

June 9, 1908.

DEAR SIR—In reply to yours of the 6th inst., we have used Winslow's Hydrolithic Cement for waterproofing and after a number of years' experience with it still continue to believe it is entirely satisfactory. Wherever used it has given the results promised and expected.

Respectfully,

June 13, 1908.

DEAR SIR—Replying to your inquiries regarding the Winslow Waterproofing preparation, would say that I have used same with success, and do not hesitate to specify it where high-grade waterproofing is desired.

Yours very truly,

June 24, 1909.

GENTLEMEN—We are in receipt of your favor of the 12th instant requesting a statement of our experience with the use of Winslow's Hydrolithic Cement.

We have used this cement coating in a number of instances, dating back to some eight years ago. Walls waterproofed with this have given us no trouble, except in cases where the wall was cracked. Provided you can keep the concrete intact we believe this cement coating will waterproof it.

Yours very truly,

June 15, 1908.

DEAR SIR—Replying to your letter of June 13th, we would state that we have for some years used E. J. Winslow's "Hydrolithic Cement," and when applied by him or under his immediate supervision we have found it very satisfactory. Mr. Winslow has undertaken several rather difficult jobs of waterproofing for us, and in every instance before finally leaving the work, he has succeeded in fulfilling his guarantee.

Yours truly,

June 15 1908.

DEAR SIR—Replying to your favor of the 13th, making inquiries as to our experience with Winslow's Hydrolithic Cement for waterproofing, would say that some six years ago Winslow's cement was applied to the inside surface of several reinforced concrete tanks completely submerged in connection with our work in New Orleans. The work seemed entirely satisfactory and remained so for about three years, when the structure of which they were a part was entirely destroyed by fire.

An application of this same material was made for us on the interior of a riveting pit in connection with Railroad shops near Moline, Ill. The pit, some thirty-two feet in depth, was some sixteen feet below the water line and as far as we know still remains intact. This is the extent of our experience with the Hydrolithic preparation and has been entirely satisfactory.

Yours truly,

June 15, 1908.

GENTLEMEN—Replying to your inquiry of the 12th inst., as to our experience with Winslow's Hydrolithic Cement for waterproofing purposes, we have used this material for some purposes of damp-proofing with success, but have not used it where we consider a severe waterproof test was required.

From our experience with this material we have reason to be satisfied that the claims of the manufacturers have been verified as to its efficiency.

Yours very truly,

June 16, 1908.

DEAR SIR—Answering yours of June 12, beg to say that I do not recall ever having made use of Winslow's Hydrolithic Cement on any of my buildings.

I will add, however, that I know of the product and consider it of a high order.

Yours truly,

June 16, 1908.

GENTLEMEN—In reply to your Mr. F. L. B.'s letter in regard to Winslow's Hydrolithic Cement—in 1900, Mr. Winslow's Company waterproofed the curb wall of the M. W. & Co. premises at the corner of M Street and M Avenue on the inside only. M Street pavement was only wood block in very poor condition, so that the head of water at times was seven or eight feet. Although the old curb wall is in the worst possible condition, hardly better than a rubble wall laid without mortar, the coating of waterproofing applied on the inside has been absolutely effective. Later when the street was about to be paved, we excavated the exterior of the wall and found it practically without mortar, so that the thin facing applied on the inside performed a remarkable service. We filled the outside of the wall and waterproofed this again.

About the same time I had Mr. Winslow waterproof a cellar twenty feet by forty feet and seven feet deep at _____ in low ground where there was absolutely no drainage. The cellar had six feet of water in it when Mr. Winslow began, and waterproofed the space by coating the walls and laying a new heavy floor which could not be destroyed by upward pressure.

In recent years Mr. Winslow covered a bad looking brick wall for me in a very satisfactory manner with his special material.

Yours very truly,

ORIGINALS.

The originals of these letters are in our possession and the names subscribed to them belong to parties who are famous in Engineering and Building Construction. References will be furnished upon request.

THE ILLINOIS DAMP-PROOFING COMPANY

Damp-Proofing Specialists and Contractors

Manufacturers of Damp-Proof Paints and Compounds

Suite 522, 145 La Salle Street

CHICAGO, ILL.

TELEPHONE, RANDOLPH 2342

PRODUCTS.

PAINTS and COMPOUNDS, including "I. D. P." Nos. 10 and 20, for waterproofing and damp-proofing substructures and superstructures; "I. D. P." No. 15, for backing and stain-proofing limestone, marble and granite; "I. D. P. TRANSPARENT" for exposed natural brick, stone and cement; "I. D. P. DAMPNO" made in all colors, for cement and tile floors; also for exterior walls of brick, stone and cement; "I. D. P. RUST-NO" for protection of structural iron and steel; "FELBUR" SYSTEM of WATERPROOFING.



TRADE-MARK

SERVICES.

Our Service Department is made up of men of years of practical experience in the construction business who are ready to assist in solving any problems in Waterproofing and Damp-Proofing.

"I. D. P. NO. 10."

"I. D. P. No. 10" takes the place of furring and lathing; gives a solid wall, absolutely damp-proof and fireproof; drying with a tacky surface, it effects a perfect bond between the plaster and the wall; prevents the cracking of plaster through shrinkage of laths and driving of nails; can be applied considerably cheaper than furring and lathing; effects a saving of from 1½ to 2 inches space on all walls where applied, and saves the time occupied in that portion of the work, thus expediting the erection of the building.

The wall being absolutely solid, there are no places for rats or other vermin to infest.

"I. D. P. No. 10" prevents the discoloration of decorations through dampness or salt-peter stain from the masonry.

SPECIFICATIONS.

For applying "I. D. P. No. 10"—Masonry to be pointed up so as to be reasonably smooth and surface to be dry. Apply one continuous coat with stiff brush and retouch where necessary, care being taken that no minute pinholes are left uncovered. Plaster can be applied twenty-four hours after retouching.

"I. D. P. NO. 15."

A moisture-resisting Compound to be applied to the hidden surfaces of stone, marble, and granite. It prevents the discolorations due to mortar or cement; also the staining caused by chemical action communicated from the surrounding masonry.

"I. D. P. No. 15" penetrates the stone and therefore is not merely a surface coating.

It is more practical and costs less than the so-called non-staining cements. The improvement in appearance of the exterior surface will more than offset the expenditure.

SPECIFICATION.

For prevention of discolorations and staining from surrounding masonry on stone. Stone to be dry. Apply one coat of "I. D. P. No. 15" to all unexposed parts of stone to within one inch of face. After setting and before backing is carried up, entire inner surface to be thoroughly covered with "I. D. P. No. 15."

"I. D. P. NO. 20."

"I. D. P. No. 20" is a thick heavy compound composed of the highest grade of water resisting oils and melted gums so compounded as to form, when set, a highly elastic, non-porous sheet very thoroughly water resisting. Is used very effectively in conjunction with felt and burlap, as in the "Felbur" System of Waterproofing.

"I. D. P. No. 20" is applied to the exterior surface of foundation walls, sub-cellars, vault arches, tunnels, cellar floors and other underground masonry. As it is applied cold it is more easily applied than the hot compounds.

SPECIFICA-
TION.

For applying "I. D. P. No. 20" to foundation walls. The wall should be thoroughly dry and free from dirt, sand, and all loose foreign matter. All imperfections in the way of sparsely filled interstices between the stones should be plastered over with cement plaster and this allowed to set. Upon this surface apply two heavy coats of "I. D. P. No. 20" by means of a stiff brush, being careful to see that no minute pinholes are left unfilled.

Allow sufficient time for the first coat to dry before applying second coat.

Do not back fill until Compound has dried.

THE
"FELBUR"
SYSTEM OF
WATER-
PROOFING.

The "Felbur" System of Waterproofing is especially adapted to deep cellars, tunnels, reservoirs, swimming tanks, etc.

Two layers of No. 2 Standard Roofing Felt, with an intermediate layer of 8-oz. Burlap, are cemented together with "I. D. P." Compound and top-coated with a hot compound consisting of hot coal-tar pitch, treated with a certain percentage of "I. D. P." Compound.

This composition is laid in the center of the concrete floor where that floor is heavy enough; or in case of light floor, is laid over the cinder fill and continuously through the pier and wall footings, making a perfect joint with two heavy coats of "I. D. P. No. 20" applied to the exterior of the foundation walls.

With this system the building is set in an absolutely water-tight basin.

The burlap adds backbone to the system, preventing puncture, and also, being of open mesh, it allows large space for the waterproof compound.

Over 50,000 square feet of this system is installed in the Ward-Corby Baking Plant at Chicago, Ill.

"I. D. P.
TRANSPAR-
ENT."

A Transparent Paint to be used on exposed natural brick, stone, and cement.

The application of "I. D. P. Transparent" insures a poreless, water-resisting surface and prevents stone decay and disintegration. Also prevents saltpeter stains from appearing on the building.

"I. D. P. Transparent" can be used on cement floors also, where natural color is desired.

Any surface to which it is applied retains its natural appearance and in addition becomes moisture-proof.

"I. D. P.
DAMPNO."

A paint for exterior walls of brick, stone, and cement, creating a moisture-proof surface, impervious to the elements, smoke or gases, and is wearable for years. Also excellent for plastered walls subjected to sweating, condensation, and steam.

This costs but little more than ordinary paint and is made in all colors.

We especially recommend "Dampno" for old buildings where saltpeter and other alkalies have stained the outside surface.

"I. D. P.
RUSTNO."

A high-grade moisture-proof paint for the protection of structural iron and steel, metal lath, drainage pipes, tank, service-pipes, bridges, etc. It has no metallic ingredients and will wear from fifty to one hundred per cent longer than graphite paints.

It is unaffected by atmospheric conditions, sulphurous acids, etc., and for a rust preventive nothing can give better satisfaction.

GUARANTEE,
PRICES.

Prices and specifications furnished upon application.

We guarantee that all of our compounds will meet the purpose for which they are manufactured.

REFERENCES.

BUILDING	LOCATION	ARCHITECT
Ward-Corby Baking Plant	Chicago, Ill.	C. B. Comstock
Administration Building	Peoria, Ill.	Paul V. Hyland
Schindler Theater	Chicago, Ill.	E. A. Seipp
Edwards & Ward Stone Co.	Chicago, Ill.	
Rueckhart Bakery	Chicago, Ill.	Adolph Woerner
S. Polakow—Stores and Apartments	Chicago, Ill.	A. L. Levy
Apartment Building	Chicago, Ill.	J. C. Morrison
Factory Building	Chicago, Ill.	Milton Eichberg
Theater, 12th and Albany Streets	Chicago, Ill.	David Saul Klafter
Worthington Apartments	Chicago, Ill.	H. Webster Tomlinson
Fuhrman Apartment Buildings	Chicago, Ill.	Huehl & Schmid
Factory Building	Chicago, Ill.	A. P. Gassman & Co.

THE KESSLER FLUATS COMPANY

Suite 401, 1161 Broadway
NEW YORK, N. Y.

TELEPHONE, 2258 MADISON SQUARE

PRODUCTS.

Manufacturers of KESSLER'S FLUATS, for the protection of all kinds of building materials against weather, mechanical and chemical injuries.

KESSLER'S FLUATS.

Kessler's Fluats are for the waterproofing, hardening, densifying, cleaning and polishing of natural stone, artificial stone, and cement construction, and for the hardening of cement and terrazzo floors, and for the preservation of monuments, etc.

The Kessler Fluats are salts soluble in water and produced from fluor-spar and quartz which are introduced into the outer film one half inch deep of building stone, brick walls, cement or lime plaster, and other building materials, and combine themselves with these and regenerate waterproof fluor-spar and quartz, and by these means form a lasting protection against decomposition and decay.

They have been in use throughout Europe during the last twenty-five years, and are recommended by the highest authorities on building material as being the only article which will prevent the decay of building materials, and with which waterproofing and hardening can be successfully done without using a cement binder.

Most of the waterproofings used in this country must be mixed with cement and mortar and applied on the walls to be waterproofed, making it therefore very expensive, whereas the Kessler Fluats are applied without the use of any other materials. They are colorless and not discoloring. They can be used on any building, no matter what color the building material is, without invalidating its effect.

UTILITY.

For the Architect, Sculptor, and Builder the Kessler Fluats are indispensable for protecting new buildings, and also for the restoration, repairing and renewing of buildings and monuments.

STONE-CUTTER—For the stone-cutter and quarry owner the Kessler Fluats make it possible to use soft and easy to be tooled building stones, which after the Fluats have been applied are as hard as the hardest stone.

CONCRETE—The concrete contractor can use the Fluats for cement floors, terrazzo floors, and concrete construction of all kinds; having the advantage of quick setting, increased tensile strength, waterproofing, and initial resistance against the inclemency of the weather, wind and sunshine, and, furthermore, avoid the objectionable features in cement construction, namely, hair cracks and efflorescence.

CEMENT ARTICLES—The manufacturer of cement articles and cement and concrete blocks may use the Kessler Fluats with beneficial results for the manufacturing of blocks, cement pipes, terrazzo works, etc., with the result that the initial resistance will be increased and that the articles so manufactured will prove to be water-tight, and not subject to hair cracks and efflorescence.

BUILDERS, ETC.—Builders, painters, and owners of houses have the opportunity when using Kessler's Fluats, should there be any defects in the outside structure of the walls, to have them restored permanently; not only the walls which are made of stone or brick, but also those which are plastered with cement or lime plaster.

FACTORIES—Owners of factories and estates will find the Kessler Fluats a great destroyer of dry-rot and mustiness, which occur quite frequently in fermenting cellars and stables, and for the disinfecting of all kinds of lumber used for building materials.

KINDS OF FLUATS.

The physical and chemical composition of natural or artificial stone differ considerably, and therefore require a different treatment in each instance, since it is impossible that one kind of fluat should have the qualification of hardening, restoring and making building

materials more durable; therefore, the inventor's effort was mainly to create a fluat for each respective building material.

MAGNESIA FLUAT—The Magnesia Fluat is mainly used for lime plaster, cement plaster, cement work, brick, fine-grain sandstone, limestone and terrazzo.

DOUBLE FLUAT—Double Fluat is generally used for porous and large-grained limestone; also for very highly porous sandstone and tufa stone.

ZINC FLUAT—Zinc Fluat is used in cases where it is desired to give surfaces a lighter color; takes the place of Magnesia Fluat and Double Fluat, also, prevents a discoloration of the stone. Zinc Fluat also kills the germinating membranes of dry-rot and fungus.

ADVANCE FLUAT—Advance Fluat is the only alkalinous reagent fluat. It is used for an Advance Fluat on sandstone, tufa stone, and brick or terra cotta, which do not contain lime.

ALUMINUM FLUAT—Aluminum Fluat is a liquid used as a finisher on all kinds of building material after the other Fluats hereinbefore and hereinafter mentioned are used, should these building materials be very porous and brittle.

LEAD FLUAT—Lead Fluat is a liquid used to protect all kinds of cement work against organic acids and carbonic acid containing water. It is also used mixed with hydrosulphate containing solutions for the darkening of building stone.

IRON, COPPER, MANGAN OR CHROME FLUATS are used for coloring highly porous limestone.

CLAY FLUAT—Clay Fluat is used to harden and to make impervious soft-burned or unburned terra cotta and other burned building material. Mixed with powdered clay it makes a plastic mass which will gradually petrify.

CLEANING FLUAT—Cleaning Fluat is similar to Clay Fluat, but is used for the cleaning of the outside of dirty and smoky buildings of limestone or lime containing sandstone. In order to remove very obstinate coatings on buildings, such as soot, tar, or oil colors, use the Debremaecker Cleaning Mass which should be used first before the Cleaning Fluat is applied.

BUILDING FLUAT—Building Fluat is used on cement surfaces which are to be painted with oil colors. It is a destroyer of microbes and fungous growth.

GYPSUM FLUAT—Gypsum Fluat is used for the hardening of all gypsum articles, such as floors, statuary, walls, cornices and similar structures.

ENCAUSTIC FLUAT—Encaustic Fluat is a liquid used for water reservoirs or tanks constructed of cement, brick or stone, and after being fluated with any of the above mentioned fluats will insure an additional waterproofing.

All of the Fluats will be furnished from one gallon upwards, as per price-list, which will be sent on application. For New York and vicinity we do the work ourselves.

Most of the Government buildings in France, Germany, England, Italy, Switzerland, Austria-Hungary, Sweden, and Norway have been treated with the Kessler Fluats, besides an innumerable number of monuments, as well as all kinds of buildings.

The Kessler Fluats have been applied on over five million square feet of surface in the city of Berlin, consisting of all kinds of building stone, brick and cement plaster, and it was demonstrated that they came up to all expectations; that is, to preserve the outside of buildings by making them perfectly impervious to atmospheric elements and increasing the tensile strength. No discoloration or oxidation can take place.

The inventor, Mr. Kessler, was presented, on account of his invention, with the Cross of the Legion of Honor, a Gold Medal from the Societe d'encouragement pour les Arts et l'Industrie, a Gold Medal from the Societe des Arts Decoratifs, a Gold Medal at the World's Exposition at Paris in 1889.

Send for Booklet.

SIZES AND
PRICES.

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MEDALS.

BOOKLETS.

NATIONAL PAINT WORKS

Makers of Technical Paint

100 William Street

NEW YORK, N. Y.

ESTABLISHED 1876

WORKS
WILLIAMSPORT, PA.

CHICAGO, ILL., Great Northern Building

BRANCHES
SAN FRANCISCO, CAL., Monadnock Building

WASHINGTON, D. C., Colorado Building

PRODUCTS.

TECHNICAL PAINTS specially made to order.

OUR PAINTS, SPECIALLY PREPARED.

The NATIONAL PAINT WORKS are in a class by themselves, and are the pioneer manufacturers of Technical Paints, specially prepared for each location. We have no hobbies, as we do not manufacture proprietary paints, i. e., special preparations, but have always been ready to tell our clients frankly the names of the principal pigments and vehicles in our paints and our reasons for using them. It is impossible to furnish one paint that will answer all requirements, and in order to secure the best results each case must be studied by a paint expert who is a graduate in the manufacturing and application of technical paints. Nearly fifty per cent of our output is composed of paints made up on our customers' specifications, and we are constantly consulted by large railroad systems as to the preparation of the best specifications for their use.

OUR LEADING SPECIALTY, TECHNICAL PAINTS FOR METAL SURFACES.

Our leading specialty for over thirty years has been the preparation of Technical Paints for Metal Surfaces, and our paints are on more bridges, steel and iron buildings, gas holders, power plants, steel cars, stations, smoke-stacks, subways, train sheds, iron and tin roofs, than all other makes combined. We are not manufacturers of anything but paints, hence are not compelled to use our by-products to make paints with, and therefore can and do go into the markets of the world to purchase what our experience has proved to be best for the work. Our service records cover a longer period than any other paint maker, and we are at your disposal to advise to the best of our ability. We make all of our paints to order and therefore obtain results where others have failed.

STRUCTURAL IRON PAINTS, NO. 16 CARBON BLACK, NO. 18 CARBON GREEN.

For two-coat work on structural iron we recommend our No. 16 Carbon Black for the shop coat, and for the field coat our No. 18 Carbon Green. This combination gives distinctive colors, so that the architect can readily see if the two coats have been properly applied. For three-coat work, No. 16 Carbon Black can be used as the finishing field coat. These paints have been used for over twenty years on many of the largest buildings in the United States. We mention a few of them:

Fifth Avenue Building, New York, N. Y.
Frankel Building, New York, N. Y.
Goelet Building, New York, N. Y.
Times Building, New York, N. Y.
Edison Building, New York, N. Y.

New Olympia Theater, New York, N. Y.
Woodbridge Building, New York, N. Y.
American Surety Building, New York, N. Y.
New Jersey State Armory, Trenton, N. J.
Pan-American Exposition Building, Buffalo, N. Y.

NO. 32 GRAPHITE, NO. 38 GRAPHITE.

We carry regularly in stock all of the leading graphite pigments such as Mexican, Michigan, Canadian, Acheson, etc., and our No. 32 Graphite Paint, which is made regularly from pure Mexican graphite pigment, is accepted by the various departments of the United States Government, and we have supplied them with many thousand gallons. It has been used recently on the United States Senate Building, Philadelphia Opera House, and many other large structures. For two-coat work, where graphite is used as the shop coat we recommend our No. 38 Green Graphite for the field coat, and for three-coat work with this combination No. 32 can be used for the finishing field coat.

LEAD PAINTS,
NO. 300
RED LEAD.

We have supplied many thousand gallons of our No. 300 Red Lead Paint for shop work on many important structures such as the Chicago post office, East River bridge, New York Central and New York, New Haven Railroad work; Second and Third Avenue car barns, New York, N. Y.; General Electric Company's plants; American Car & Foundry Company's plants, etc. For the field coats over our No. 300 any shade of our Technical Lead Paints can be applied, and we will be glad to send, on application, our sample card No. 90, showing over forty different shades to select from.

NO. 625
GALVANIZED
IRON PRIMER.

For new or old galvanized iron work we especially recommend our No. 625 Galvanized Iron Primer. This can be applied with any shade of our Technical Paints for metal.

BRIDGE
PAINTS,
NO. 31
ENGLISH RED
OXIDE OF
IRON. NO. 54
BROWN
OXIDE. NO. 56
MEDIUM
BROWN.

For many years we have held the record on Bridge Paints and have supplied more bridge paint than all other makes combined. We especially recommend for bridge work our No. 31 English Red Oxide of Iron Paint which we can furnish in three shades: No. 31, Bright Red; No. 54, Dark Brown; No. 56, Medium Brown; these last two being made from oxide and graphite, forming three distinctive shades for three-coat work. Either 54 or 56 can be used for the shop coats, and 31 for the field coats. We can refer to many of the leading railroad systems in the United States who use our paint as their standard bridge paint.

SPECIFICA-
TIONS.

The following forms incorporated in specifications for preparing and painting metal surfaces will insure satisfactory results:

Shop Work—First: All metal surfaces except galvanized metal shall be carefully and thoroughly scraped and cleaned of all rust, scales, dirt and dust; steel scrapers and stiff wire brushes must be used for this purpose. Then use a stiff bristle brush for dusting off the surface to be painted. Immediately after cleaning apply one coat of No. —made by the NATIONAL PAINT WORKS of Williamsport, Pa.; main Sales Office, 100 William Street, New York, N. Y.

Second: All inaccessible surfaces shall receive, before assembling, a second coat of NATIONAL PAINT WORKS No. —.

Third: All galvanized metal must be clean and dry and free from rust, and have one coat applied to the galvanized surface of NATIONAL PAINT WORKS No. 625 Galvanized Iron Primer before erection, and all inaccessible surfaces shall receive, before assembling, a second coat of NATIONAL PAINT WORKS No. —.

Erection (Field Coat)—Fourth: After erection all rust spots shall be thoroughly cleaned, and all places where the paint is rubbed off, together with all edges, rivets, nuts and bolt heads shall receive an extra coat of NATIONAL PAINT WORKS No. —, and the galvanized metal which has received a coat of NATIONAL PAINT WORKS No. 625 shall be cleaned where necessary and all bare spots given a second coat of No. 625.

Fifth: Allow at least five days for this to dry and then apply, for the second coat, NATIONAL PAINT WORKS No. —.

Finishing—Sixth: For three-coat work, after allowing five days at least, for the second coat to dry, apply for the third coat NATIONAL PAINT WORKS No. —.

Seventh: No coats shall be applied before the previous coats are thoroughly dry. If it is necessary to thin the paint, only pure, raw linseed oil or a small quantity of pure spirits of turpentine shall be used (benzine and rosin oil are absolutely prohibited). No paint shall be applied out of doors in wet, freezing or misty weather, and all painting, whether in shops or field, shall be done by skilled workmen.

Eighth: All paint shall be bought direct from the manufacturer specified and opened in the presence of the inspector.

SERVICE
AND CO-
OPERATION.

In making inquiries regarding our paints give us all the information you can as to how much time you can allow for paint to dry, remembering every hour less in drying time sacrifices durability. If paint is to be subjected to severe exposure it is desirable to select a paint that without impairing or shortening its durability decays, so as to be easily removed when its usefulness is gone. Always state if old or new work, wood or iron; if painted before, what was used, and its present condition; what exposure—sun, water, gases, etc.; how it is to be applied—brush, dipped, or sprayed.

We will make a paint of any color according to special formula, to suit any requirement, upon receipt of the necessary data addressed to our New York office.

BLUE
BOOK.

On application, we will be glad to send a free copy of the seventh edition of our Blue Book, entitled "Review of Technical Paints for Metal."

THE NATIONAL ROOFING CO.

MANUFACTURERS OF

Preservative Asphalt Paints and Roof Coatings

FACTORIES AND GENERAL OFFICES

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LOUISVILLE, KY., CENTRAL PAINT & ROOFING Co., 306 West Main Street

DISTRICT OFFICE

PITTSBURG, PA., MORRIS AYRAULT, Manager, 503 Publication Building

PRODUCTS.

"ASPHALTUS," Special Asphalt Coating; "PERMANENT" PAINT, for Felt, Rubber, Metal or Wood; ASPHALT GRAPHITE PAINT, for Bridge and Structural Iron Work, Stacks, Engines, and Machinery; GRAPHITE PIGMENT; ASPHALT CASTING DIP; ASPHALT WATER-PROOFING.

Also various brands of ROOFING described elsewhere in this Catalogue, for which see our name in general index.

"ASPHALTUS" COATING.

"Asphaltus" is made from the best grade of natural hard gum asphalt treated in oil at a high heat, making a perfect chemical combination and producing a tough, elastic, non-porous and impervious coating which will strengthen, renew and build up felt, rubber, feldspar or gravel surfaced roofing, for years. Reduced with one gallon of boiled linseed oil to each gallon of coating it makes a very superior asphalt paint for all kinds of metal or wood construction. It is especially adapted for use on tin, iron or steel roofs, boilers, engines and machinery. Reduced in the above proportions it has a covering capacity on metal of from 350 to 500 square feet per gallon. Made in Black, Red, Green, Brown and Terra Cotta.

"PERMA- NENT" PAINT.

This is our leading brand of paint. It is composed of lead, zinc, natural oxides and chemically pure coloring matter, finely ground, making a tough, elastic, impervious surface not affected by the elements, and it is a preventive of corrosion.

COLORS.

It is furnished in four colors, Black, Red, Green and Brown.

USES.

"Permanent" Brand Paint is especially desirable, owing to its strong and permanent color, for use on felt, rubber and all composition roofings; for houses, factories, barns and other wood construction; for metal construction of all kinds, and for all uses where tough paint of lasting qualities and permanent color is desired.

ASPHALT GRAPHITE PAINT.

Our XX Asphalt Graphite Paint is a natural graphite pigment ground in asphalt linseed oil varnish. It is non-porous, rust inhibitive, and a perfect metal preservative. It has high heat-resisting properties.

USES.

The above brand is especially desirable for use as a first coat on bridges, smoke-stacks, engines, boilers, machinery and structural iron work.

COLOR.

Made in one color only, natural graphite or dark lead color.

GRAPHITE PIGMENT.

This is a natural graphite for paint grinders' use. We would be pleased to furnish analysis on application.

SHIPMENTS.

We control to a large extent the raw materials used in the manufacture of our goods, and are therefore not handicapped for materials, and in addition our well-equipped traffic department insures prompt delivery of all orders entrusted to us.



THE STANDARD PAINT COMPANY

MANUFACTURERS OF
Preservative Paints
100 William Street
NEW YORK, N. Y.



BRANCH OFFICES

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HAMBURG AND BERLIN, GERMANY, RUBEROID GESELLSCHAFT, M. B. H. PARIS, FRANCE, SCE. ANE. DES TOITURES ET ISOLANTS

PRODUCTS.

"FLEXITE" METAL PRESERVATIVE PAINTS, "FLEXITE" PRIMER, "S P C" GRAPHITE PAINT, "S P C" DAMP-PROOFING PAINT, "S P C" FLEXIBLE IRON PAINT, "P & B" ACID-RESISTING PAINTS. Also, RUBEROID ROOFING; BUILDING, SHEATHING and INSULATING PAPERS, as described elsewhere in this Catalogue, for which see our name in General Index.

"FLEXITE" METAL PRESERVATIVE PAINTS.

"Flexite" Metal Preservative Paints (black and colors) are for all metal surfaces exposed to the weather, dampness, salt air or corrosive gases, including structural iron and steel, bridges, siding, roofs, fences, railing, ornamental work. Made from the most carefully selected inert pigments with a vehicle containing absolutely pure refined linseed oil, in combination with one of the most refractory materials known to science, they present exceptional qualities for resisting severe conditions. They may be used with or without "Flexite" Primer.

Color card and specifications will be forwarded upon request.

"FLEXITE" PRIMER.

"Flexite" Primer is recommended for a shop coat in connection with "Flexite" Paints. It consists of a transparent fibrous pigment, ground very fine in pure linseed oil. It dries to a hard transparent coat, which will permit inspection of the underlying metal. The fibrous nature of the pigment adds to the tenacity of the coating and its low specific gravity permits it to remain in perfect suspension in linseed oil.

"S P C" DAMP- PROOFING PAINT.

"S P C" Damp-Proofing Paint is a waterproof compound, having a mineral base of the highest damp-resisting qualities intended for coating the inner surfaces of exposed brick and concrete walls. It forms a perfect bond between the wall and the plaster, thus avoiding the necessity of furring and lath, and at the same time insures a thoroughly moisture-proof building. Usually one good coat is sufficient for a satisfactory job. To insure the best results, however, two coats are recommended.

Copy of specifications for applying this paint will be forwarded to any one interested.

"S P C" FLEXIBLE IRON PAINT.

"S P C" Flexible Iron Paint is a quick-drying, glossy black paint composed of a flexible base cut with a solvent, and is highly elastic in nature. This paint contains no coal-tar, will not melt, blister or peel. It is extensively used on metal roofs, and is especially efficient where leaks may have developed at the seams and in places difficult to locate. An economical, durable, and efficient coating.

"P & B" ACID- RESISTING PAINTS.

"P & B" Acid-Resisting Paints, old and well-known coatings, are used in connection with ice plants, refrigerating rooms, acid chambers, breweries, photographers' studios, etc. They are well adapted for pipes, vats, tanks, and all surfaces subject to acids. They dry rapidly to a tasteless and odorless coat. No. 1, the thinnest grade, is used where the greatest penetration is desired. No. 2, or medium grade, is most generally employed. No. 3, the heaviest grade, is intended for brick walls, foundations, and submerged work generally.

ESTABLISHED 1848

TOCH BROTHERS

MANUFACTURERS OF

Technical and Decorative Paints, Varnishes and Enamels

320 Fifth Avenue
NEW YORK, N. Y.

BRANCH OFFICES

CHICAGO, ILL., 208 Chamber of Commerce Building

PHILADELPHIA, PA., Builders' Exchange

AND ALL PRINCIPAL CITIES IN THE UNITED STATES AND CANADA

WORKS AND LABORATORIES: LONG ISLAND CITY, N. Y.

PRODUCTS.

"R. I. W. DAMP-RESISTING PAINTS" for all purposes.

"TOCKOLITH" (Patented), a cement paint for metal, to prevent chemical corrosion.

"LIQUID KONKERIT" (Patented), a cement paint for waterproofing concrete and brick structures.

"TOXEMENT" (Patented), for waterproofing cement against pressure.

"VERTE ANTIQUE," for producing effect of genuine corroded copper.

"TOXLOXPORE," a colorless waterproofing for concrete, brick, and stone, which rain-proofs surfaces. Does not contain paraffine.

"CEMENT FILLER" and "CEMENT FLOOR PAINT" (Patented), for interior cement floors, for oil-proofing, dust-proofing and waterproofing.

"EDINBURGH" MORTAR COLORS, for brick work.

PERMANENT CEMENT COLORS for coloring cement tile and concrete.

ELECTRIC INSULATING PAINTS.

HOSPITAL and LABORATORY ENAMEL.

TECHNICAL PAINTS of all descriptions, and fine VARNISHES of all kinds.

SERVICES.

Our expert and advisory services are at the command of the trade. Mr. Maximilian Toch, F. C. S., author of "Chemistry and Technology of Mixed Paints," "The Composition of Paints and Pigments," "The Permanent Protection of Iron and Steel," and many other publications, is the director of our laboratory.

WHEN
ESTABLISHED.

We are the oldest technical paint and varnish house in the United States, having been established in 1848.

"R. I. W.
DAMP-
RESISTING
PAINT."

"R. I. W. Damp-Resisting Paint" was originally made in only one grade, known as R. I. W. No. 232, and was first used for painting the interior of exterior walls, which were then plastered, and such walls became vermin-proof, moisture-proof, and stain-proof.

Since the invention of this paint, which is a non-saponifiable, bituminous compound, with a base composed of a gum similar to gutta-percha, a number of others were made, as, for instance, R. I. W. No. 110, for backing limestone, and for painting the grillage of steel buildings; R. I. W. No. 112, which is similar to R. I. W. No. 110, but which dries quicker, for the painting of interior iron work, to prevent electrolysis; R. I. W. No. 49 on metal for extreme exposures; R. I. W. No. 1375, for steel work in subways; R. I. W. No. 47 and R. I. W. No. 48, for bridge work; R. I. W. No. 44, for hot stacks; R. I. W. Marine Cement, for foundation and ship work; and a large number of other varieties.

"TOCKO-
LITH"
(PATENTED).

"Tockolith" is a patented paint with a cement base, comprising a tricalcic silicate synthetic cement, which renders steel and iron immune to corrosion. It incases structural iron in a hard coating, everlastingly impenetrable by fumes, gases, and vapors. This paint has been used on the Pennsylvania Terminal in New York, the Metropolitan Life Building and Tower, the Boston Subway, the New York Subway, the Brooklyn "L" Road, and hundreds of other structures.

"Tockolith" must always be protected by means of one of our "R. I. W. Damp-Resisting Paints," in order to prevent the free lime, which is generated in setting, from being leached out.

"LIQUID KONKERIT."

"Liquid Konkerit" is an exterior paint for cement, concrete, stone and brick. By filling all pores and crevices it makes the surface impervious to dampness. This paint is light gray in color, similar in color to neat Portland Cement. It may be second-coated with any of our colored "Liquid Konkerit" paints, or can be left in its original shade.

"CEMENT FILLER" AND "CEMENT FLOOR PAINT" (PATENTED).

Cement floors grind off into dust, no matter how frequently they are swept or washed, and the particles of silica and lime injure machinery, furniture or goods stored in such rooms. Applications of oil cause cement to expand, bulge, blister and disintegrate. The principle of "Cement Filler" is as follows: Concrete and cement liberate calcium hydroxide in setting. We have manufactured an organic acid resin (not a rosin) which, when coated on cement, combines with the free calcium hydrate to form a true calcium resinate, the process taking about six hours. The floor is then treated with another coat of the same material, containing in addition an inert pigment. Within twenty hours this second coating is so hard and vitreous that it may be walked on without showing a scratch. The first coat, "Cement Filler," need never be replaced; the second coat, "Cement Floor Paint," will wear off through much use, and needs occasional retouching. There are six shades, the most popular being maroon and neutral, neutral being the color of concrete. Some of the largest power-houses in the country have adopted this material for use on engine and generator room floors, no sparking being visible on direct-current generators. Hospitals also use the material, the concrete floors looking as though made of polished stone.

We warn consumers against imitations, improper fatty acids doing harm to the floor. Our materials are covered by patents, and the price is moderate. The first coating will cover about 200 square feet, depending on the porosity of the floor; the finishing paint averages 300 square feet to the gallon. Applied by ordinary labor.

"TOXEMENT."

"Toxement" is a chemical in powdered form, two per cent of which by weight is mixed with neat Portland Cement, before addition to the aggregates. Such cement-concrete becomes waterproof against pressure.

"ANHYDROSOL."

"Anhydrosol" is a liquid application for permanently damp-proofing cement or brick walls, and is colorless.

"VERTE ANTIQUE."

"Verte Antique" is a pure copper product made in two qualities, one for interior and the other for exterior purposes, and can be used on any metal or even on wood, to produce the effect of genuine corroded copper.

"TOXLOX-PORE."

"Toxloxpore" is a colorless liquid which can be applied to any cement or brick construction. It waterproofs and stain-proofs almost immediately. A test can be made with our "Toxloxpore" which will show its superiority over anything sold as the "just as good" variety. A cement floor treated with "Toxloxpore" must be allowed to dry for a few hours, after which a drop of ink placed on the floor and allowed to remain ten seconds and then wiped off with a damp rag, does not show a stain, which can not be said of any imitation.

ENAMELS.

We make a variety of Enamels that is far superior to the imported, and many of the enamels are waterproof, steam-proof, oil-proof and sulphur-proof.

CEMENT COLORS, ETC.

We are the originators of Cement Colors, Mortar Colors, and Plaster Colors, and make over twenty-five colors which are permanent in either lime or cement mortar.

REFERENCES.

Some of the buildings on which our "R. I. W.," "Tockolith," etc., have been used are:

Pennsylvania Power House, Long Island City, N. Y.
Metropolitan Life Tower and Buildings, New York, N. Y.
Singer Tower, New York, N. Y.
Public Library, New York, N. Y.
Custom House, New York, N. Y.
Ansonia Hotel, New York, N. Y.
Pennsylvania Terminal, New York, N. Y.
Hotel Martinique, addition, New York, N. Y.
New Hoffman House, New York, N. Y.
City Hall, Newark, N. J.
U. S. Government Building and Post Office, Cleveland, Ohio
Office Building of House of Representatives, Washington, D. C.
New Cook County Court House, Chicago, Ill.

United States Mint, San Francisco, Cal.
Maison Blanche, New Orleans, La.
City Investing Building, New York, N. Y.
McAdoo Terminal Buildings, New York, N. Y.
New Union Depot, Birmingham, Ala.
Union Depot, Washington, D. C.
Bank of Ottawa Building, Montreal, Canada
North Philadelphia Trust Co., Philadelphia, Pa.
People's Bank Building, Seattle, Wash.
The Empress Hotel, Victoria, B. C., Canada
Greenville Apartments, Vancouver, B. C., Canada
Hotel Tuller, Detroit, Mich.
Plaza Hotel, New York, N. Y.
Pontchartrain Hotel, Detroit, Mich.

THE WATERPROOFING COMPANY

Engineers and Contractors for Waterproofing

147 East Thirty-Fifth Street
NEW YORK, N. Y.



TRADE-MARK

BRANCH OFFICES

BOSTON, MASS., 23 North Grove Street
CHICAGO, ILL., Rookery Building
PITTSBURG, PA., Union Bank Building

SERVICES AND PRODUCT.

We are ENGINEERS and CONTRACTORS for WATERPROOFING, making a specialty of "HYDROLITHIC" CEMENT WATERPROOFING.

We contract for the waterproofing of basements, subways, reservoirs, vaults, tunnels, swimming-pools, etc., procuring and guaranteeing a positive and permanent waterproofing for all kinds of masonry construction.

We manufacture "Hydrolithic" Cement, which is a true waterproof cement—not one of the numerous compounds advertised for mixing with cement or concrete. The properties of "Hydrolithic" Cement include all the good points of a first-class Portland Cement with the addition that it is water repellent, and can be mixed with water only after the addition of sand and by special manipulation. Our cement is not offered for sale, but is used exclusively by ourselves.

APPLICA- TION.

Wherever practicable "Hydrolithic" Cement Coating is placed upon the inner face of the wall to be waterproofed, and over the upper surface of the floor, where it serves not only as a waterproof medium but a wearing surface as well. So great is the adhesive power of "Hydrolithic" Cement that it withstands, without cracking or showing the slightest evidence of percolation, a pressure of 140 pounds per square inch.

ADVANTAGES.

(1) Ease and economy with which repairs may be made should leaking occur through settlement of the structure or accidents of any kind.

(2) With "Hydrolithic" Cement Waterproofing, no extra supporting walls are required.

(3) Not only is the expense of supporting walls obviated but there is a large gain in floor space.

(4) In basements and sub-basements no furring and plastering is necessary.

(5) The walls are left with a neat finish.

(6) Where applied to floors no further floor finish is necessary.

(7) "Hydrolithic" Cement Waterproofing is applied independent of and without delay to other work upon the structure.

(8) "Hydrolithic" Cement Coatings add to the strength and durability of walls or floors to which they are applied.

(9) As this system employs neither paper nor cloth, and as the material is mineral, the coating is a positive and permanent waterproofing agent, no decomposition or disintegration being possible, the cement becoming harder with age.



CITY INVESTING BUILDING, 165
BROADWAY, NEW YORK, N. Y.

FRANCIS H. KIMBALL, Architect

Rises 486 feet above sidewalk; 32 stories,
cubical contents of 10,300,000 cubic
feet

Waterproofed exclusively with "Hydro-
lithic" Cement, gaining 10,332 cubic
feet of space over felt method



ENGINE-ROOM, CITY INVESTING BUILDING
Methods of waterproofing trenches, machinery foundations,
etc., with "Hydrolithic" Cement

(10) "Hydrolithic" Cement is fireproof, and may be used to advantage in close proximity to boilers, furnaces, or other places where heat would cause tar waterproofing to melt and run.

(11) Our cement coating, when finally set, becomes as hard as the best Portland Cement mortar and may be placed beneath grillages and column bases without the slightest settlement occurring, eliminating the metal pans used with tar and felt waterproofing.

(12) "Hydrolithic" Cement Coating may be carried directly through walls without the trouble and expense of forming a key, all danger from slipping in retaining walls, so common with tar and felt seal, being eliminated.

EXPERIENCE.

"Hydrolithic" Cement Waterproofing is beyond the experimental stage, having been employed since 1900. During the past four years more important buildings in New York, Boston, and Pittsburg have been waterproofed by this company with "Hydrolithic" Cement than by all other methods combined.

SPECIFICATIONS.

Material—All interior surfaces of all exterior walls, and the upper surface of the concrete floor slab throughout the basement (or sub-basement), elevator pits, machinery foundations, trenches, etc., as shown on plans, shall be waterproofed with "Hydrolithic" Cement.

The Waterproof Cement must be delivered at the building ready for mixing with water. In no case will liquid or powdered compounds mixed with ordinary cement and sand mortar be allowed.

Workmanship—All surfaces, before the application of the waterproof coating, shall be thoroughly chipped or cleaned, and the coating applied not later than twenty-four hours after the surface has been prepared. A perfect bond must at all points be secured with the underlying masonry.

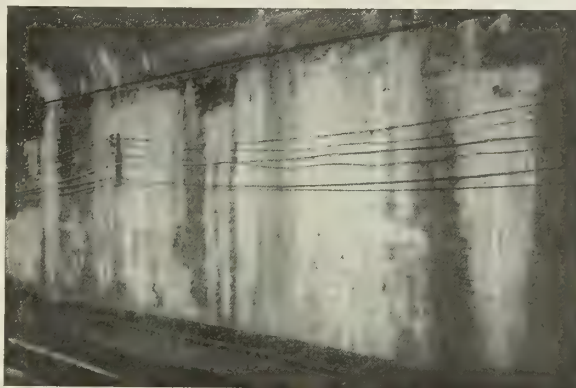
Wall coating shall be $\frac{3}{8}$ inch in thickness, thoroughly floated and troweled to a smooth and even finish, free from all imperfections. Wall coating shall be applied in two coats, scratch and finish. Floor work shall be what is known as "Hydrolithic" granolithic floor finish, 1 inch in thickness, and is to serve the double purpose of a waterproofing agent and wearing surface. Floor coating shall be placed at one operation, floated and finished as described for wall work.

Guarantee—The waterproofing contractor shall be required to furnish a written guarantee that his work shall be waterproof; that he will promptly repair any leaks which appear in his waterproofing which cannot be attributed to indisputable settlement or other defects in the masonry upon which his waterproofing is applied, provided that such masonry has not been constructed by the waterproofing contractor.

REFERENCES.

The following are a few of our important contracts:

Pennsylvania Tunnels under New York, N. Y., Alfred Noble, Chief Engineer
Thompson Avenue Viaduct, Long Island City, N. Y., Alfred Noble, Chief Engineer
Hunters' Point Avenue Viaduct, Long Island City, N. Y., Alfred Noble, Chief Engineer
Joralemon Street Tunnel, Brooklyn, N. Y., George H. Pegram, Chief Engineer
McAdoo Power-House, New York, N. Y., Robins & Oakman, Architects
Hudson Terminal Buildings, New York, N. Y., Clinton & Russell, Architects
United States Express Company Building, New York, N. Y., Clinton & Russell, Architects
Farmers' Loan & Trust Company Building, New York, N. Y., Clinton & Russell, Architects
Buffalo, Rochester & Pittsburg Railway Office Building, Rochester, N. Y., Clinton & Russell, Architects
City Investing Building, New York, N. Y., Francis H. Kimball, Architect
Peerless Garage Building, New York, N. Y., Francis H. Kimball, Architect
Seligman Building, New York, N. Y., Francis H. Kimball and Julian C. Levi, Associate Architects
Singer Building, New York, N. Y., Ernest Flagg, Architect
The Teachers' College, New York, N. Y., Parish & Schroeder, Architects



BROOKLYN SUBWAY

Joralemon Street Tunnel, before being Waterproofed



JORALEMON STREET TUNNEL

Waterproofed with "Hydrolithic" Cement. 41,150 square feet of surface treated

Morris Park Station of New York, New Haven & Hartford Railroad, New York, N. Y., Cass Gilbert, Architect
New York State Educational Building, Albany, N. Y., Palmer & Hornbostel, Architects
School of Mines Building, Pittsburg, Pa., Palmer & Hornbostel, Architects
Bryant Building, New York, N. Y., Henry Ives Cobb, Architect
Union Bank Building, Pittsburg, Pa., MacClure & Spahr, Architects
Jones & Laughlin Building, Pittsburg, Pa., MacClure & Spahr, Architects
Carnegie Office Building, Waverly, N. Y., MacClure & Spahr, Architects
Fort Pitt Hotel, Pittsburg, Pa., Janssen & Abbot, Architects
Century Building, Pittsburg, Pa., Rutan & Russell, Architects
Oliver Office Building, Pittsburg, Pa., D. H. Burnham & Co., Architects
Pump Well, Brooklyn Navy Yard, Brooklyn, N. Y., Civil Engineers, United States Navy
Pump Well, Brooklyn Navy Yard, Brooklyn, N. Y., Civil Engineers, United States Navy
Colgate Buildings "H" and "I," Jersey City, N. J., William P. Fields, Engineer
College of City of New York, New York, N. Y., George B. Post & Sons, Architects

TRUSSED CONCRETE STEEL CO.

Manufacturers of Chemical Products for Waterproofing and Finishing
Concrete and Masonry

DETROIT, MICH.

CABLE ADDRESS: "KAHNCRETE, DETROIT"

WORKS
YOUNGSTOWN, OHIO
WALKERVILLE, ONTARIO
WELLINGTON, ENGLAND

AGENCIES IN ALL PRINCIPAL CITIES OF THE UNITED STATES AND ABROAD

PRODUCTS.

"TRUS-CON" CHEMICAL PRODUCTS include LIQUID WATER-PROOFING, WATERPROOF FILLER, FLOOR FINISH, WALL FINISH, BONDING COAT, STONE BACKING, FOUNDATION COAT, SOLID BITUMINOUS CEMENTS X and Y.



TRADE-MARK

"TRUS-CON"
LIQUID
WATER-
PROOFING.

A permanent, transparent, waterproof coating applied to outside walls. Penetrates the surface of porous masonry, thoroughly sealing every pore and rendering it impermeable to moisture. Prevents staining and discoloration on concrete and stone walls.

"TRUS-CON"
WATERPROOF
FILLER.

A powder chemical compound which when added to cement in mixing concrete makes concrete waterproof under the most severe conditions. "Trus-Con" Waterproof Filler gives maximum waterproofing efficiency without any detrimental effect upon the strength or permanency of the concrete. For concrete blocks, stucco, silos, conduits, foundations, etc.

"TRUS-CON"
FLOOR
FINISH.

A hard, tough, and elastic finish applied to concrete floors, making them stain-proof and waterproof. Resists wear and abrasion and prevents the formation of concrete dust. Used for floors of power stations, manufacturing plants, garages, hospitals, hotels, etc.

"TRUS-CON"
WALL
FINISH.

For waterproofing and beautifying interior and exterior walls. Furnished in a variety of tints to secure any desired decorative effect. Prevents the formation of stains due to moisture and chemical action. Useful on concrete and brick walls of all kinds. Will not peel.

"TRUS-CON"
BONDING
COAT.

A waterproof coating for the inside of all exposed walls, furnishing a perfect bond for plaster, which is applied directly to it. An absolute stop for moisture and dampness.

"TRUS-CON"
STONE
BACKING.

A coating for unexposed faces of cut stone to prevent staining due to absorption of moisture from brick backing. "Trus-Con" Stone backing is water, acid, and alkaline proof and effectually resists any detrimental chemical action which may be present.

"TRUS-CON"
FOUNDATION
COAT.

A heavy waterproof, bituminous cement for waterproofing substructural work under earth filling, where water pressures are not so high as to require the use of our solid cements. Provides a continuous waterproof coating and indefinitely retains its bond to the masonry under wide variations of temperature. It is applied cold with a mop or brush.

"TRUS-CON"
SOLID
BITUMINOUS
CEMENT X.

For waterproofing tunnels and general underground masonry which are subjected to a comparatively uniform temperature.

In application it is heated and mopped on the surface which has received one application of Bonding Coat No. 2. Permanently ductile and elastic, retains its adhesion to concrete, and furnishes a positive waterproofing membrane. Under very heavy hydrostatic pressures it is used with burlap.

"TRUS-CON"
SOLID
BITUMINOUS
CEMENT Y.

An elastic solid cement for use in concrete, brick or general masonry subject to wide variations of temperature, as culverts, bridges, etc. Retains its adhesion and elasticity under the widest range of temperature. Applied in same way as Solid Cement X. Also used in connection with asphalted burlap, to resist heavy hydrostatic pressures.

SERVICES.

Our large Technical Laboratory will gladly advise and give detailed suggestions, without charge, on any special waterproofing and finishing problems. Write for free specifications.

ZIBELL DAMP-RESISTING PAINT COMPANY

Waterproofing Engineers, Consulting Experts in Waterproofing
and Damp-Proofing Problems

273 Water Street
NEW YORK, N. Y.

TELEPHONE, 1782 BEEKMAN

BRANCH WAREHOUSES

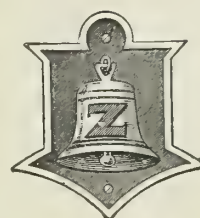
AMSTERDAM, HOLLAND, Damrak 16, J. LINGEMAN

GENEVA, SWITZERLAND, F. BONNET & Co.

PRODUCTS AND SERVICES.

Manufacturers of "ALKACENE" CEMENT, "PROTECTORINE" WATERPROOF PAINT and "VESUVALINE" WATERPROOFING and INSULATING PREPARATIONS, and Contractors and Consulting Experts for WATERPROOFING and DAMP-PROOFING WORK.

By a skilful and scientific treatment, we successfully solve difficult or complex waterproofing and damp-proofing problems, in either new or old buildings, foundations, weather-exposed walls or roofs of residences, mercantile buildings, tunnels, subways, reservoirs, aqueducts, or concrete tanks.



TRADE-MARK

THE ZIBELL SYSTEM.

The Zibell System used in all of our operations has been developed after years of experiment and practical work, and is now the most efficient and economical known system of waterproofing and damp-proofing. Its use in foundation work, where old methods have failed, results in successful expulsion of water of any pressure up to 200 pounds per square foot, and spring water, a most persistent enemy, is stopped in its flow, turned about and forced to take another course. The old method of sump pumps is done away with, and walls and floors of basements, cellars, vaults, and tunnels are made absolutely dry and sanitary.

WATERPROOF- ING AND DAMP-PROOF- ING FOR SUBSTRUC- TURES, SUPER- STRUCTURES.

Colorless "Protectorine" is of the consistency of liquid rubber, highly penetrative, adhesive, elastic, and of bull-dog tenacity; applied with a brush to wet walls, it forms a vitreous surface unaffected by water.

BRICK—The Zibell System of damp-proofing weather-exposed brick walls against driving rains consists of thoroughly examining the entire exterior surface of the wall, skilfully and carefully removing the broken pieces of brick, pointing up the interstices with "Protectorine" cement, and thoroughly coating the entire surface with amber "Protectorine" and two coats of Zibell's waterproof paint, any desired color.

STONE—Colorless "Protectorine" applied to brownstone, limestone, and other masonry, sinks deeply into the pores, sealing them completely, fills cracks, crevices and interstices, and leaves the natural granular effect of newly quarried stone.

CONCRETE—In concrete buildings, porosity, the only serious objection to the general use of this form of structure, is entirely overcome by the use of Colorless "Protectorine," which, when applied, forces its way in, plugs up the pores, and forms a permanent epidermal surface impenetrable by water or dampness. Concrete buildings thus treated do not become soaked during rainstorms, but retain their natural color in all conditions of weather.

TERRA COTTA—All kinds of terra cotta are made non-porous by colorless "Protectorine," and retain their newness.

INSIDE DAMP- PROOFING.

Zibell's black "Protectorine," made from a combination of highly elastic waterproof gums, is a viscid, leathery liquid, absolutely poreless, waterproof, wind-proof, frost-proof, and weather-proof. Applied by means of a 4-knot brush to inside of exposed walls of a

building, it forms a tough, continuous, elastic, glossy surface, impenetrable by rain and storms; the plaster is applied direct to the "Protectorine," eliminating the fur and lath air-space. One 4-knot brush shipped with each barrel of black "Protectorine" gratis.

PROTECTION OF MURAL DECORATION.

As an efficient protection for ceiling and mural decoration white "Protectorine" is unsurpassed; it prevents discoloration, efflorescence, and exudation of dampness. Saltpetre is held in check and all possibility of staining is eliminated.

PROTECTION FOR IRON AND STEEL.

Antirust "Protectorine" is invaluable as a protective for all kinds of structural, ornamental and corrugated iron and steel work; it makes a poreless, tough, elastic surface, unaffected by rain, gases, sulphurous acids, atmosphere or rust.

CONCRETE FLOORS.

Concrete floors continually give off a fine dust, composed of particles of silica, lime and magnesia; this is not only injurious to the human throat and lungs, but is the cause of constant wear in the bearings of machinery. One or two coats of colorless "Protectorine" render concrete floors as hard as steel, and impervious to moisture and oil.

LIGHT- COLORED FLOORS.

Light-colored floors, composed of marble dust, cement and sand, retain their natural color and are rendered moisture and oil proof by treatment with F. F. F. "Protectorine."

CONCRETE ROOFS.

Zibell's roof "Protectorine" is elastic, will not chip or crack; will withstand vibration and sulphurous acid gas, also the effects of salt air, is guaranteed for 20 years, and is absolutely waterproof, frost-proof, and fireproof.

PAINT WITHOUT LEAD OR OIL.

"Vesuvaline" is a valuable substitute for oil paint, one in which no oil is necessary. It is 75 per cent cheaper than lead and oil paints. It is manufactured and shipped in mass or paste form, and is cut with benzine in proportion of 100 pounds "Vesuvaline" to 10 gallons benzine. It adheres with great tenacity, is elastic, works smoothly, has great covering capacity, and is not affected by atmospheric influences or sulphurous gases. Is waterproof, weatherproof, and frost-proof. Is used inside or outside on all forms of buildings; brick, stone, wood or cement. Can be applied to wet or dry walls, foundations, tunnels, etc. Is unaffected by soluble salts, and as a protection for iron and steel is unsurpassed. It is one quarter the cost of best oil paint.

PRICES OF "VESUVA- LINE."

"Vesuvaline" is made in white, buff, and pearl gray, at \$12.00 per keg of 100 pounds (enough for 20 gallons of liquid paint).

SURVEYS, ESTIMATES, AND GUARANTEE.

We make careful surveys and thorough sanitary inspections of all kinds of leaky buildings, without charge. We submit estimates for rendering any kind of structure thoroughly waterproof, damp-proof, frost-proof, germ-proof, and sanitary, with an absolute guarantee of efficiency.

REFERENCES.

The position we occupy with our clients is a confidential one. Owners do not wish to have the fact published that their buildings were leaky or defective. For this reason we do not publish a list of buildings treated by us, although the Zibell System has been applied to over 5,000 buildings in both the United States and Europe.

"ALKACENE" WATERPROOF CEMENT.

COMPRESSIVE STRENGTH.

"Alkacene" Cement is highly vitreous, impervious and resilient. It conforms in its constituents to a cold-process porcelate, forming a hydrolithic cement of amazing steel-like hardness, the compressive strength of which is 300 per cent greater than the highest grade of Portland cement. Its hygrometric nature and molecular construction are such that they entirely overcome porosity, its water resisting and repelling qualities being positive and absolute.

The discovery of the "Alkacene" method of manufacturing cement, lime, mortar, and plaster, the most astounding achievement in building material of the century and one that will work a revolution in building construction, has been the result of many years of tireless research in both this country and Europe.

SUPERSTRUC-
TURES, SUB-
STRUCTURES.
WATERPROOF
MASONRY.

"Alkacene" Cement produces an absolutely water-tight masonry and the added strength imparted to superstructures and substructures is prodigious. All antiquated forms of tar and paper waterproofing are done away with. Don't waterproof: construct your foundations with a cement already waterproof; you accomplish your mason work and waterproofing in one operation, economizing in construction.

SUBAQUEOUS
MASONRY.

"Alkacene" Cement is indispensable in the construction of tunnels, subways, reservoirs, aqueducts, and all subaqueous and subterra masonry against fresh or salt water.

BOND WITH
OLD CEMENT.

In ordinary cement construction builders have found the impossibility of making one day's work bond with another. "Alkacene" Cement overcomes this defect, an improvement particularly valuable in monolithic work. A perfect bond is formed, the entire operation tripled in strength, the structure made water-tight and the steel reinforcement absolutely preserved from corrosion.

NO RAIN
DISCOLORA-
TION.

Discoloration of cement walls during rainstorms is done away with. "Alkacene" Cement shows no discoloration whatever and absorbs absolutely no moisture.

NO
CRACKING.

Cracks never develop with "Alkacene" Cement because of the enormous added tensile strength and resilience. This feature is highly valuable in all concrete work, particularly roofs, floors, sidewalks, and vault lights, eliminating leaks.

"ALKACENE"
CONCRETE
ROOFS.

"Alkacene" Concrete Roofs are guaranteed 20 years. Old tin and paper roofs covered with a thin layer of "Alkacene" Concrete last a lifetime.

"ALKACENE"
CONCRETE
FLOORS.

"Alkacene" Concrete Floors of auto garages, mercantile buildings and engine-rooms are absolutely dust-proof, free from cracks and tripled in strength.

"ALKACENE"
LIME
MORTAR
WATERPROOF.

"Alkacene" Lime Mortar used in construction of brick and stone buildings is of extreme hardness, of perfect affinity and tenacity and forms a joint absolutely impermeable to rain or moisture. Because of its added strength and impermeability it is particularly valuable in the construction of tall mercantile buildings, solving positively the problem of protection from rains driven by winds of high velocity. It eliminates the need of fur and lath and reduces lateral or wind sway to a minimum.

WIND SWAY.

CONCRETE
BLOCKS.

Concrete Blocks made from "Alkacene" Cement are hard as steel and free from rain discoloration and efflorescence.

"ALKACENE"
PLASTER
WATERPROOF.

"Alkacene" Plaster used in walls and ceilings is fire-, damp-, and water-proof, making the staining of mural decorations impossible; efflorescence, wet and dry rot unheard of.

ADDITIONAL
USES.

"Alkacene" Cement should be used in the manufacture of artificial building stone, sarcophagi, mausoleums, burial vaults, foundations, etc. Architects, engineers and contractors who use "Alkacene" Cement, "Alkacene" Mortar and "Alkacene" Plaster in their work will not be disappointed but will be amazed and highly gratified with the results—satisfactory beyond expectation.

DIRECTIONS.

To one barrel dry "Alkacene" Cement add two barrels of sand. Mix thoroughly, add not too much water. For lime mortar, same formula.

PACKAGES,
PRICE.

Shipped in bbls. of 400 lbs. at \$4.50 per bbl. Special price in ton lots.

THE BLUE RIDGE MARBLE CO.

NELSON, GA.

PRODUCTS.

GEORGIA MARBLE, finished, sawed to size or in quarry blocks. All classes of MARBLE WORK, both Exterior and Interior as follows:

Exterior—STEPS, SILLS, LINTELS, COPING, WATER-TABLES, BELT-COURSES, CORNICES, TURNED BALUSTERS, COLUMNS, COLUMN BASES, CAPITALS, ASHLAR WORK, CARVED ORNAMENTS, MONUMENTS.

Interior—FLOOR TILE, BORDERS, BASES, WAINSCOTS, WALL FACINGS, MOULDED CAPS and CORNICES, STAIR TREADS, RISERS, and PLATFORMS, POLISHED COLUMNS, CARVED ORNAMENTS; TOILET MARBLE PARTITIONS, BACKS, FLOOR SLABS, etc.; MARBLE MANTELS, MARBLE TABLETS.

PHYSICAL PROPERTIES OF GEORGIA MARBLE.

The attention of architects and builders is called to the scientific tests and experiments that have been made on Georgia Marble. All of these tests show that Georgia Marble is the best material known for both exterior and interior building work, and it is particularly adapted for mausoleums and monumental work.

Special attention is called to the non-absorbent quality of Georgia Marble, which distinguishes it from other marbles and enables it to resist the action of the elements, keep clean, and retain its original color and beauty.



GIRARD TRUST AND BANKING CO. BUILDING, PHILADELPHIA, PA.
McKIM, MEAD & WHITE and FURNESS, EVANS & Co., Architects

ESTIMATES, SAMPLES, ETC.

Upon request we will be glad to furnish architects with estimates of cost of any work they may have on hand or in prospect.

Samples will be furnished on application and correspondence concerning our products is earnestly solicited.

FACILITIES
AND
TERRITORY.

Our facilities are of the highest class, and we are prepared to handle contracts from the smallest to the largest.

Our market is limited only when distance is so great as to make freight rates prohibitive. We have filled orders in the past from points in Canada to Mexico and from New York to California.

REFERENCES.

Among the prominent buildings for which we have furnished Marble Work are:

EXTERIOR
WORK.

BUILDING	LOCATION	ARCHITECTS
National Metropolitan Bank	Washington, D. C.	B. Stanley Simmons and Gordon, Tracy & Swartwout
Royal Bank of Canada	Montreal, Quebec	H. C. Stone
Girard Trust Co. Building	Philadelphia, Pa.	McKim, Mead & White and Furness, Evans & Co.
New Orleans Court House	New Orleans, La.	Frederick W. Brown and A. Ten Eyck Brown and P. Thornton Marye
Fourth National Bank Building	Atlanta, Ga.	Morgan & Dillon
Century Building	Atlanta, Ga.	Morgan & Dillon
United States Post Office Building	Tampa, Fla.	James Knox Taylor (Supervising)
T. C. Meadows, Residence	Buffalo, N. Y.	McCreary, Wood & Bradney
Union Bank & Trust Co.	Nashville, Tenn.	Mowbray & Uffinger
Bank of Sheboygan	Sheboygan, Wis.	Paul V. Highland
First Presbyterian Church	Chattanooga, Tenn.	McKim, Mead & White and Bearden & Foreman
Holy Cross Academy	Washington, D. C.	T. H. Poole & Co.
United States Post Office	Gadsden, Ala.	James Knox Taylor (Supervising)
Municipal Building	Washington, D. C.	Cope & Stewardson
House of Representatives, Office Building	Washington, D. C.	Elliott Woods (Superintendent Capitol Building and Grounds) and Thomas Hastings (Consulting)
Girard Trust Co. Building	Philadelphia, Pa.	McKim, Mead & White and Furness, Evans & Co.
Candler Building	Atlanta, Ga.	George E. Murphy
Fourth National Bank Building	Atlanta, Ga.	Morgan & Dillon
Century Building	Atlanta, Ga.	Morgan & Dillon
United States Post Office Building	Anniston, Ala.	James Knox Taylor (Supervising)
United States Post Office Building	Charlottesville, Va.	James Knox Taylor (Supervising)
United States Post Office Building	Tampa, Fla.	James Knox Taylor (Supervising)

INTERIOR
WORK.

PLANT OF THE BLUE RIDGE MARBLE COMPANY, NELSON, GA.

THE GEORGIA MARBLE CO.

TATE, GA.

LONG DISTANCE TELEPHONE

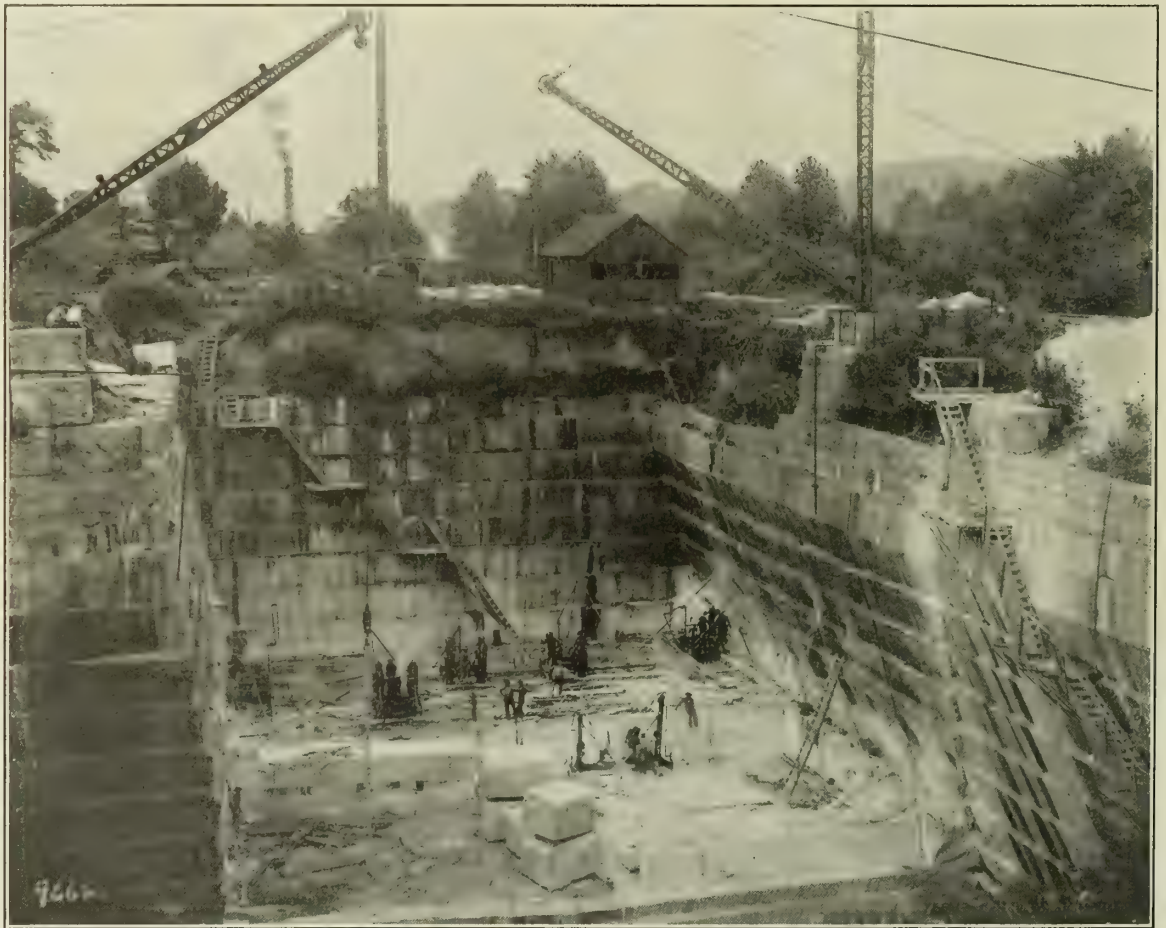
NORTHWESTERN REPRESENTATIVE
CHICAGO, ILL., I. H. DAPPRICH Co., 416 Fisher Building

PRODUCTS. "CHEROKEE," "CREOLE," "KENNESAW," and "ETOWAH" GEORGIA MARBLE.

DURABILITY. Georgia Marble is unsurpassed as to durability for exterior or interior work, and is suitable for all classes of construction.

CRUSHING STRENGTH. The following is an extract from the report of physical tests on specimens of Georgia Marble made by J. B. Johnson, professor of civil engineering and director of testing laboratory, Washington University, St. Louis, Mo.:

"Six three-inch tubes were tested upon a U. S. Standard Riehle Testing Machine of 100,000 pounds capacity. The details of these tests are given in the accompanying certificate. I was only able to break four of the specimens. The other two stood 112,000 and



ONE END OF QUARRY OF THE GEORGIA MARBLE COMPANY

109,300 pounds respectively without crushing; which was a much greater load than the machine should be allowed to carry.

"The lowest test was 76,200 pounds, or 8,330 pounds per square inch, but since two of the six specimens remained uncrushed, it is perhaps fair to say the average crushing strength is not less than 10,500 pounds per square inch. This is equivalent to 750 tons per square foot.

"The fractures showed a remarkably uniform composition without seams or lines of cleavage.

“The strength of granite is from 700 to 1,000 tons per square foot; the strength of limestone and marble varies from 350 to 700 tons per square foot.
“The average strength of the best sandstone is about 500 tons per square foot.
“The average strength of the St. Louis pressed brick is about 250 tons per square foot.
“It is thus seen that the strength of “Kennesaw” Marble is about equal to that of granite, and greater than any other form of building stone or brick.”

ABSORPTION.

This marble absorbs only 4/100 of one per cent of moisture, the lowest per cent of absorption in stone known, as shown in the following report of test:

UNIVERSITY OF WISCONSIN—DEPARTMENT OF GEOLOGY, MADISON, January 9, 1906.
Sample of marble from THE GEORGIA MARBLE Co., submitted to me by Professor Leith, has been analyzed and tested for its absorption power. The results obtained are almost the same as those printed in their handbook. Following is the chemical analysis:

CaCO ₃	97.95 per cent
MgCO ₃	.57 per cent
SiO ₂ (insoluble matter)	.54 per cent
Iron	traces
Aluminum	traces
Total	99.06 per cent

In determining the absorption, a piece weighing 15 gr. was dried for ten hours at a temperature of 150° C. and weighed, then soaked in distilled water for twenty-four hours and reweighed. The second weight was 15.62 gr. This difference in weight divided by the dry weight gave the absorption of the stone, or .04%, which is very small.
The rock is white and coarsely crystalline. Because of its purity, especially the absence of iron, the marble will retain its white color, and due to its low absorption power, the agents of disintegration will have but little effect upon the stone.

Very truly yours,
E. B. HALL, Assistant in Geology.

FACILITIES.

Having an unlimited supply of marble and excellent facilities for production, we can fill any size order and ship anywhere.

COLUMNS.

Special attention is given to the production of blocks for long columns in one piece.

CO-OPERATIVE SERVICE.

We shall take pleasure at all times in giving any information in regard to our marbles and will furnish samples.



PLANT OF THE GEORGIA MARBLE COMPANY

MEDALS.

Georgia Marble was awarded a gold medal at the St. Louis Exposition—the highest award; also, received the highest award at the Jamestown Exposition—a silver medal.

REFERENCES.

The following are a few representative buildings where our work has been specified :

BUILDING	LOCATION	ARCHITECT
House of Representatives, Office Building	Washington, D. C.	Elliott Woods (Superintendent Capitol Buildings and Grounds)
Municipal Building	Washington, D. C.	Thomas Hastings
Girard Trust & Banking Co. Building	Philadelphia, Pa.	Cope & Stewardson
		McKim, Mead & White
State Capitol	Frankfort, Ky.	Furness, Evans & Co.
Court House	New Orleans, La.	Frank M. Andrews & Co.
		Frederick W. Brown
Royal Insurance Co. Building	San Francisco, Cal.	A. Ten Eyck Brown
		P. Thornton Marye
		Howell & Stokes
Northwestern National Bank Building	St. Paul, Minn.	
Hotel Patten	Chattanooga, Tenn.	W. T. Downing

THE KENNESAW MARBLE CO.

Contractors and Finishers of Georgia Marble

MARIETTA, GA.

PRODUCTS.

GEORGIA and ITALIAN MARBLE (including Blue and English Veined) ; GEORGIA VERD-ANTIQUE MARBLE, similar to the Alps and Vermont Green.

We furnish these Marbles in sawed and finished forms for all Interior and Exterior uses, including MONUMENTS, COLUMNS and CAPS—Corinthian, Ionic or Runic—WAIN-SCOT, BASE (moulded or plain), STAIRS, RAILS, BALUSTERS, NEWEL POSTS, FLOOR TILE, COUNTERS, PLUMBING MARBLE—PARTITION, FLOOR SLABS, LAVATORY SLABS—BANK and OFFICE FIXTURES.

GENERAL INFORMATION.

Georgia Marble possesses qualities which make it superior to any other American marble. It has a peculiar formation which nearly resembles the beautiful marble used in the construction of the magnificent temples and palaces of ancient times, the columns of which have stood the tests for thousands of years, while all the other material used in their construction has long since gone to decay.

All of our work is executed in strictly first-class manner. Special attention is given to the matching of slabs, thereby securing the best possible effect.

STRENGTH.

Georgia Marble possesses strength that is simply marvelous. Pieces measuring four feet long by two feet wide can be reduced to one fourth inch in thickness, and show almost the strength of window glass and are more beautiful when used in a variety of color for transoms and memorial windows.

The accompanying tests were made by the Ordnance Department, United States army, with the United States Testing machine, capacity 800,000 pounds, at the Arsenal, Watertown, Mass., Sept. 18, 1886. The tests were by compression with three cubes of marble, Marcus W. Lyon, Captain, in command.

COMPRESSION TESTS

Test No.	Marks	Dimensions			Sectional Area sq. in.	Ultimate Strength	
		Height	Compressed Surface			Total Pounds	Pounds per sq. in.
4337	Cherokee	6'' .04	6'' .01	6'' .00	36.06	395.800	10.976
4338	Creole	6'' .03	6'' .00	5'' .99	36.94	434.100	12.078
4339	Etowah	6'' .03	6'' .03	6'' .01	36.12	384.400	10.642

SPECIFIC GRAVITY.

The specific gravity of Georgia Marble is 2.724, or its weight is 170 pounds per cubic foot.

NON-ABSORPTION.

Among the leading features of the Georgia Marble are its crystalline formation and wonderful density, which make it absolutely impervious to liquids; hence it can not stain, disintegrate or decompose in any climate.

In the immense deposits of the large crystal marble in Georgia, in the hundreds of places where projecting points have been exposed to the elements ever since the marble was formed, long ages ago, not a single ounce of decomposed marble can be found; every exposure is free from disintegration or stains.

These tests show that Georgia Marble is the best material for both exterior and interior building work, all kinds of cemetery work, and every place where beauty, combined with the greatest strength and durability, is desired.

FIRE TESTS.

The "Weekly Underwriter" of April 24, 1880, publishes a report of fire tests of building stone conducted by the eminent geologist, Hiram A. Cutting, Ph.D.:

"Of twenty-two varieties of granite from all parts of the United States and Canada, some were injured at 600°, and all at 800° F.

"Of twenty-three varieties of sandstones or freestones (including brownstone) some were injured at 800°, all but two at 900°, and all, without exception, at 1,000° F.

"Conglomerates were injured at 700° and slate at 800° F.

"Of seven varieties of limestone all but one were injured at 900°, and that one at 1,000° F.

"Of seven varieties of marble, including all those commonly used for building purposes, all were uninjured at 800°, all but one were uninjured at 900°, and three remained uninjured at 1,000° F. Of these three, Dr. Cutting writes that they 'are each uninjured until the heat is sufficient to change them into quicklime, which heat must exceed 1,200° F. and be continuous for some time.'"

From the foregoing it is plainly seen that marble stands heat better than any other building stone. Dr. Cutting, himself, thus expresses it:

"Taken as a whole, the heat-resisting capacity of building stones stands as follows: 1st, marble; 2d, limestone; 3d, sandstone or freestone; 4th, granite; 5th, slate; 6th, conglomerates."

INSTALLATION.

Where desired we contract for installation, or furnish complete setting plans.

CO-OPERATIVE SERVICE.

We will cheerfully give architects all desired information regarding our products, quoting approximate prices upon request.

REFERENCES.

The following are a few representative buildings in which installations of our work have been made:

Hotel Patten, Chattanooga, Tenn.
Lupton Apartments, Chattanooga, Tenn.
Atlanta Terminal Station, Atlanta, Ga.
Carnegie Library, Atlanta, Ga.
Frankfort State House, Frankfort, Ky.
Third Avenue Hotel, Cedar Rapids, Iowa
Prudential Building, Atlanta, Ga.
Bisbee Office Building, Jacksonville, Fla.
Rhodes Office Building, Atlanta, Ga.
Wesley Memorial Church, Atlanta, Ga.
Beckham Hotel, Abilene, Tex.

United States Post Office, Jacksonville, Fla.
United States Post Office, Tampa, Fla.
United States Post Office, Vincennes, Ind.
United States Post Office, Natchez, Miss.
United States Post Office, Abilene, Tex.
Union Real Estate & Trust Co. Building, Texarkana, Ark.
United States Post Office, Lake Charles, La.
United States Post Office, Sumter, S. C.
United States Post Office, Marietta, Ga.
United States Post Office, Greenville, Miss.



CITY HALL, LITTLE ROCK, ARK.

Georgia Marble furnished by THE KENNESAW MARBLE CO.

MEADOW MARBLE COMPANY

PRODUCERS OF

"Meadow Grey" Tennessee Marble

516 First National Bank Building
CINCINNATI, OHIO

TELEPHONE CONNECTION

QUARRIES
MEADOW, TENN.

PRODUCT. "MEADOW GREY" TENNESSEE MARBLE for Structural, Ornamental and Statuary purposes.

DESCRIPTION. "Meadow Grey" is a Tennessee Marble quarried at Meadow, Tenn., and has a fine texture, beautiful color, and artistic veining. It does not stain or fade and takes a high polish. It is almost impervious to water, and is therefore the cleanest stone that can be used, whether sand-rubbed, rock-faced, or polished. It has great crushing strength, and will outlast almost every other kind of stone. Only a few of the most durable granites can compare with it in durability.

UTILITY. For wainscoting, partitions, base, tile, etc., no marble can compete with Grey Tennessee. This fact is especially true of "Meadow Grey." The polished slabs show the attractive and characteristic color and veining of our marble.

We make a specialty of large sizes for wainscoting, partitions, and other work.

"Meadow Grey" is unsurpassed for ashlar work, and for other exterior construction where a high-grade material is required.

For exterior carving and statuary work "Meadow Grey" can be furnished in special sizes. Prices on application.

DELIVERIES. We guarantee to make prompt shipment of all orders taken. The Louisville & Nashville Railway operates a branch track to our quarry, which enables us to load direct from quarry to car.

Ordinary sizes of "Meadow Grey" run from 6 x 4 x 2 feet up to 12 x 6 x 3 feet. Ordinary sizes (not dimension blocks) can be shipped at any time on one week's notice, or sooner.

INSTALLATION. We do not install our products, but we shall take pleasure in assisting architects and contractors to secure estimates and bids on installation of "Meadow Grey."

FACILITIES AND TERRITORY. We own our quarry, containing 26 acres of marble in one deposit. Our capacity is practically limited only by the demand. Contracts of the largest size solicited for both interior and exterior work throughout the United States.



NATIONAL BANK OF COMMERCE, ST. LOUIS, MO.
Contains 20,000 surface feet of "Meadow Grey"
MAURAN, RUSSELL & GARDEN, Architects

CRUSHING
STRENGTH.

The Ordnance Department, United States Army (Watertown Arsenal), tested three cubes of "Meadow Grey" on March 25, 1908, on the United States testing machine. Their report is as follows:

"TESTS BY COMPRESSION—TEST No. 13752

Height Inches	Dimensions		Section area Square inches	First crack Pounds	Total Pounds	Ultimate Strength	
	Inches	Compressed surface Inches				Per cubic inch Pounds	
3.99	3.98	3.99	15.88	293,000	312,000	19,650	
3.97	3.96	3.96	15.68	320,000	327,000	20,850	
3.98	3.98	3.98	15.84	289,800	289,800	18,300	

Correct. (Signed) J. E. HOWARD. C. B. WHEELER, Major Ordnance Dept., U. S. A., Commanding."

CHEMICAL
ANALYSIS
AND
ABSORPTION
TEST.

"Meadow Grey" Marble contains 99.34 per cent of calcium carbonate. It is almost waterproof, its ratio of absorption being less than 1 to 14,000.

The following is the report of chemical analysis and absorption test of marble received from the MEADOW MARBLE COMPANY, April 23, 1908, made at the Sheffield Scientific School of Yale University:

"CHEMICAL ANALYSIS

Calcium oxide	(CaO)	55.87
Carbon dioxide	(CO ₂)	43.47
Iron oxide	(FeO)	.08
Alumina	(Al ₂ O ₃)	.16
Magnesium oxide	(MgO)	.15
Silica	(SiO ₂)	.23

ABSORPTION TEST

No.	Weight (dry)	Weight after absorption	Difference	Percentage absorbed	Ratio
I	1,428.00 g	1,428.10 g	.10 g	.007	1—14,280
II	1,424.00 g	1,424.10 g	.10 g	.007	1—14,240

The test pieces were submerged 45 hours.

(Signed) GEORGE S. JAMIESON."

PRICES.

"Meadow Grey" is sold at the same price as other grey Tennessee marbles, namely \$1.50 per cubic foot in the block, f. o. b. Knoxville, Tenn., for ordinary sizes (not dimension blocks). For exterior work, special reduced prices are made, particularly for large orders. Prices on finished marble furnished on application.

UNLIMITED
SUPPLY.

Architects need not hesitate to specify "Meadow Grey." It is carried in stock by many of the largest marble dealers and marble workers in the United States. Our quarries are practically inexhaustible. "Meadow Grey" will remain a staple article for years to come.

SAMPLES AND
CO-OPERATIVE
SERVICE.

Samples will be supplied on request and all desired assistance will be given to facilitate the specifying of "Meadow Grey" Marble. Correspondence is solicited.

SPECIFICA-
TION.

Architects desiring our marble to be used, need only specify, "'Meadow Grey' Tennessee Marble."

REFERENCES.

The following are a few of the buildings in various parts of the country where "Meadow Grey" Marble has been used or contracted for:

BUILDING	LOCATION	BUILDING	LOCATION
Norwood National Bank	Norwood, Ohio	Scanlon Building	Houston, Tex.
Second National Bank	Cincinnati, Ohio	Steger Building	Chicago, Ill.
Wisconsin State Capitol	Madison, Wis.	Cook County Infirmary Buildings	Chicago, Ill.
Delaware, Lackawanna & Western Railway Station	Scranton, Pa.	Joliet National Bank Building	Joliet, Ill.
New Cadet Building	West Point, N. Y.	Y. M. C. A. Building	Memphis, Tenn.
Evansville & Terre Haute Railroad Station	Evansville, Ind.	United States Government Building	Cleveland, Ohio
Bronx Public Baths	New York, N. Y.	Mahoning County Court House	Youngstown, Ohio
Bulletin Building	Philadelphia, Pa.	Sharp Building	Kansas City, Mo.
Cedar Rapids National Bank	Cedar Rapids, Iowa	Jersey Central Terminal	New York, N. Y.
First National Bank	Maysville, Ky.	Gary High School	Gary, Ind.
		Hughes High School	Cincinnati, Ohio
		Christ Church Parish House	Cincinnati, Ohio

RUTLAND FLORENCE MARBLE CO.

FOWLER, VT.

PRODUCTS.

We are producers of the very finest AMERICAN MARBLES for both Interior and Exterior Work.



W. B. HIBBS & CO., BANK BUILDING, WASHINGTON, D. C.

BRUCE PRICE & DE SIBOUR, Architects

EXTERIOR
WORK.

Some of the exterior work done in our marble:

J. D. Rockefeller, Gardens, Pocantico Hills, N. Y.
Bristol National Bank, Bristol, Conn.
W. B. Hibbs & Co., Bank Building, Washington, D. C.
P. A. Rockefeller, Residence, Greenwich, Conn.
Lansford National Bank, Lansford, Pa.

Planters Loan & Savings Bank, Augusta, Ga.
Oswego City Savings Bank, Oswego, N. Y.
Union County Trust Co., Elizabeth, N. J.
United States Post Office, Salisbury, N. C.

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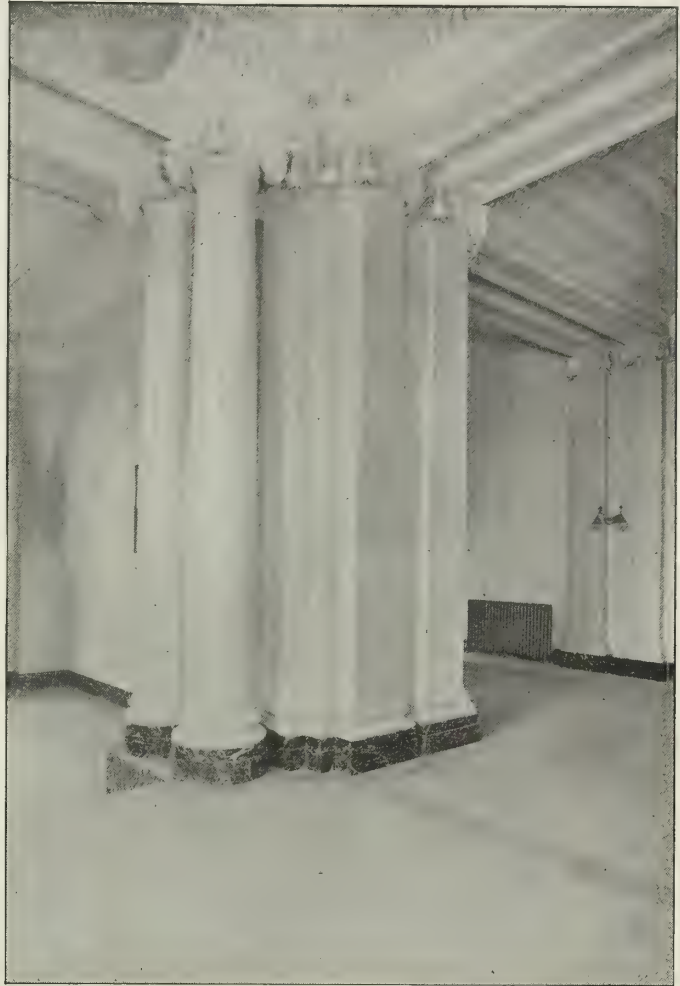
INTERIOR WORK.

Our marbles have been used in the interior of the following buildings:

United States Senate Office Building,
Washington, D. C.
United States House Office Building,
Washington, D. C.
Seattle Federal Building, Seattle, Wash.
E. H. Harriman's Residence, Arden, N. Y.
Los Angeles Post Office, Los Angeles, Cal.
Fairmount Hotel, San Francisco, Cal.
Nashua Post Office, Nashua, N. H.
Atlanta Federal Building, Atlanta, Ga.
Wisconsin State Capitol, Madison, Wis.
Quincy Post Office, Quincy, Mass.

SERVICES.

Correspondence is invited from all architects and users of marble.



FEDERAL BUILDING, SEATTLE, WASH.



FEDERAL BUILDING, SEATTLE, WASH.

TENNESSEE PRODUCERS MARBLE COMPANY

Quarriers and Manufacturers of Tennessee Marble
KNOXVILLE, TENN.

PRODUCTS.

TENNESSEE MARBLE of all colors. Our Special Brands are "McMULLEN GRAY," "BOND PINK," "GREAT BEND," and "GRAY TENNESSEE."

DESCRIPTION AND ADAPTA- BILITY.

"McMullen Gray" is a clear light gray marble with blue veinings. The quarry also produces beautiful gray and pink marble susceptible of perfect matching. Used extensively for Wainscoting, Floor Tile, Stair Marble, and Toilet-Room Work.

"Bond Pink" is a uniform, deep pink marble suitable for all Interior work.

"Great Bend" is of a variegated dark chocolate color, hard, fine grained, and is especially adapted for Base, Floor Border, and Furniture Tops.

"Gray Tennessee" is used for Exterior Building and Monumental Work, and on account of its uniform color and fine grain is very satisfactory for such purposes.



INTERIOR OF NEW COURT HOUSE, MEMPHIS, TENN.
Showing Panels and Wainscoting

ILLUSTRATIONS.

The illustrations show a portion of the interior marble work furnished and installed by us in the new Court House at Memphis, Tenn. There are one hundred thousand feet of wainscoting and stair marble, and eighty thousand feet of marble floors in the building, all of which was manufactured and set by us in five months.

STRENGTH AND AB- SORPTION.

Tennessee Marble compares favorably in crushing strength and absorption with any other marble.

It stands exposure in any climate, and can be used for exterior as well as interior building work. For monuments and cemetery work it has no equal, never losing its original color or beauty. It will last for years without crumbling and in this respect it resembles granite in quality.

FACILITIES
FOR IN-
STALLATION.

We manufacture and install, if desired, interior marble work in buildings anywhere, no matter how large or small the quantity; and as we are operating four quarries with an unlimited supply of the raw material, large up-to-date mills and finishing shops fully equipped with modern machinery and appliances, we are in a position to fill all orders and commissions promptly and satisfactorily to the architect as well as to the builder.

ESTIMATES.

We are always ready to make estimates upon any work that you are contemplating.

CO-OPERATIVE
SERVICE.

We will be glad to furnish architects with drawings or suggestions and samples, without charge.



INTERIOR OF NEW COURT HOUSE, MEMPHIS, TENN.
Showing Pillars and Wainscoting

REFERENCES.

We have manufactured and installed our marbles in buildings all over the country, a few of which we mention:

BUILDING	LOCATION	ARCHITECT
New Court House	Memphis, Tenn.	Hale & Rogers, New York, N. Y.
Birmingham Terminal Station	Birmingham, Ala.	P. Thornton Marye, Atlanta, Ga.
Mobile Terminal Station	Mobile, Ala.	P. Thornton Marye, Atlanta, Ga.
Paul Jones Building	Louisville, Ky.	F. M. Andrews & Co.
General Post Office Building	Washington, D. C.	
Tapestry Room, St. Francis Hotel	San Francisco, Cal.	Bliss & Faville
Gayoso Hotel	Memphis, Tenn.	
National Bank of Savannah	Savannah, Ga.	
James Building (Office)	Chattanooga, Tenn.	R. H. Hunt
Knoxville Bank & Trust Co. (Bank and Office)	Knoxville, Tenn.	Richards, McCarty & Bulford
Bank of California	San Francisco, Cal.	Bliss & Faville

VERMONT MARBLE COMPANY

PROCTOR, VT.

BRANCHES

BOSTON, MASS., 10 Thacher Street
 NEW YORK, N. Y., 134th Street and 12th Avenue
 PHILADELPHIA, PA., 201 South 30th Street

SAN FRANCISCO, CAL., 244 Brannan Street

CLEVELAND, OHIO, 9508 Quincy Avenue
 CHICAGO, ILL., 404 East North Water Street
 ST. LOUIS, MO., 1115 South Seventh Street

PRODUCTS.

MARBLES for Exterior and Interior of Buildings.

MARBLE TILE; MONUMENTS, MAUSOLEUMS and CEMETERY WORK; ALTARS and other
 CHURCH WORK; FOUNTAINS; ELECTRIC SWITCHBOARDS; BANK SCREENS and COUNTERS;
 LIBRARY STACK PLATFORMS; MANTELS; PLUMBERS' MARBLE; CRUSHED MARBLE; and
 everything in MARBLE known to the Building Trade.

OUTPUT.

The largest producers and manufacturers of marble in the world.



SENATE OFFICE BUILDING, WASHINGTON, D. C.

ELLIOTT WOODS, Superintendent; CARRERE & HASTINGS, Architects

About 200,000 cubic feet of marble used in this building

VARIETIES
PRODUCED.

Rutland White, Statuary, Second Statuary, Light Cloud, Olivo, Brocadillo, Listavena,
 American Pavonazzo, Blue, Rubio, Sutherland Falls, Grey, and Mountain White.

We are also manufacturers of all the leading foreign marbles.

ESTIMATES.

Estimates given on any kind of marble work, either delivered or installed anywhere.



FIRST NATIONAL BANK, CHICAGO, ILL.
D. H. BURNHAM & Co., Architects



FIRST NATIONAL BANK, HAZLETON, PA.
MILLIGAN & WEBBER, Architects



KIMBALL MONUMENT, CHICAGO, ILL.
McKIM, MEAD & WHITE, Architects

SPECIALTIES. Bank Screens and Counters are a specialty with us. Examples of our bank work are numerous in all important cities in the United States and Canada.
High-grade Monuments, Mausoleums, Chapels, and Cemetery work of all kinds are handled on a large scale by a department established entirely for this line of marble work.

THE VICTORIA MARBLE COMPANY

Producers of and Dealers in Tennessee Marble

604 Bank and Trust Building

KNOXVILLE, TENN.

PRODUCTS.

"VICTORIA" PINK and "VICTORIA" SILVER GREY, two varieties of TENNESSEE MARBLE adapted for STRUCTURAL, STATUARY, MONUMENTAL, and all Interior use.

DESCRIPTION.

These marbles are noted for their soundness and durability, their fine texture and uniformity of color. They are very free from cutters, glass seams and white streaks, and take an unusually fine polish which is retained, thus giving a most satisfactory appearance.



SECTION OF NEW OPENING—THE VICTORIA MARBLE COMPANY

UTILITY.

For exterior work "Victoria" Pink may be classed with the best granites for durability, and its warm, life-like color especially recommends it for such use.

INTERIOR WORK.

For interior work both "Victoria" Pink and "Victoria" Silver Grey can not be excelled. When used for wainscoting and partitions the fine character of the marble is at once apparent, and for platforms, stair-treads, base, tile, etc., the appearance is most attractive.

LAVATORIES.

For lavatories in hospitals, office and public buildings it has no superior, being impervious to the action of acids, which soon discolor and scent a material less fittingly suited.

NON-ABSORBING QUALITIES.

The non-absorbing quality of "Victoria" Marble will be appreciated from the statement that the ratio of absorption is one part to about 15,000, which means that it will not show stains or streaks as would a more porous building stone.

STRENGTH.

Tennessee Marbles have been used so largely during the past thirty years and are so well and favorably known that statistics as to their chemical analysis and compressive strength are quite unnecessary. Suffice it to say that testing records show a crushing strength of from 19,000 to 21,000 pounds to the cubic inch for the different varieties; and "Victoria" marble will stand the test of and show results most favorable in comparison with any Tennessee marble.

POLISHED
SURFACES.

Where polished marble is desired we prefer to work with the marble mills located in all the large cities, where the marble may be polished and set without further transportation; thus insuring a finish free from scratches, which it is difficult to avoid if the surface is polished before shipment.

PRODUCTION.

The production of "Victoria" Marble is in such quantities as to give positive assurance that, when specified, the required amount can be furnished uniform in color and up to standard in every way.

Our quarries are equipped for handling blocks of fine dimensions, thus insuring slabs of sufficient length and breadth for all requirements.

MILL WORK.

We have the facilities of a thoroughly up-to-date Custom Mill for supplying slabs, platforms, treads, tile, etc., in sand-rubbed finish.

PRICES.

Space does not permit the listing of prices in detail covering the different uses and thicknesses for which marble is employed. The price however is uniform with that charged for all grades of Tennessee Marble and is sold f. o. b. Knoxville. Quotations for block marble, statuary, monumental and building marble, as well as for all interior uses, furnished upon request.

SAMPLES.

Samples will be furnished to architects upon request and their letters of inquiry on the subject of marble, its uses, adaptability, etc., are solicited and will be given prompt attention.

TRANSPORTA-
TION.

All sawed marble is carefully and securely packed in box-cars and properly cleated to insure delivery in perfect condition.

DELIVERY.

The facilities of the Southern Railway and the Louisville and Nashville Railroad enable us to give dispatch to shipments for any part of the country, and we aim to keep on hand a good stock of choice blocks for prompt shipment.

BUILDINGS
SUPPLIED
WITH
"VICTORIA"
MARBLE.

During the past five years "Victoria" Marble has been used extensively for various work throughout the country. The New Art Museum Building, Boston, Mass., the Fourth National Bank Building, Cincinnati, Ohio, the Essex County Court House, Newark, N. J., being examples of its use for interior work, and the Harkness residence, 5th Avenue and 76th Street, New York, N. Y., is a striking example of its adaptability for exterior work.

BARNEY MARBLE COMPANY

Producers and Finishers

SWANTON, VT.

PRODUCTS.

The celebrated "VERMONT VERD-ANTIQUE," "SWANTON BLACK," and all the varieties of "RED CHAMPLAIN" MARBLES, namely ORIENTAL, LYONAISE, JASPER and OLIVE.

QUALITIES.

These are the hardest Marbles produced and are susceptible of the most brilliant polish.

DESCRIPTION
AND USES.

Their color and texture make them unequaled for floor work, base and similar uses where wearing qualities are essential. Having such a variety to select from they are widely used, in combination with lighter marbles, for bank screens, counters, and wainscoting.



MOORE THEATER, SEATTLE, WASH. E. W. HOUGHTON, Architect

BENVENUE GRANITE COMPANY

41 Park Row

NEW YORK, N. Y.

TELEPHONE, 4498 CORTLANDT

QUARRIES

CROTCH ISLAND, ME.

SULLIVAN, ME.

SWAN'S ISLAND, ME.

BENVENUE, CONN.

PRODUCTS.

GRANITE—"CROTCH ISLAND," "SULLIVAN," and "SWAN'S ISLAND"; for Building, Curb, and Monumental Work.

DESCRIPTION.

"Crotch Island" Granite is light pink in color, which is perfectly uniform. It is a fine class of granite and is suitable for every description of high-class building, monumental, and curb work. This stone is well known to the trade and has already been used extensively in building in New York, Philadelphia, Boston, and various other cities.

"Sullivan" Granite is of a light gray color, fine grain, and uniform texture. This is also a fine class of granite and suitable for all classes of building and curb work. For many years past this stone has been greatly appreciated for its color and texture and has been used in many large cities in the United States.

"Swan's Island" Granite is a beautiful shade of red, of fine grain. This stone is very uniform in color and suitable for *building*, curb, and monumental work.

FACILITIES.

The BENVENUE GRANITE COMPANY has quite recently installed at its quarries a complete outfit of granite-cutting machinery and accessories of the most modern description known to the granite trade. With this machinery they are able to furnish large blocks or monoliths weighing fifty tons and upwards, and to execute orders of any magnitude on the shortest possible notice. One of the leading features of the business methods of the BENVENUE GRANITE COMPANY is "quick deliveries."

TERRITORY.

The quarries of the BENVENUE GRANITE COMPANY being centrally located, they are in a position to ship promptly to any part of the United States by rail or water.

ESTIMATES.

Architects and contractors desiring estimates for or further information regarding the Granite of the BENVENUE GRANITE COMPANY are respectfully invited to write to their office, 41 Park Row, New York, N. Y. Replies will be prompt and explicit, and every possible information given to facilitate the culmination of contracts.

REFERENCES.

The following is a selection from a list of buildings in which "Crotch Island" Granite has been used:

Astor Hotel, New York, N. Y.

Belmont Hotel, New York, N. Y.

New Museum of Fine Arts, Boston, Mass.

New York Historical Society Building, 77th Street and Central Park West

Piers, Blackwell's Island Bridge, New York, N. Y.

Brooklyn Anchorage, Manhattan Bridge, Brooklyn, N. Y.

Broadway Savings Institution, 7 Park Place, New York, N. Y.

Henry Siegel Co. Building, corner Essex and Washington Streets, Boston, Mass.

Post Office, Lowell, Mass.

CHAS. G. BLAKE & CO.

MANUFACTURERS OF

Mausoleums and Monuments

735 Woman's Temple

CHICAGO, ILL.

WORKS

CHICAGO, ILL., Greenwood Avenue and 67th Street
and at WESTERLY, R. I.

PRODUCTS.

MAUSOLEUMS, MONUMENTS and
GARDEN FURNITURE.

FACILITIES.

We are experienced makers of Mausoleums, Monuments and Garden Furniture, our organization being such that we can erect them economically in all parts of the United States.

The "Chicago Daily News," referring to the Gary Mausoleum here shown, said:

"Takes a week to move one stone. Remarkable engineering feats in building new mausoleum.

"The mausoleum being constructed by Chairman E. H. Gary, of the United States Steel Corporation, at Wheaton, is now nearing completion. One of the large granite blocks used for a portion of the roof was placed in position yesterday, and another will be placed to-morrow.

"The stones, which are said to be the largest ever used in modern times for a similar purpose, weigh *forty tons each*, and it required a week to move each one from the Wheaton station to the cemetery. The highest moving speed of the stones was three quarters of an inch a second. CHAS. G. BLAKE & Co. are superintending the placing of the stones."

ESTIMATES.

Send plans and specifications to our Chicago office, and we will furnish estimates thereon.

CO-OPERATION.

We correctly interpret and carefully carry out architects' drawings, in granite, marble or stone.



JUDGE E. H. GARY'S (OF U. S. STEEL CORPORATION)
FAMILY MAUSOLEUM
Erected by CHAS. G. BLAKE & Co.



MCKINLEY MONUMENT
Erected by CHAS. G. BLAKE & Co.
POND & POND, Architects



POTTER PALMER MAUSOLEUM
Erected by CHAS. G. BLAKE & Co.
McKIM, MEAD & WHITE, Architects

CHICAGO GRANITE COLUMN AND CARVING WORKS

6651 Ellis Avenue

CHICAGO, ILL.

TELEPHONE, 170 H.P.

PRODUCTS.

GRANITE CIRCULAR WORK of all kinds, including COLUMNS, BALUSTERS, VASES, SUN-DIALS, PEDESTALS, BALLS, etc., turned and polished; also, ARCHITECTURAL and MONUMENTAL GRANITE and STONE CARVING of all kinds.

ATTRACTIVE QUALITY OF GRANITE.

Nothing will keep a building up to key so effectively, and consequent renting value, at so little additional cost, as polished Granite Columns at the entrance. Other effects may depreciate, but Granite Columns carry the load esthetically as well as actually.

COLORS.

We carry a stock of Grey, Red, Pink, Black, Green, and Blue Granite, and therefore can suit all requirements as to color effects.

SPECIAL DESIGNS.

We are always ready to carve carefully any special designs from models or architects' drawings. Details and suggestions faithfully carried out.

ESTIMATES AND PRICES.

Upon the receipt of sketches and plans we shall be pleased to make estimates and submit prices on any work you may require in our line.

FACILITIES AND TERRITORY.

Having a well-organized force we can execute with the utmost care and despatch all orders entrusted to us; and we ship anywhere, no matter how far distant the point of delivery lies.



FOUNTAIN



PARMELEE MONUMENT



SUN-DIAL

THE LELAND COMPANY

Monuments, Mausoleums, Statuary, Altars

557 Fifth Avenue

NEW YORK, N. Y.

STUDIOS

NEW YORK, N. Y., West 133rd Street
PIETRASANTA, ITALY

WORKS

GRANITE WORKS, BARRE, VT.

PRODUCTS AND SERVICES.

GRANITE, MARBLE and STONE MONUMENTS and MAUSOLEUMS; ALTARS, FONTS, STATUARY; MANTELS, in marble and stone; GARDEN FURNISHINGS, in marble and stone.

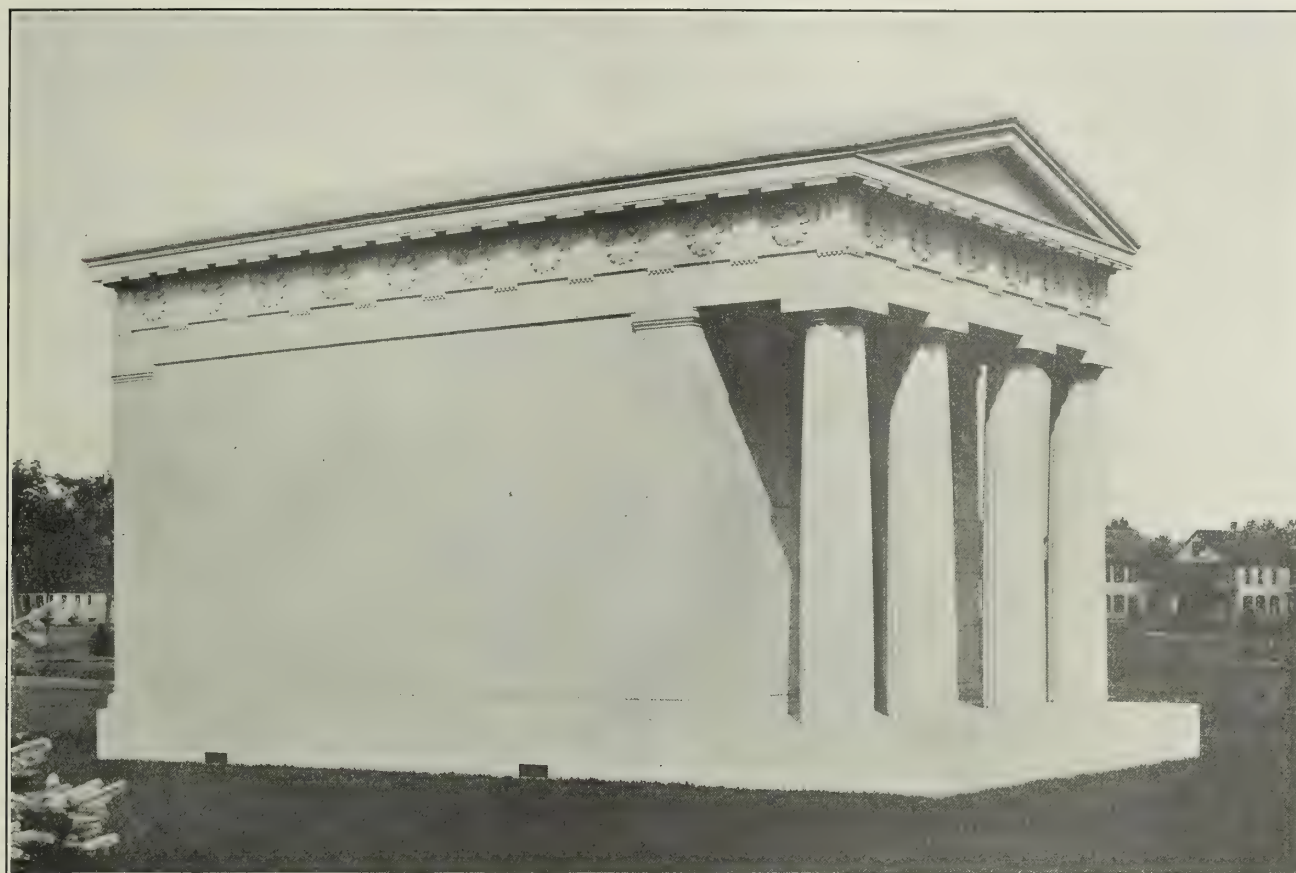
As General Contractors for Monuments, Mausoleums, etc., we aim to execute the class of work architects require. We know what is expected.

FACILITIES.

A thoroughly modern granite-cutting plant at Barre, Vt.; a marble studio at Pietrasanta, Italy, and a marble and stone shop at West 133rd Street, New York City.



MARBLE FOUNTAIN ON GROUNDS OF RICHARD CANFIELD, SARATOGA, N. Y.
CHARLES W. LEAVITT, Architect



GRIPPIN MAUSOLEUM, BRIDGEPORT, CONN. CUT, IN OUR WORKS, OF BARRE GRANITE
JOSEPH W. NORTHROP, Architect



MONUMENT OF BARRE GRANITE, ERECTED IN
WESTVIEW CEMETERY, ATLANTA, GA.,
FOR MRS. JAMES H. McKELDIN



MAUSOLEUM OF BARRE GRANITE, ERECTED IN ALLEGHENY CEMETERY,
PITTSBURG, PA., FOR JOHN BINDLEY

THE NORTH CAROLINA GRANITE CORPORATION

Mt. Airy Granite

GENERAL OFFICE, QUARRIES AND CUTTING PLANT

MT. AIRY, N. C.

BRANCH OFFICES

NEW YORK, N. Y., 41st Street and Park Avenue
PHILADELPHIA, PA., 732 Witherspoon Building

CHICAGO, ILL., 79 Dearborn Street
CINCINNATI, OHIO, 42 Peñin Building

PRODUCTS. MT. AIRY GRANITE, ROUGH or DRESSED, for Buildings, Monuments, and Mausoleums.
DESCRIPTION. Mr. Airy Granite is a white granite, bright and lively in appearance, of medium grain and of uniform color.
REFERENCES. Mt. Airy Granite has been used during the past nineteen years in many structures, including those mentioned below:

BUILDING	ARCHITECT	BUILDING	ARCHITECT
New National Museum, Washington, D. C.	Hornblower & Marshall	Geo. Washington Monument, Brooklyn, N. Y.	Lord & Hewlett
Hamilton Trust Building, Philadelphia, Pa.	Horace Trumbauer	U. S. Regular Monument, Gettysburg, Pa.	
Union Trust Building, Washington, D. C.	Wood, Donn & Deming	Minnesota State Monument, Vicksburg, Miss.	
First National Bank, St. Paul, Minn.	Louis Lockwood	Mississippi State Monument, Vicksburg, Miss.	F. E. Triebel, Sc.
First National Bank, Roanoke, Va.	John Kevan Peebles	Pennsylvania State Memorial, Gettysburg, Pa.	W. L. Cottrell
Old Land Title Building, Philadelphia, Pa.	D. H. Burnham & Co.	Esper Mausoleum, Chicago, Ill.	
Roman Catholic Cathedral, Harrisburg, Pa.	Geo. I. Lovatt	Woolner Mausoleum, Peoria, Ill.	
All Saints' Church, Jersey City, N. J.	Rowland & Eurich	Pollard-Goff Mausoleum, Manito, Ill.	
St. Nicholas' Church, School and Rectory, Atlantic City, N. J.	E. F. Durang & Son	Tremble Mausoleum, Allegan, Mich.	
P. G. Thomson, residence, Cincinnati, Ohio	Hale & Rogers	Clarke Mausoleum, Elm Grove, W. Va.	
		Hornblower Mausoleum, New York City	Warren & Wetmore



POWER PLANT AND MILL



A QUARRY LEDGE (ONE OF MANY), MT. AIRY QUARRIES

PENNSYLVANIA MARBLE AND GRANITE COMPANY

1415-16-17 Pennsylvania Building

PHILADELPHIA, PA.

QUARRIES AND MILLS
WEST GROVE, PA.

PRODUCTS.

Quarrymen and manufacturers of "PENNSYLVANIA WHITE," BLUE and GRAY PENNSYLVANIA MARBLE and GRANITE.

FACILITIES.

Quarries and mills are thoroughly equipped with the most modern machinery, capable of handling the finest grade of stone work, including large trackage, cars and shifting locomotives; complete electric-power plant supplying current for electrically driven saws, rub beds, planers, lathes, traveling cranes, surfacing machines, air-drills, etc. Within thirty-five miles of Philadelphia, easy of access by train or trolley, permits us to reach any point covered by rail or water deliveries.

"PENNSYLVANIA WHITE."

"Pennsylvania White" has demonstrated its superior qualities as a building material; hard, especially close grained, and compact, it has taken a place in the front rank where durability and beauty are required. Adapted to exterior stone work of every description, especially banks and monumental buildings, mausoleums, large estates, etc.

BLUE AND GRAY STOCK.

This is different only in color, making it suitable for other classes of work.



WYOMING VALLEY TRUST CO.,
WILKESBARRE, PA.

MOWBRAY & UFFINGER, Architects



JAMES V. BROWN LIBRARY, WILLIAMSPORT, PA.

E. V. SEELER, Architect



BLOOMINGDALE MAUSOLEUM,
BROOKLYN, N. Y.

McKIM, MEAD & WHITE, Architects

PRICES AND ESTIMATES.

Accurate preliminary estimates furnished to architects from pencil sketches or other descriptive information. Our location enables us to reach territory not heretofore accessible for the rock-faced ashlar, rubble-stone, etc., of marble quarries suitable for church and residence work. Prices include hauling and erection of cut stone or masonry work where desired.

REFERENCES.

Banks: Brown Bros., Baltimore, Md., Douglas H. Thomas, Jr., Architect; Marine Trust Co., Atlantic City, N. J., S. & P. A. Davis, Architects; Wyoming Valley Trust Co., Wilkesbarre, Pa., Mowbray & Uffinger, Architects; Chester County Trust Co., Westchester, Pa., Wilson, Harris & Richards, Architects; First National Bank and Colonial National Bank of Connellsville, Pa., etc.

Public Buildings, Libraries, etc.: Passaic County Court House, Paterson, N. J.; Evans Building, New York Avenue, Washington, D. C., Frederick Pyle, Architect; United States Post Office, Westchester, Pa.; J. V. Brown Library, Williamsport, Pa., E. V. Seeler, Architect; Bosler Memorial Library, Carlisle, Pa., Baldwin & Pennington, Architects; Forrest Theater, Philadelphia, Pa., Marshall & Fox, Architects; Masonic Temple, Harrisburg, Pa., C. A. Bernheisel, Architect, etc.

Private Estates, Residences, etc.: J. G. Cassatt, Doylestown, near Philadelphia, Pa., J. A. Dempwolf, Architect; W. H. Sayen, St. Davids, Philadelphia, Pa.; Richard Park, Westchester, Pa.; T. Elwood Allison, Wallingford, Pa.; T. L. Eyre, Westchester, Pa.; E. Z. Wallower, Harrisburg, Pa., Charles Lloyd, Architect, etc.

Churches in Philadelphia, Williamsport, Harrisburg and Lancaster, Pa., Wilmington, Del., Passaic, N. J., Watertown and Canastota, N. Y., Norfolk, Va., etc.

PICTON ISLAND RED GRANITE COMPANY

320 Fifth Avenue
NEW YORK, N. Y.

TELEPHONE, 5172 MADISON SQUARE

QUARRIES
PICTON ISLAND, ST. LAWRENCE RIVER,
CLAYTON, N. Y.

PRODUCTS.

RED and PINK GRANITES of superior quality and color for Buildings, Polished Columns, Monumental and Decorative Purposes; also, Granite Paving Blocks.



SECTION OF PICTON ISLAND RED GRANITE QUARRY

Other buildings of the Company and the Pink Granite Quarry not shown here

DESCRIPTION.

The Red Granite is of medium grain, light red color, flecked with black. The Pink Granite is of fine grain and uniform rich pink color. An acknowledged authority on granite mentions Picton Island stone as among the most beautiful granites, combining in an unusual degree the qualities of beauty, strength and durability. Both granites are susceptible of very high and lasting polish, with rift and grain favorable to easy working.

EQUIPMENT.

Our quarries are thoroughly equipped with the most modern appliances for the proper handling of large quantities of stone including our own tugboat and lighters.

SHIPPING FACILITIES.

The railroad adjoins our property on the main land, affording unusual facilities for prompt shipments by either rail or water.



PART OF QUARRY LOADING DOCK



LOCATION OF QUARRIES

RECENT DELIVERIES OF GRANITE.

American Museum of Natural History (new building), New York, N. Y.
Maryland Institute Building, Baltimore, Md. (twenty-four polished columns).
A National Bank Building; a large private residence and numerous orders for monumental and decorative work.

ROCKPORT GRANITE COMPANY

Dealers in Rough and Finished Granite

ROCKPORT, MASS.

NEW YORK, N. Y., 21 Park Row
F. E. FOSTER, *Representative*
BOSTON, MASS., 31 State Street
CHAS. ROGERS, *Treas. and Manager*
CHICAGO, ILL., Chamber of Commerce Building
J. D. DUFFY, *Representative*

QUARRIES

ROCKPORT, MASS.
BAY VIEW, MASS.
PIGEON COVE, MASS.
JONESPORT, ME.

PRODUCTS.

Quarriers and producers of RED, GRAY, and SEA-GREEN GRANITES for the better class of buildings and for BRIDGE WORK. Manufacturers of GRANITE PAVING BLOCKS.

FACILITIES.

We have three fully equipped plants for dressing stone and can execute orders promptly, in accordance with the architect's requirements.

We are the largest manufacturers of Granite Paving Blocks in New England.

SPECIFICATIONS, CO-OPERATION, TERRITORY.

Architects specifying our Granite will secure a stone that will hold its beauty. We will willingly furnish architects with samples on application.

We can supply Granite and Paving Blocks in any quantity to all points that can be reached by coasting vessels or railroad, loading vessels up to 3,000 tons' capacity.

Among the prominent buildings in which our Granite has been used are the following:

RED GRANITE—Real Estate Trust Co.'s Building, Philadelphia, Pa.

American Baptist Building, Philadelphia, Pa.

Interior of Suffolk County Court House, Boston, Mass.

Siegel-Cooper Co. Building, New York, N. Y.

Sacred Heart Cathedral, Newark, N. J., columns

SEA-GREEN GRANITE—Madison Avenue Church, New York, N. Y., columns

Philadelphia Public Buildings, wainscoting and stairways to towers

People's Gas and Coke Co. Building, Chicago, Ill., eighteen polished monoliths

Plaza, Washington Union Station, Washington, D. C. two large bowls (13 feet in diameter)

GRAY GRANITE—Boston Post Office, Boston, Mass.

Baltimore Post Office, Baltimore, Md.

Suffolk County Court House, Boston, Mass.

Essex County Registry of Deeds and Probate Building, Salem, Mass.

WHERE OUR GRANITE HAS BEEN USED.

BRIDGE WORK.

We make a specialty of all kinds of Bridge Work. Among the jobs of this character that we can refer to are the following:

Brooklyn anchorage and tower foundations of the Williamsburg Bridge, New York, N. Y., for which we used both gray and green granite.

Newell Avenue Bridge, Bronx Park and University Heights Bridge, over Harlem River, New York, N. Y.

We also furnished granite for the Longfellow Bridge between Boston and Cambridge, Mass., and for the Blackwell's Island Bridge, New York, N. Y., both approaches.

We are now furnishing granite for the New York anchorage for the Manhattan Bridge, which is in process of erection.



REGISTRY OF DEEDS AND PROBATE BUILDING, SALEM, MASS.

G. P. SHERWOOD & CO.

Dealers, Importers and Quarry Sales-Agents for All Kinds of Building Stone

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TELEPHONE, 7050-7051 MADISON SQUARE

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NOVA SCOTIA OLIVE SANDSTONE
PORTAGEVILLE BLUESTONE
WYOMING BLUESTONE
OHIO SANDSTONE
SCOTCH RED SANDSTONE
GRANITE

MARYLAND MARBLE
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TENNESSEE MARBLE
FRENCH MARBLE
ITALIAN MARBLE
FRENCH CAEN STONE

Importers of CAEN, QUILLY, BATH, PORTLAND, YORK and other foreign STONES.
FRENCH and ITALIAN WHITE and COLORED MARBLE.

FACILITIES. Our facilities at home and abroad are ample for the execution of orders of any size and with all the despatch consistent with skilled workmanship.

Cut stone for artistic work of any kind, exterior or interior, will be supplied, and we are prepared to deliver Columns in polished Granite and Marble promptly.

ESTIMATES. Estimates will be promptly submitted in accordance with architects' designs and plans.

CO-OPERATIVE SERVICE. All desired information and assistance will be furnished architects to enable the specifying of our products. Correspondence is solicited.

REFERENCES. The following are a few representative buildings in New York City where our work has been specified:

BUILDING	STONE	ARCHITECT
Gotham Hotel	Limestone	Hiss & Weeks
Ansonia Hotel	Limestone	L. Du Bois
Yale Club	Limestone	Tracy & Swartwout
Harvard Club	Limestone	McKim, Mead & White
Mt. Sinai Hospital	Limestone	Brunner & Tryon
Bellevue Hospital	Limestone	McKim, Mead & White
Fordham Hospital	Limestone	Raymond F. Almirall
Nurses' School, Bellevue Hospital	Limestone	Parish & Schroeder
Y. M. C. A., 23d Street	Limestone	Parish & Schroeder
Singer Building	Limestone	Ernest Flagg
Marbridge Building	Limestone	Townsend, Steinle & Haskell
Horace Mann School	Longmeadow	Howell & Stokes
Waldorf-Astoria Hotel	Longmeadow	H. J. Hardenbergh
Dakota Apartment	Nova Scotia	H. J. Hardenbergh
New York Hospital	Nova Scotia	Cady, Berg & See
World Building	Scotch Red Stone	George B. Post

WOODBURY GRANITE COMPANY

GEO. H. BICKFORD, General Manager

HARDWICK, VT.

BRANCH OFFICES

NEW YORK, N. Y., 1 Madison Avenue, H. E. EASTMAN,
Representative

CHICAGO, ILL., 832 Monadnock Block, J. B. REINHALTER,
Representative

PRODUCTS.

GRANITE for building and monumental purposes as follows: WOODBURY GRAY, a fine-grained, light gray building granite; WOODBURY BASHAW, a dark gray monumental granite; HARDWICK WHITE, the whitest and choicest of building granites.

FACILITIES.

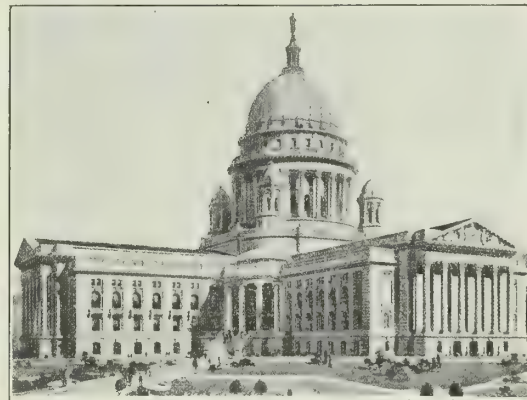
Paid capital of \$1,000,000; 12-derrick quarry at Woodbury, Vt.; 6-derrick quarry at Bethel, Vt.; cutting plant at Hardwick, Vt., employing 600 men; cutting plant at Bethel, Vt., employing 400 men; electric power throughout, from our own water-power plants. No fuel bills. Superb equipment, planned for speed.

DELIVERIES.

We are the originators of rapid delivery as applied to granite work. Our organization produces work on time. Blocks of any size to the limit of transportation. Capacity of our plants, 2,500 cubic feet of finished work per eight hour day.



PENNSYLVANIA STATE CAPITOL
Woodbury Gray Granite



WISCONSIN STATE CAPITOL
Hardwick White Granite

REFERENCES.

Our Woodbury Gray and Hardwick White Granites have also been used for the following notable buildings and monuments:

WOODBURY GRAY

Kentucky State Capitol (base)
Iowa State Capitol (steps and platforms)
State Historical Building, Lincoln, Neb.
City Hall, Chicago, Ill.
Syracuse University Library
Syracuse University Gymnasium
Post Office, Providence, R. I.
Post Office, Des Moines, Iowa
Post Office, Grand Rapids, Mich.
Commonwealth Trust Co., Pittsburg, Pa.
Cook County Court House, Chicago, Ill.
Mahoning County Court House, Youngstown, Ohio
National Hotel, Rochester, N. Y.

HARDWICK WHITE

Title Guarantee and Trust Company, 176 Broadway, New York, N. Y.
Importers & Traders National Bank, 247 Broadway, New York, N. Y.
American Bank Note Company, Broad and Beaver Streets, New York, N. Y.
Emigrant Industrial Savings Bank, New York, N. Y.
Harry Payne Whitney residence, 79th Street and 5th Avenue, New York, N. Y.
Union Station, Washington, D. C.
Essex County Court House, Newark, N. J.
People's Bank, McKeesport, Pa.
Pro-Cathedral, Minneapolis, Minn.

THE COLUMBUS BRICK AND TERRA COTTA COMPANY

COLUMBUS, OHIO

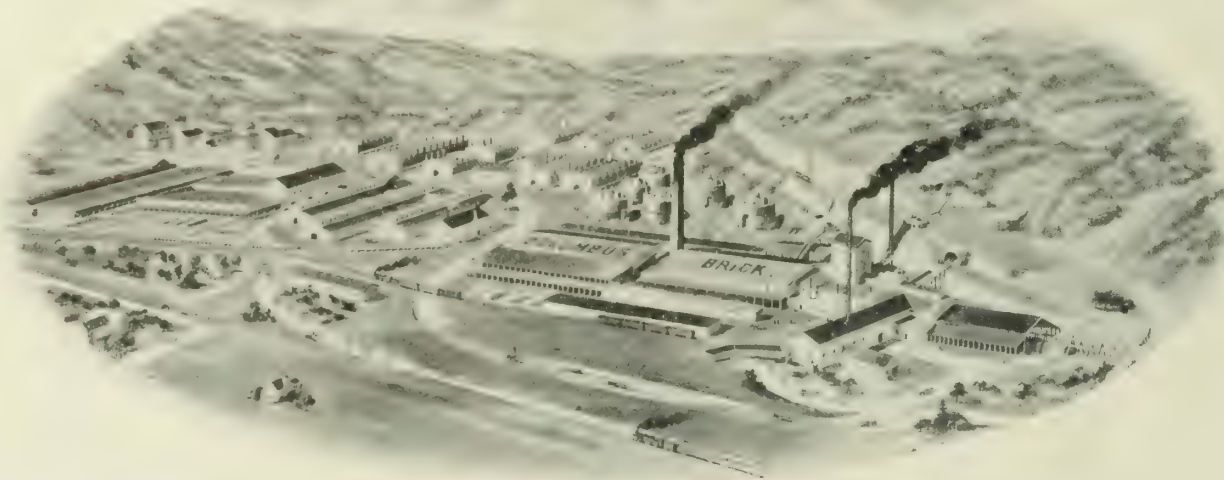
ESTABLISHED 1885

WORKS
UNION FURNACE, OHIO

AGENCIES

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BOSTON, MASS., FISKE & Co.
BUFFALO, N. Y., JOHN H. BLACK
CHICAGO, ILL., S. S. KIMBELL BRICK Co.
CLEVELAND, OHIO, THE HUNT QUEISSER & BLISS Co.
CINCINNATI, OHIO, L. H. McCAMMON BROS.
DALLAS, TEX., S. H. HANSON BUILDERS SUPPLY Co.
DETROIT, MICH., F. B. HOLMES & Co.
DAYTON, OHIO, C. H. LYON
DULUTH, MINN., PAINE & NIXON
GRAND RAPIDS, MICH., F. H. McDONALD
INDIANAPOLIS, IND., A. B. MEYER & Co.
KANSAS CITY, MO., BRYANT SUPPLY Co.
KNOXVILLE, TENN., CHANDLER & Co.
MINNEAPOLIS, MINN., JOHNSON, JACKSON & CORNING
ST. PAUL, MINN., JOHNSON, JACKSON & CORNING
CHATTANOOGA, TENN., SLOAN & Co.
CHARLESTON, S. C., CAROLINA PORTLAND CEMENT Co.
DECATUR, ILL., V. H. PARKE & SON Co.

LYNCHBURG, VA., ADAMS BROS.-PAYNES Co.
LOUISVILLE, KY., W. J. WATKINS & Co.
MONTREAL, CAN., DAVID MCGILL
MILWAUKEE, WIS., MILWAUKEE BUILDERS' SUPPLY Co.
NASHVILLE, TENN., FULCHER BRICK Co.
NORFOLK, VA., J. C. GRINNAN
NEW ORLEANS, LA., MUTUAL BRICK & SUPPLY Co.
NEW YORK, N. Y., PERSON & Co.
NEW HAVEN, CONN., WARNER-MILLER Co.
OMAHA, NEB., SUNDERLAND BROS. Co.
PHILADELPHIA, PA., O. W. KETCHAM
PITTSBURG, PA., JAMES R. PITCAIRN
ST. LOUIS, MO., NATIONAL PRESSED BRICK Co.
WASHINGTON, D. C., O. W. KETCHAM
CHARLOTTE, N. C., THE CHARLOTTE BRICK Co.
TOLEDO, OHIO, THE TOLEDO BUILDERS' SUPPLY Co.
DES MOINES, IOWA, THE DES MOINES BUILDING MATERIAL Co.
BIRMINGHAM, ALA., OTTO E. FISCHER
WINNIPEG, CAN., ALSIP BRICK, TILE & LUMBER Co.



WORKS OF THE COLUMBUS BRICK AND TERRA COTTA COMPANY

PRODUCTS.	High-Grade DRY PRESSED and WIRE-CUT FACING BRICK. We make a specialty of ARCH and ORNAMENTAL BRICK to order.
COLORS.	Buff, gray, buff speckled, gray speckled and buff and gray Astrakhan wire-cut face.
KINDS.	Standard, Roman, and Norman sizes, plain and ornamental in Dry Pressed. Wire Cut in standard size only.
IMPERVIOUS BRICK.	Attention is called to our light buff Impervious Brick, which are especially adapted for light courts and all inside and outside facings.
EFFLORESCENCE.	Our brick are free from efflorescence.
PROMPT SHIPMENTS.	We carry at all times a large and well-assorted stock, insuring prompt shipments.
CATALOGUES, SAMPLES, PRICES.	Catalogues, samples and prices cheerfully furnished on application to main office or nearest agency.

AMERICAN ENAMELED BRICK AND TILE CO.

INCORPORATED 1893

Enameled Brick in Standard and Ornamental Shapes

Metropolitan Life Insurance Building
NEW YORK, N. Y.

TELEPHONES, 4638, 4639 GRAMERCY

REPRESENTED IN

CABLE ADDRESS, "AMEREBRICK"

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SAN FRANCISCO, CAL.
LOS ANGELES, CAL.
DENVER, COLO.
BRIDGEPORT, CONN.
HARTFORD, CONN.
MERIDEN, CONN.
NEW HAVEN, CONN.
JACKSONVILLE, FLA.
ATLANTA, GA.
MACON, GA.
CHICAGO, ILL.
INDIANAPOLIS, IND.
DES MOINES, IOWA
SIOUX CITY, IOWA
LOUISVILLE, KY.

NEW ORLEANS, LA.
BOSTON, MASS.
BALTIMORE, MD.
DETROIT, MICH.
DULUTH, MINN.
ST. PAUL, MINN.
KANSAS CITY, MO.
ST. LOUIS, MO.
BUTTE, MONT.
OMAHA, NEB.
ALBANY, N. Y.
BUFFALO, N. Y.
ROCHESTER, N. Y.
SCHENECTADY, N. Y.
SYRACUSE, N. Y.
TROY, N. Y.
UTICA, N. Y.

CANTON, OHIO
CINCINNATI, OHIO
CLEVELAND, OHIO
COLUMBUS, OHIO
DAYTON, OHIO
TOLEDO, OHIO
ZANESVILLE, OHIO
OKLAHOMA CITY, OKLA.
PORTLAND, ORE.
PHILADELPHIA, PA.
PITTSBURG, PA.
PROVIDENCE, R. I.
CHATTANOOGA, TENN.
KNOXVILLE, TENN.
MEMPHIS, TENN.
NASHVILLE, TENN.
DALLAS, TEXAS

EL PASO, TEXAS
FORT WORTH, TEXAS
HOUSTON, TEXAS
PAN HANDLE, TEXAS
SAN ANTONIO, TEXAS
NORFOLK, VA.
RICHMOND, VA.
SEATTLE, WASH.
SPOKANE, WASH.
TACOMA, WASH.
WHEELING, W. VA.
MILWAUKEE, WIS.
WASHINGTON, D. C.
MONTREAL, CAN.
OTTAWA, CAN.
TORONTO, CAN.
WINNIPEG, CAN.

PRODUCTS.

ENAMELED BRICK in Standard Sizes and Ornamental Shapes. (See plates.)

TERRITORY.

The business operations of this firm cover the entire United States, Canada and South America.

STANDARD SIZES, SHAPES AND COLORS OF ENAMELED BRICK

Name	Dimensions	Surface Enameled	Brick required per square foot of surface, including joints	Note on Stock at Factory in White			
English Size, Standard	2 $\frac{7}{8}$ x 8 $\frac{7}{8}$ x4 $\frac{3}{8}$	2 $\frac{7}{8}$ x 8 $\frac{7}{8}$	5.33 Brick	Large	Stock varies from 500,000 to 2,000,000.	Capacity 6,000,000 per annum.	Made to order in any of our colors or shapes. Standard colors and moulded shapes held in stock, in lots only, according to Market.
English Size, Flatters	4 $\frac{3}{8}$ x 8 $\frac{7}{8}$ x2 $\frac{7}{8}$	4 $\frac{3}{8}$ x 8 $\frac{7}{8}$	3.55 Brick	Medium			
Norman Size, Flatters (only)	4 x12 x2 $\frac{1}{4}$	4 x12	3.8 Brick	Medium			
American Size, Standard...	2 $\frac{1}{4}$ x 8 $\frac{1}{4}$ 4 $\frac{1}{16}$	2 $\frac{1}{4}$ x 8 $\frac{1}{4}$	7.24 Brick	Large			
American Size, Flatters	4 $\frac{1}{16}$ x 8 $\frac{1}{4}$ x2 $\frac{1}{4}$	4 $\frac{1}{16}$ x 8 $\frac{1}{4}$	4.23 Brick	Medium			

Dimensions given are approximate only

DETAILS

REQUIRED
FOR ARCH
BRICK.

WORKING
DRAWINGS
FOR
ARCHES.

When ordering arches please furnish details as long as possible in advance of time the arches will be required. For details necessary see diagrams on sixth following page. We should be allowed from three to six weeks' time to make up Arch Brick. Arch Brick should be made to order to secure satisfactory work. We keep no standard arches in stock. We cannot always guarantee uniformity of shade in arches as in regular deliveries of first-quality plain stock brick.

We make full-sized working drawings (shrinkage scale), and mark drawing so that each different brick has its own designating letter or number in arch, and make typewritten schedules. We ship you copy of drawing and schedule with the brick to serve as guide in setting. The mason should lay each brick on its place on drawing before attempting to set the arch. We pack arches separately in barrels, and mark barrels distinctly to avoid confusion at job.

SPECIAL
FEATURES
AND
ADVANTAGES
OF OUR
ENAMELED
BRICK.

In making our product we follow the English and Scotch systems, working on the soft mud process. This is without question the only process which insures durability and the closest relation of bond obtainable between body and glaze.

Our brick are burnt in but one fire, thus making the chemical change in the body and the glaze simultaneously.

Where manufacturers use the dry pressed process, the brick have to be burnt first as front brick before the enamel can be applied, and fired again for the fluxing of the glaze.

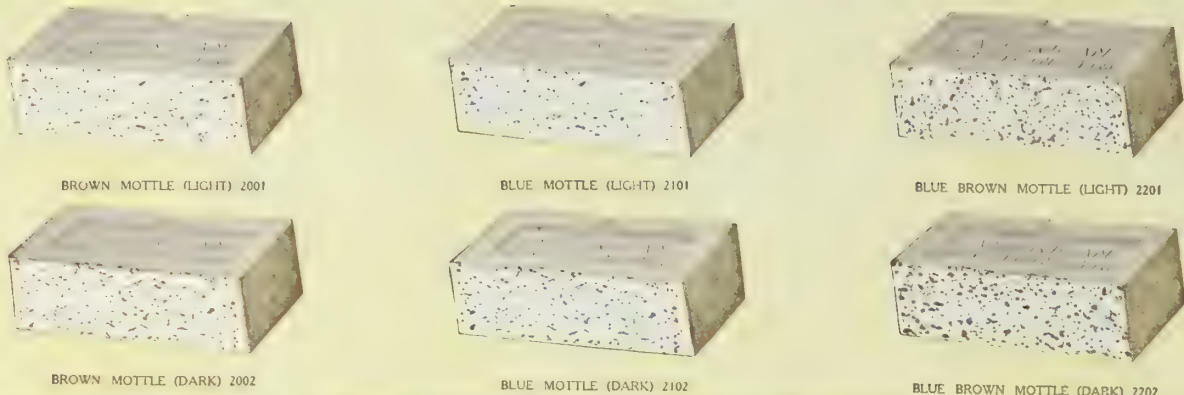
Where the enamel is applied on an already burnt brick and fluxed in a second fire the bond is weak and peeling is sure to follow.

We use hard and durable glazes, not soft lead glazes frequently seen on inferior grades of Enameled Brick.

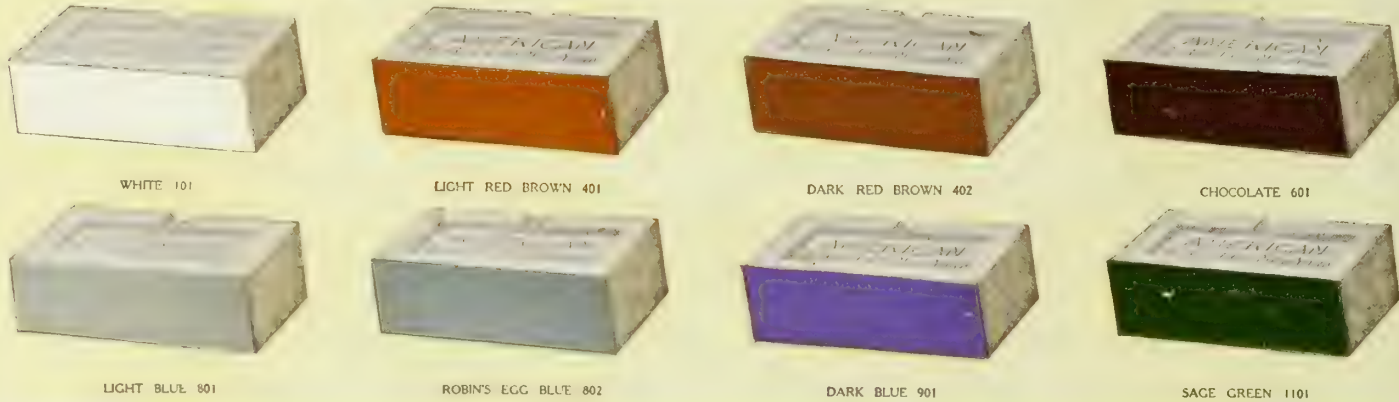
We have not a single case during our fifteen years of business where any peeling has been seen or reported. This is better than any guarantee which we might be asked to give, as it covers a distributed output of 50,000,000 brick located all over the United States, Canada, and South America, and subject to all varieties of climatic conditions.

Continued on next page

MOTTLE
COLORS



UNIFORM
COLORS



CLEANING. For cleaning brick use caustic soda (NaO) which cleans enamel well and gives no reaction with cement or lime mortar.

Acids—Sulphuric, nitric or hydrochloric, even in concentrated form, will not affect our glazes, but if used as a wash, even when diluted, will attack the lime mortar or cement of the joints (Calcium Carbonate, CaCO_3), forming sulphate—nitrate or chloride of calcium respectively, and in each case generating carbonic acid gas (CO_2) and water. Use caustic soda, commonly called soda-ash (NaO).

SPECIAL DESIGNS. New designs of special moulded shapes are always an enigma when untried, and frequently afford unsurmountable difficulties in avoiding the troubles they give, although an explanation of the cause is usually easy to find.

STOCK DESIGNS. Much delay is saved by use of stock designs of moulded brick.

These designs are chosen to reduce manufacturing troubles and delays to minimum; to enable composite mouldings to be made up (see plates); and to enable prompt filling of orders. No other manufacturer offers the variety we do. (See plates.) Two stock sheds are devoted exclusively to these specials.

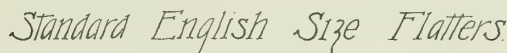
COLORS AND THEIR DESIGNATIONS. We show herewith several samples of color of our brick, together with their titles and numerals. Color is indicated by hundred-numerals, and shade by unit-numerals. For example, we indicate White by Nos. 101, 102, 103, and 104, No. 101 being the lightest shade and 104 the darkest. Similarly, we indicate Red Brown by Nos. 401 to 404 (two shades of this color being shown above), etc.

UNIFORMITY OF SHADES. We guarantee uniformity of shades in all first-quality deliveries to the limit of practicability. Colors giving most uniform results are, in order of degree of uniformity, white, red-brown and sage green. Other colors follow in irregular positions.

We will try on orders of moderate size, or on larger orders, if ample time be given, to match in shade the moulded and stretcher stock on any order, but can not always guarantee to uniformly shade shipments of specials.

N. B.—Uniform Shading in First Quality White, Brown, Sage Green, and Chocolate a specialty.

ILLUSTRATIONS. In the following pages are shown designs that we recommend as being most satisfactory in manufacturing results. We try to keep a stock of these on hand, in standard colors and in English and American sizes.



Stretcher

Quoin

Header

Double Stretcher

Double Quoin Stretcher
stock in white and iron

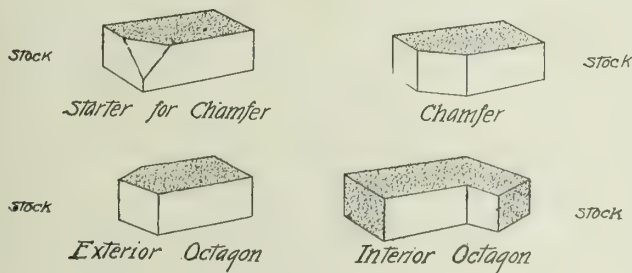
Double Header

Lipped Stretcher
stock in white

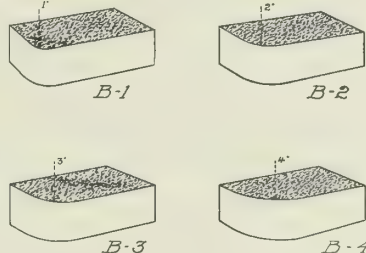
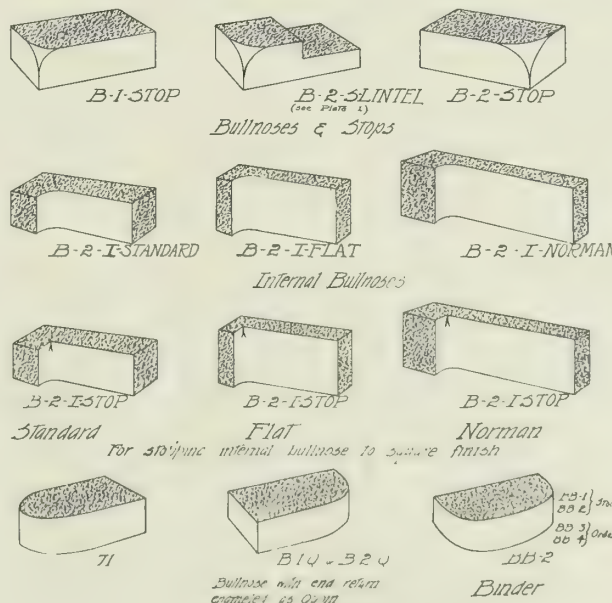
Double Stretcher Quoin

Lipped Quoin
stock in white

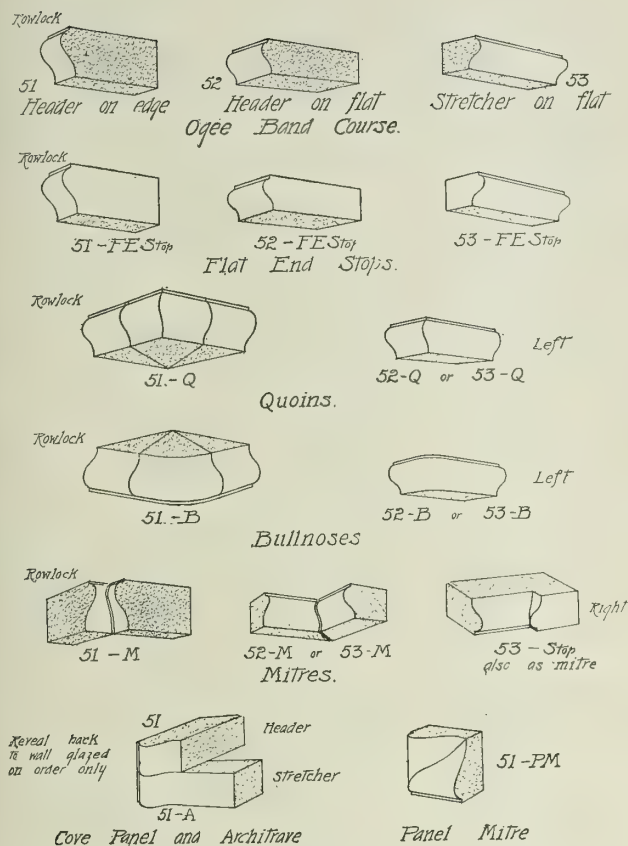
Chamfer and Octagon



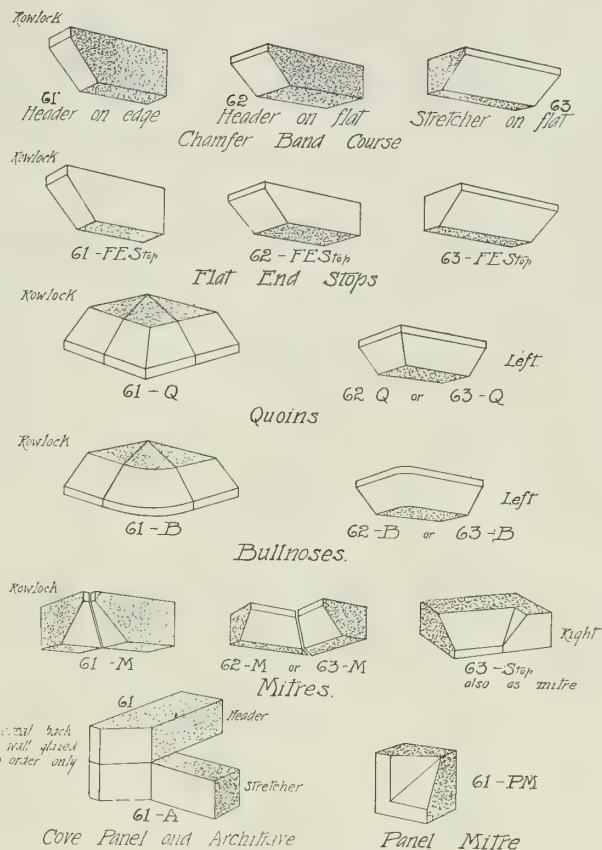
Figures indicate Radius

*Bullnoses*

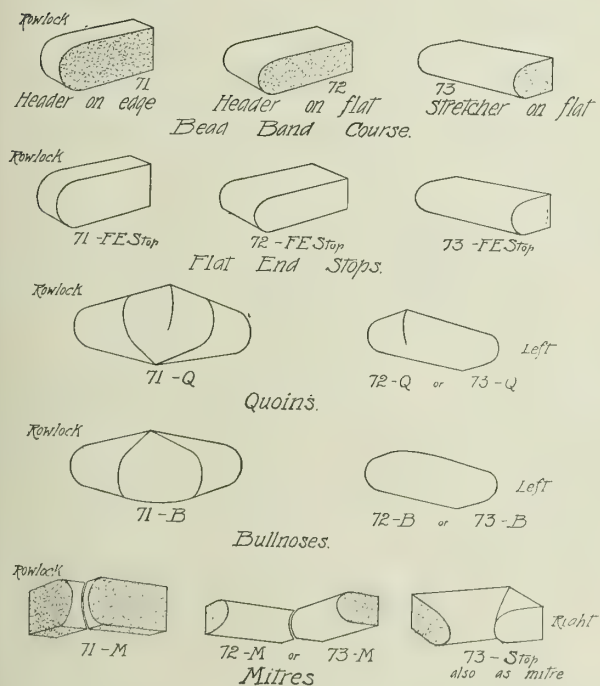
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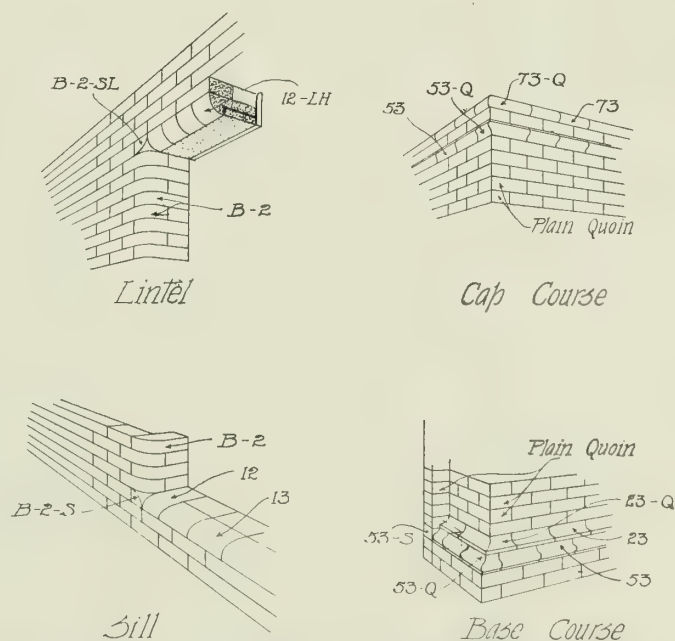
OGEE MOULD



CHAMFER MOULD

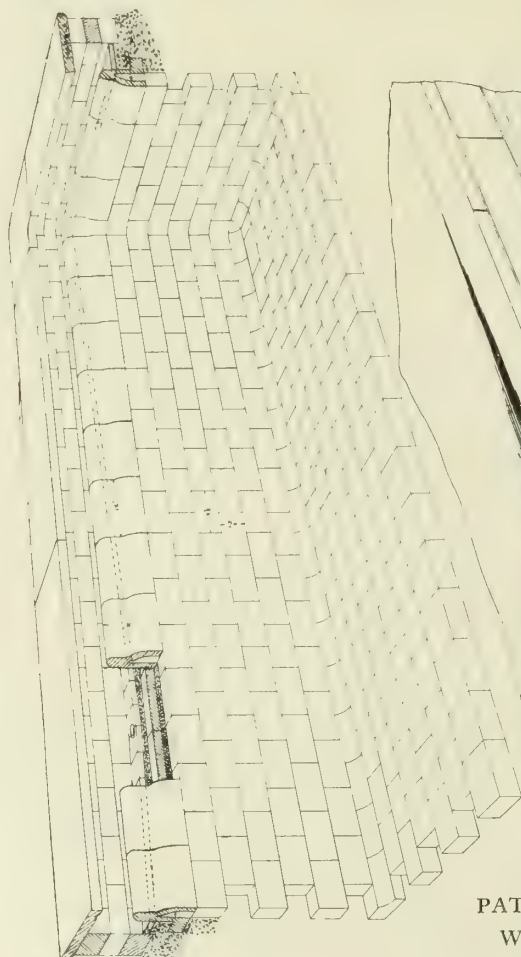
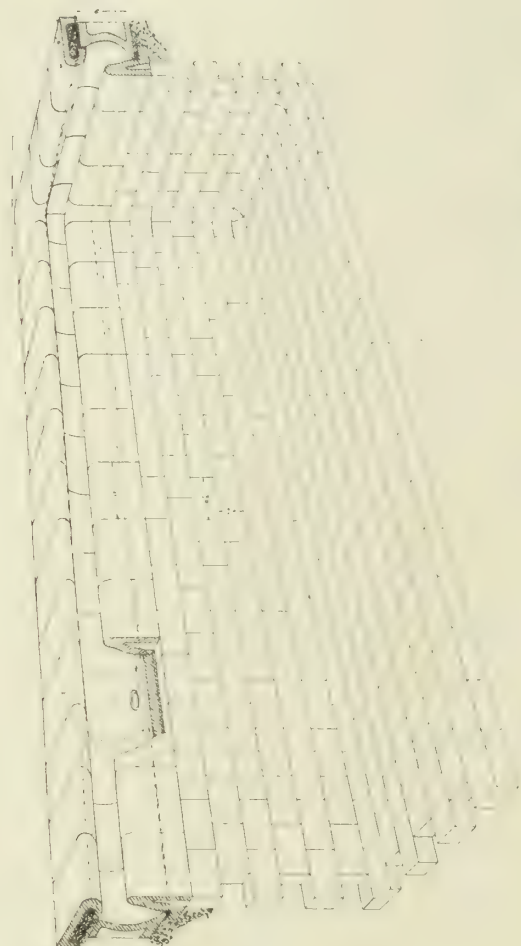


BEAD MOULD

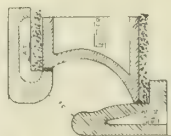
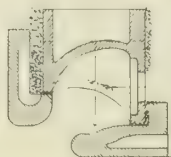
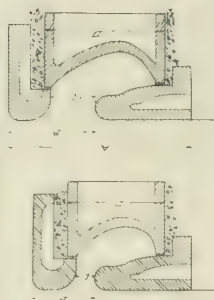


STUDY OF A WINDOW OPENING

STUDY OF A WAINSCOT

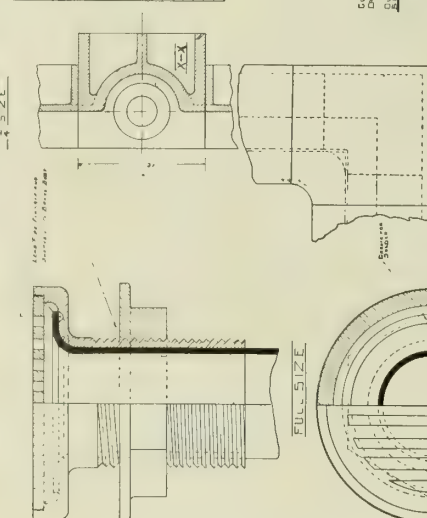


COPING - SHW TH RAIL

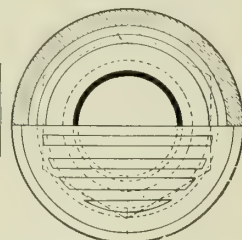


DETAIL OF GUTTER SECTION

1/2" SIZE



1/2" SIZE



APPROXIMATE DATA

TILE TYPE AND COLOR		GUTTER TYPE		GUTTER TYPE		GUTTER TYPE		GUTTER TYPE		GUTTER TYPE	
TYPE	COLOR	TYPE	COLOR	TYPE	COLOR	TYPE	COLOR	TYPE	COLOR	TYPE	COLOR
1	White	1	White	1	White	1	White	1	White	1	White
2	Blue	2	Blue	2	Blue	2	Blue	2	Blue	2	Blue
3	Red	3	Red	3	Red	3	Red	3	Red	3	Red
4	Green	4	Green	4	Green	4	Green	4	Green	4	Green
5	Yellow	5	Yellow	5	Yellow	5	Yellow	5	Yellow	5	Yellow
6	Black	6	Black	6	Black	6	Black	6	Black	6	Black
7	Grey	7	Grey	7	Grey	7	Grey	7	Grey	7	Grey
8	Brown	8	Brown	8	Brown	8	Brown	8	Brown	8	Brown
9	Pink	9	Pink	9	Pink	9	Pink	9	Pink	9	Pink
10	Orange	10	Orange	10	Orange	10	Orange	10	Orange	10	Orange
11	Purple	11	Purple	11	Purple	11	Purple	11	Purple	11	Purple
12	White	12	White	12	White	12	White	12	White	12	White
13	Blue	13	Blue	13	Blue	13	Blue	13	Blue	13	Blue
14	Red	14	Red	14	Red	14	Red	14	Red	14	Red
15	Green	15	Green	15	Green	15	Green	15	Green	15	Green
16	Yellow	16	Yellow	16	Yellow	16	Yellow	16	Yellow	16	Yellow
17	Black	17	Black	17	Black	17	Black	17	Black	17	Black
18	Grey	18	Grey	18	Grey	18	Grey	18	Grey	18	Grey
19	Brown	19	Brown	19	Brown	19	Brown	19	Brown	19	Brown
20	Pink	20	Pink	20	Pink	20	Pink	20	Pink	20	Pink
21	Orange	21	Orange	21	Orange	21	Orange	21	Orange	21	Orange
22	Purple	22	Purple	22	Purple	22	Purple	22	Purple	22	Purple
23	White	23	White	23	White	23	White	23	White	23	White
24	Blue	24	Blue	24	Blue	24	Blue	24	Blue	24	Blue
25	Red	25	Red	25	Red	25	Red	25	Red	25	Red
26	Green	26	Green	26	Green	26	Green	26	Green	26	Green
27	Yellow	27	Yellow	27	Yellow	27	Yellow	27	Yellow	27	Yellow
28	Black	28	Black	28	Black	28	Black	28	Black	28	Black
29	Grey	29	Grey	29	Grey	29	Grey	29	Grey	29	Grey
30	Brown	30	Brown	30	Brown	30	Brown	30	Brown	30	Brown
31	Pink	31	Pink	31	Pink	31	Pink	31	Pink	31	Pink
32	Orange	32	Orange	32	Orange	32	Orange	32	Orange	32	Orange
33	Purple	33	Purple	33	Purple	33	Purple	33	Purple	33	Purple
34	White	34	White	34	White	34	White	34	White	34	White
35	Blue	35	Blue	35	Blue	35	Blue	35	Blue	35	Blue
36	Red	36	Red	36	Red	36	Red	36	Red	36	Red
37	Green	37	Green	37	Green	37	Green	37	Green	37	Green
38	Yellow	38	Yellow	38	Yellow	38	Yellow	38	Yellow	38	Yellow
39	Black	39	Black	39	Black	39	Black	39	Black	39	Black
40	Grey	40	Grey	40	Grey	40	Grey	40	Grey	40	Grey
41	Brown	41	Brown	41	Brown	41	Brown	41	Brown	41	Brown
42	Pink	42	Pink	42	Pink	42	Pink	42	Pink	42	Pink
43	Orange	43	Orange	43	Orange	43	Orange	43	Orange	43	Orange
44	Purple	44	Purple	44	Purple	44	Purple	44	Purple	44	Purple
45	White	45	White	45	White	45	White	45	White	45	White
46	Blue	46	Blue	46	Blue	46	Blue	46	Blue	46	Blue
47	Red	47	Red	47	Red	47	Red	47	Red	47	Red
48	Green	48	Green	48	Green	48	Green	48	Green	48	Green
49	Yellow	49	Yellow	49	Yellow	49	Yellow	49	Yellow	49	Yellow
50	Black	50	Black	50	Black	50	Black	50	Black	50	Black

GUTTERS ARRANGED FOR RISE AND FALL OF 1/8" PER FOOT, 12" MIN. 1/2" MIN. 1/4" MIN. 1/8" MIN. 1/16" MIN. 1/32" MIN. 1/64" MIN. 1/128" MIN. 1/256" MIN. 1/512" MIN. 1/1024" MIN. 1/2048" MIN. 1/4096" MIN. 1/8192" MIN. 1/16384" MIN. 1/32768" MIN. 1/65536" MIN. 1/131072" MIN. 1/262144" MIN. 1/524288" MIN. 1/1048576" MIN. 1/2097152" MIN. 1/4194304" MIN. 1/8388608" MIN. 1/16777216" MIN. 1/33554432" MIN. 1/67108864" MIN. 1/134217728" MIN. 1/268435456" MIN. 1/536870912" MIN. 1/1073741824" MIN. 1/2147483648" MIN. 1/4294967296" MIN. 1/8589934592" MIN. 1/17179869184" MIN. 1/34359738368" MIN. 1/68719476736" MIN. 1/137438953472" MIN. 1/274877906944" MIN. 1/549755813888" MIN. 1/1099511627776" MIN. 1/2199023255552" MIN. 1/4398046511104" MIN. 1/8796093022208" MIN. 1/17592186044416" MIN. 1/35184372088832" MIN. 1/70368744177664" MIN. 1/140737488355328" MIN. 1/281474976710656" MIN. 1/562949953421312" MIN. 1/1125899906842624" MIN. 1/2251799813685248" MIN. 1/4503599627370496" MIN. 1/9007199254740992" MIN. 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ARE YOU
GOING TO
BUILD A
BATH?

Ours has a combination non-interfering life rail, with surface drainage and inclined overflow system.

What this design accomplishes (see Bath Design on previous page and in margin).

First—A complete and efficient surface-drainage system which will remove all skum, dried skin, saliva and other floating substances from the surface of the water, and prevent accumulation of the same on the side of the tank where it usually collects.

Second—This reduces the necessity of cleaning to a minimum; saves many dollars of water-tax by reducing the number of times the tank has to be emptied, and increases the service time available for the tank, so that the swimmers find it full and not empty and out of commission when they want to take a swim.

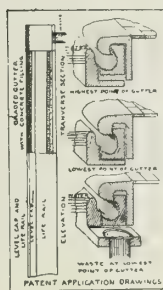
Third—Affords a Life Rail at water's edge within easy reach of the swimmer, and much more convenient and practical than the unhealthy ropes and the rigid Bronze Railings far above the water surface; hence no broken legs for the diver, and Life Rail within easy reach of the rattled swimmer.

Fourth—The Life Rail is a help and not a hindrance in getting out of the tank at any point without going to the steps, and the gutter affords a convenient place for swimmers to expectorate in at all parts of the tank.

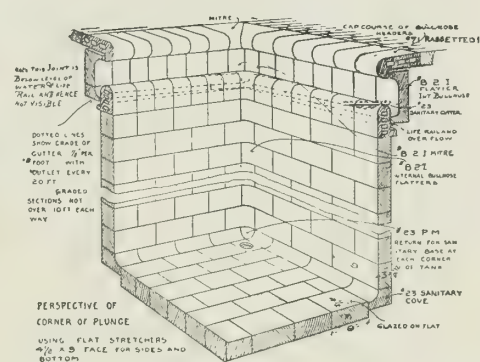
Fifth—All drippings from the bathers, mixed with dirt from the feet of the observers, are carried into the gutter instead of into the tank, and are promptly removed by constant flushing over the Life Rail.

Sixth—If the outlets from the gutter are made of sufficient capacity and frequency to remove the full flow of the delivery pipe, it is a physical impossibility to overflow the tank so as to flood the floor or the surrounding building, as the capacity of the overflow at the rail is a matter of square feet against square inches on the inlet pipe under pressure.

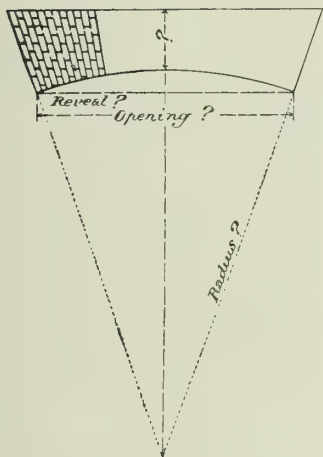
Seventh—Our Porcelain finish, Enameled Brick and Terra Cotta are impervious to all acids (sometimes present in diluted form in water), and are far superior to marble in this respect. We use hard pure porcelain on fire-clay bodies, that will stand extreme heat and cold and natural changes easily.



PATENT
APPLICA-
TION
DRAWINGS

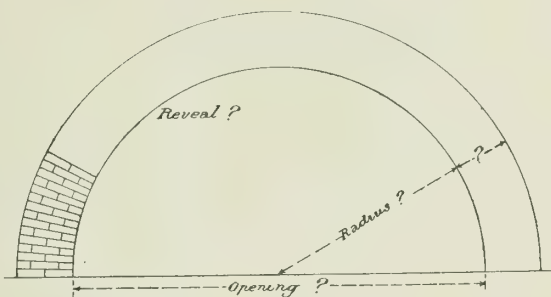


PERSPECTIVE OF CORNER OF PLUNGE



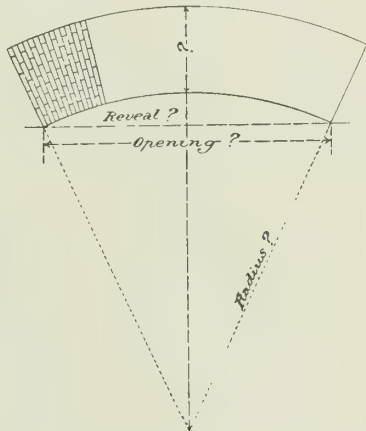
SEGMENT OR GOTHIC ARCHES

Gothic Arches will be made to one radius as above, unless otherwise specified

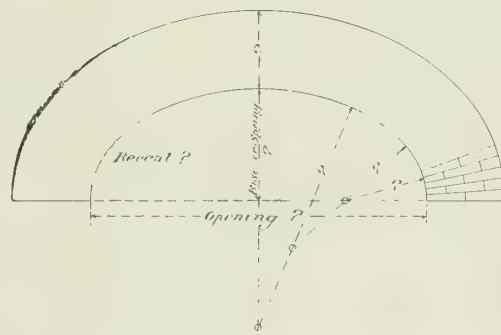


SEMICIRCULAR OR SEGMENT ARCHES

These Arches can be made with moulded reveals



FLAT OR CENTERED ARCH



ELLIPTIC OR THREE-CENTERED ARCH

Can be made with moulded reveals

* In ordering arches give information called for by ? marks. See center of first page for information as to how these are furnished.

PAST WORK.

We can furnish for inspection, on request, detailed class lists summarizing 651 buildings, 14 classes, furnished by us with seventeen million enameled brick.

BRADFORD PRESSED BRICK CO.

Red Front Brick

WILLIAM HANLEY, PRESIDENT

BRADFORD, PA.

PRODUCTS.

We are the Manufacturers of "BRADFORD PRESSED BRICK," or "BRADFORD REDS."

"BRADFORD
PRESSED
BRICK."

"Bradford Pressed Brick" are a fine red brick manufactured from Bradford shale and burned by natural gas. They are unequaled for richness of color, perfection of shading, and uniformity of size. They are not artificially colored, but are the natural color of the shale rock from which they are manufactured. This makes them absolutely unfading.

UTILITY.

"Bradford Reds," laid either with close joints and even shades or with heavy joints and diversified shades, make a beautiful wall.

SIZES.

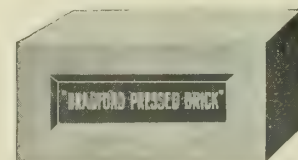
Standard size brick, $2\frac{3}{8}" \times 4" \times 8\frac{1}{4}"$.

Roman size brick, $1\frac{1}{2}" \times 4" \times 12\frac{1}{4}"$.

Short Roman size, $1\frac{1}{2}" \times 4" \times 8"$.

MOULDED
BRICK.

We carry in stock a large line of Moulded and Ornamental Brick and are in a position to make any special shape not shown in the catalogue. When special moulds are required we should be given from four to six weeks to insure good work. We are pleased to correspond with architects regarding their requirements at any time. Full-sized details should accompany any order for special moulds or arches.



Trade-Mark Reg. U. S. Pat. Office
STANDARD BRICK

ARCHES.

We get out arch brick of any size or style from drawings submitted by architects.

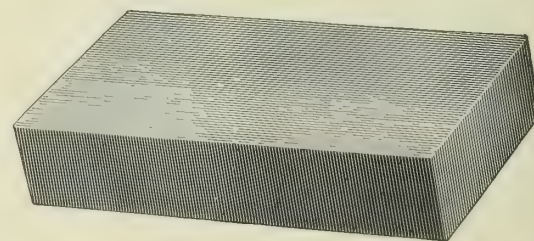
MANUFACTUR-
ING PROCESS.
ADVANTAGES
AND
FACILITIES.

We manufacture both dry-press and impervious brick.

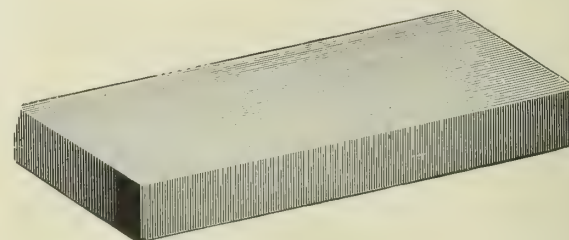
Red brick are always standard. Our stiff-mud product is specially desirable when imperviousness is required.

Our supply of raw material is practically inexhaustible, consequently we can duplicate orders from year to year. We operate continuously two yards with a capacity of 25,000,000 brick per year.

Our location on two trunk lines and close traffic arrangement with other roads guarantees prompt shipment.



SHORT ROMAN BRICK

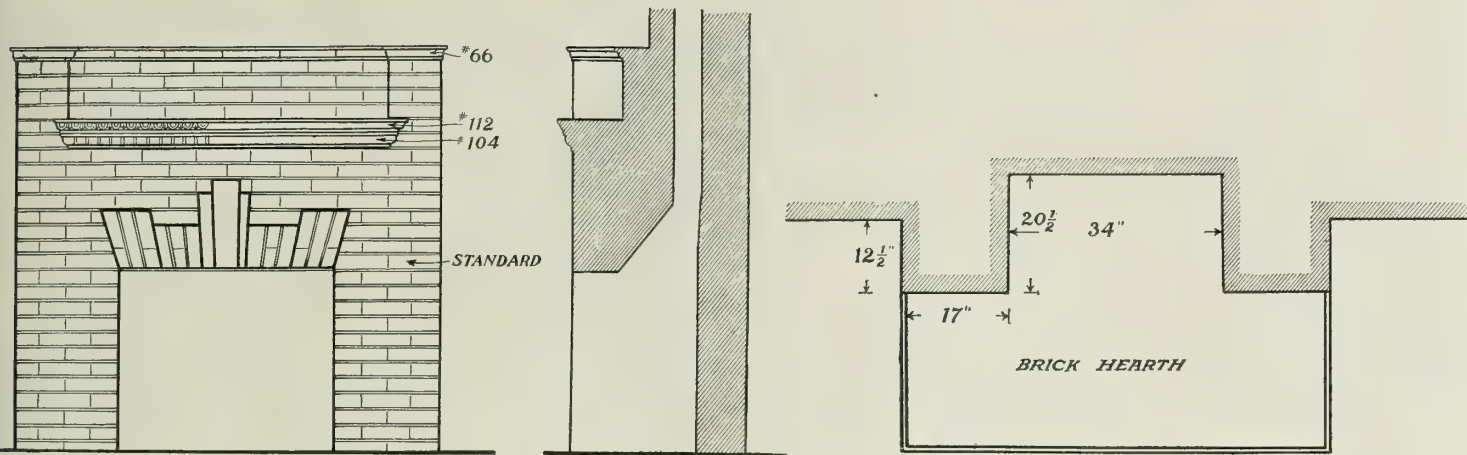


ROMAN BRICK

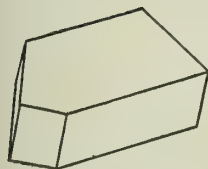
CO-OPERATIVE
SERVICES,
PRICES AND
CATALOGUES.

We will furnish estimates and all desired information to enable the specifying of "Bradford Pressed Brick."

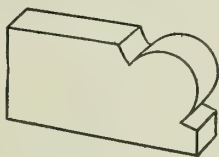
Mantel Catalogue, also Catalogue of Ornamental Brick sent on request.



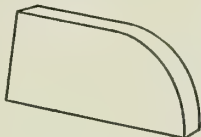
ELEVATION, SECTIONAL AND FLOOR PLANS OF SPECIMEN MANTEL DESIGN



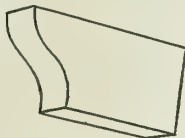
No. 2 Octagon or Bay Window Brick



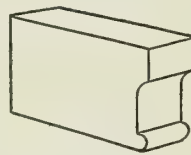
No. 6 Jamb Brick 3-inch Bead



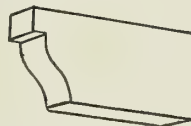
No. 11 Jamb Brick 4-inch Radius



No. 56 Header Projection 2 1/2 in.



No. 54 Header Projection 3/4 in.



No. 62 Header Projection 1 1/2 in.



No. 100 Stretcher Projection 1 in.



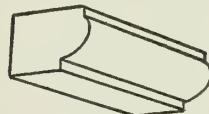
No. 112 Stretcher Projection 1 3/8 in.



No. 12 Radius or Circle Brick



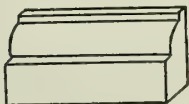
No. 46 Stretcher Projection 1 in.



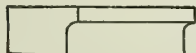
No. 48 Stretcher Projection 1 3/8 in.



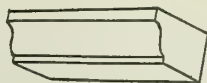
No. 30 Stretcher Projection 1 1/2 in.



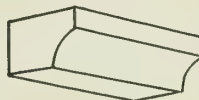
No. 32 Stretcher Projection 1 1/2 in.



No. 36 Stretcher Projection 5/8 in.



No. 66 Stretcher Projection 7/8 in.



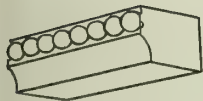
No. 38 Stretcher Projection 1 1/8 in.



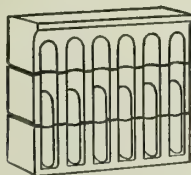
No. 107 Stretcher Projection 5/8 in.



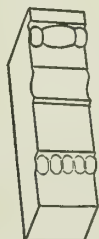
No. 40 Stretcher Projection 2 in.



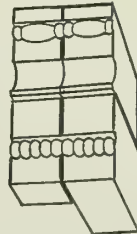
No. 124 Stretcher Projection 3/4 in.



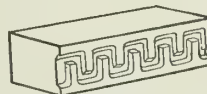
Combination of Nos. 126, 128, and 130



No. 132 Header Projection 1 1/2 in.



Combination of Nos. 132, 133, and 134



No. 152 Stretcher

SOME DESIGNS OF ORNAMENTAL BRICK

THE EVERHARD COMPANY

Manufacturers of Iron Spot Brick

MASSILLON, OHIO

A PARTIAL LIST OF OUR REPRESENTATIVES

BOSTON, MASS., WALDO BROTHERS
 NEW YORK, N. Y., HARBISON-WALKER REFRACTORIES Co.
 BALTIMORE, MD., HUDSON CEMENT & SUPPLY Co.
 PHILADELPHIA, PA., S. B. DOBBS
 CINCINNATI, OHIO, MOORES-CONEY Co.
 COLUMBUS, OHIO, WARREN B. FERRIS BRICK Co.
 DETROIT, MICH., THE BARTLETT Co.

CHICAGO, ILL., BONNER & MARSHALL Co.
 ST. LOUIS, MO., ILLINOIS SUPPLY & CONSTRUCTION Co.
 MINNEAPOLIS, MINN., JOHNSON, JACKSON & CORNING
 KANSAS CITY, MO., BRYANT SUPPLY Co.
 MILWAUKEE, WIS., RICKETSON & SCHWARZ
 DULUTH, MINN., PAINE & NIXON Co.
 NASHVILLE, TENN., THE FULCHER BRICK Co.

PRODUCTS.

IRON SPOT BRICK; IMPERVIOUS BRICK; REPRESS BRICK; FACING BRICK; MOTTLED BRICK; FLASH BRICK.

PROCESS OF MANUFACTURE.

Our brick are made by the stiff-mud process. All the brick are repressed, guaranteeing uniformity in size. When burned they are perfectly impervious to water or to the ink test. The best grade of fire clay is used, and as this clay carries with it the iron globules which form the iron spots, we do away with all mixture of foreign clays. All brick are burned on their beds, guaranteeing both faces of a uniform shade.

SHADES.

Iron spot brick, orange, light brown, chocolate and dark shades.

ARCHES.

We either cut green or grind to size brick required for arches.

MOULDED BRICK.

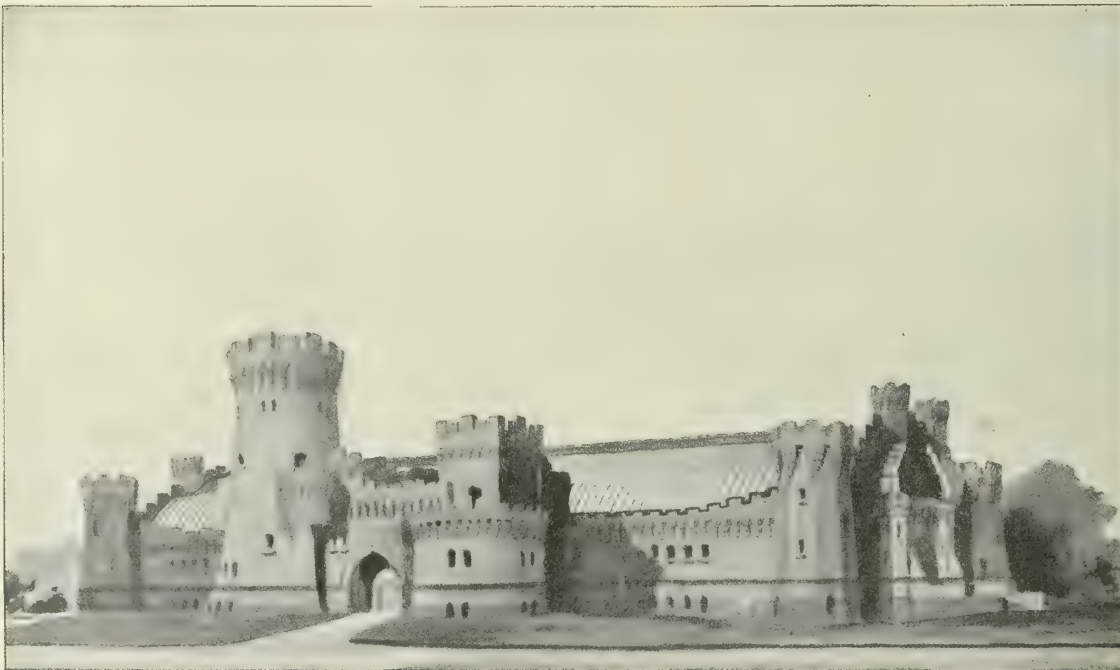
We carry a stock of standard Moulded Brick in the different shades.

CAPACITY.

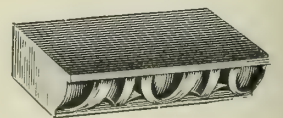
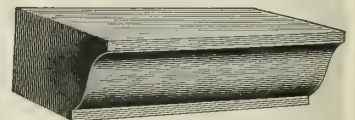
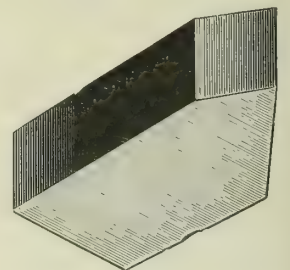
Ten million brick, annual capacity.

CATALOGUES.

We gladly furnish catalogues of arch and moulded brick to those interested.



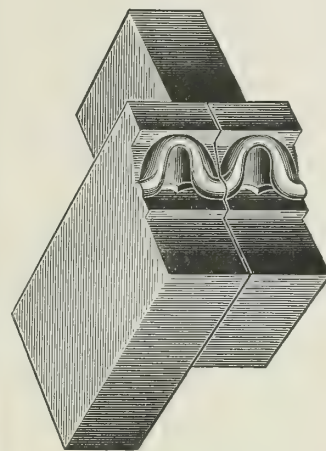
ARMORY AND GYMNASIUM, OHIO STATE UNIVERSITY, COLUMBUS, OHIO, 300,000 BRICK



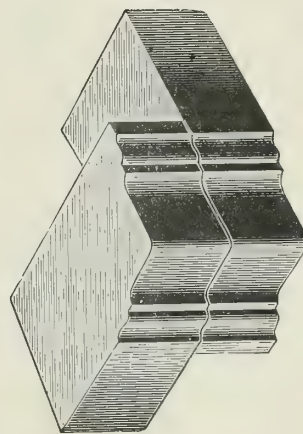
STANDARD SHAPES OF MOULDED BRICK



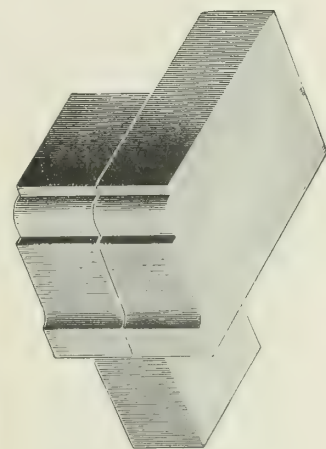
OHIO ODD FELLOWS' HOME, SPRINGFIELD, OHIO. 200,000 BRICK



MASSILLON'S STATE HOSPITAL, MASSILLON, OHIO. 250,000 BRICK. ONE OF 25 BUILDINGS



GRAEME STEWART SCHOOL, CHICAGO, ILL. 125,000 BRICK



STANDARD SHAPES OF
MOULDED BRICK

GREENPOINT FIRE BRICK CO.

Fire Brick, Wall Coping, Flue Lining, Drain-Pipe

111 Clay Street

BROOKLYN, N. Y.

TELEPHONE, 138 GREENPOINT

FACTORY
407-11 OAKLAND STREET

PRODUCTS. Manufacturers of FIRE BRICK of standard shapes as follows: ARCH, WEDGE, KEY, BULLNOSE, BULLHEAD, SPLIT, SOAP, ARCH JAMB, SPLAY, SKEW BLOCKS, CUPOLA LININGS, BOILER SETTINGS, BAKERS' OVEN TILES, SLABS of various sizes. SPECIAL SHAPES for any required purpose made to order in accordance with details furnished. FIRE MORTAR or GROUND FIRE CLAY of best quality. PATENT FLANGED-LOCKED TERRA COTTA CHIMNEY CAPS; standard shape SADDLE-BACK GLAZED WALL COPING; DRAIN-PIPE and FLUE LININGS of all sizes.

FIRE BRICK
DETAILS.

Our product is of the very best manufacture and will withstand a high heat without injury, provided reasonable time is allowed for the cooling of the bricks. The admittance of draughts of cold air immediately after high heat is a severe test for fire brick. Furnaces should be allowed to cool slowly whenever possible.

Our standard brick measures 9" x 4½" x 2½" and weighs 7 pounds. One cubic foot of wall requires 17 standard bricks. One cubic yard of wall requires 460 standard bricks. Where Keys, Wedges, and other shapes are required allow 10 per cent additional in estimating quantity of bricks.

When ordering Cupola Lining give inside and outside diameters of shell and height to be lined.

Fire Brick should be laid with the smallest amount of mortar possible if the best results are considered. About one quarter ton of Fire Clay should be used to lay 1000 bricks.

SPECIAL
SIZES.

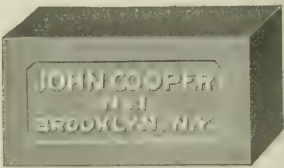
The manufacture of special sizes requires from four to six weeks. Consider this in ordering and avoid disappointment.

PATENT
CHIMNEY
CAPS.

In our Patent Flanged-Locked Chimney Caps of glazed Terra Cotta we offer a product that possesses many advantages over the usual bluestone caps. They are weather-tight, indestructible, neat in appearance and inexpensive. They are easy to set, being made in sections sufficiently light for one man to carry. Therefore no hoisting rig is required.

FACILITIES
AND PRICES.

We are in a position to fill orders for any of our goods for delivery by truck, rail or water, or packed for export. Price-list and estimates on special orders sent promptly on application.



NO. 1 FIRE BRICK
4½" x 9" x 2½"

DIMENSIONS OF TILES AND BLOCKS

12 x 12 x 2	18 x 12 x 2	20 x 12 x 2	18 x 12 x 3	30 x 12 x 3	36 x 12 x 4	22 x 24 x 4	24 x 18 x 4
15 x 12 x 2	18 x 6 x 2	16 x 16 x 2	24 x 12 x 3	24 x 24 x 3	18 x 15 x 4	14 x 12 x 4	24 x 6 x 4
12 x 4½ x 2½	21 x 12 x 2	24 x 12 x 2*	20 x 12 x 3	16 x 12 x 3	12 x 4 x 4	12 x 12 x 4	20 x 6 x 4
20 x 6 x 2	22 x 12 x 2	30 x 12 x 2	36 x 12 x 3	18 x 18 x 3	20 x 15 x 4	20 x 12 x 4	18 x 6 x 4
12 x 6 x 2	24 x 6 x 2	24 x 12 x 2½	30 x 24 x 3	24 x 12 x 4	30 x 12 x 4	18 x 12 x 4	24 x 8 x 4
16 x 12 x 2	24 x 12 x 2	*Flanged	12 x 12 x 3				

DIAMETERS AND DIMENSIONS OF CUPOLA BRICK

Diameter of Cupola		Diameter of Cupola		Size of Brick		Size of Brick	
15 ins. inside	23 ins. outside	34 ins. inside	46 ins. outside	6 ins. high	4 ins. thick	4 ins. high	6 ins. thick
18 " "	26 " "	36 " "	48 " "	6 " "	4 " "	4 " "	6 " "
20 " "	32 " "	40 " "	52 " "	4 " "	6 " "	4 " "	6 " "
22 " "	30 " "	48 " "	60 " "	6 " "	4 " "	4 " "	6 " "
28 " "	40 " "	48 " "	60 " "	4 " "	6 " "	6 " "	6 " "
30 " "	38 " "	60 " "	72 " "	6 " "	4 " "	4 " "	6 " "
30 " "	38 " "	60 " "	72 " "	4 " "	6 " "	6 " "	6 " "

HYDRAULIC-PRESS BRICK CO.

MANUFACTURERS OF

Building Bricks of Every Description

Missouri Trust Building

ST. LOUIS, MO.

FACTORIES, HOME OFFICE AND MAIN WORKS, ST. LOUIS, MO.

BRANCHES

ILLINOIS BRANCH

KANSAS CITY BRANCH

WASHINGTON BRANCH
PHILADELPHIA BRANCH
CLEVELAND BRANCH
ZANESVILLE BRANCH
BRAZIL BRANCH
CHICAGO BRANCH
MENOMONIE HYDRAULIC-PRESS BRICK CO.
OMAHA BRANCH
KELLEY BRICK & TILE CO.

OFFICES

St. Louis, Mo.

Kansas City, Mo.

Washington, D. C.
Philadelphia, Pa.
Cleveland, Ohio
Zanesville, Ohio
Brazil, Ind.
Chicago, Ill.
Minneapolis, Minn.
Omaha, Neb.
Duluth, Minn.

WORKS

Collinsville, Ill.
Kansas City, Mo.
Diamond, Kan.
Chanute, Kan.
Washington, D. C.
Winslow, N. J.
South Park, Ohio
Roseville, Ohio
Brazil, Ind.
Porter, Ind.
Menomonic, Wis.
Averys, Neb.
Wrenshall, Minn.

SELLING AGENTS

NEW YORK, N. Y., FREDENBURG & LOUNSBURY
MILWAUKEE, WIS., RICKETSON & SCHWARZ
DETROIT, MICH., THOMAS BROS. & Co.
NEW ORLEANS, LA., F. CODMAN FORD
MEMPHIS, TENN., MEMPHIS BRICK SUPPLY CO.
CINCINNATI, OHIO, L. H. MCCAMMON BROS.
COLUMBUS, OHIO, LEROY W. GADDIS
TOLEDO, OHIO, TOLEDO BUILDERS' SUPPLY CO.

DALLAS, TEX., F. H. DUKES
JACKSON, MISS., MORRISON BROS.
BALTIMORE, MD., ALFRED TYLER
SOUTH BEND, IND., E. A. MORSE
WINNIPEG, MAN., DUNN BROS. & Co.
EVANSVILLE, IND., E. F. SONNTAG MANTEL & TILE CO.
NORFOLK, VA., G. S. FRIEBUS
SEATTLE, WASH., F. T. CROWE & Co.

PRODUCTS.

PRESS BRICK, in all conceivable colors. Made in Standard, Roman, or Norman sizes. STIFF MUD BRICKS—Red, Gray, Buff, and Mottled Impervious. Matt finish, salt glaze, pavers, gun-metal, and special rustic effects.

ENAMEL BRICKS—White, Buff, Cream, Blue, Green, Brown, Delft, and Transparent Glaze.

We have the only perfectly Opaque Enamel on the market.

We have the only Green, Brown, and Blue that does not have that "painted" effect.

MOULDED BRICKS—We issue a special catalogue embracing a full line of correct Mouldings for all conditions of usage, which will be sent free on application.

ENAMELED BRICKS.

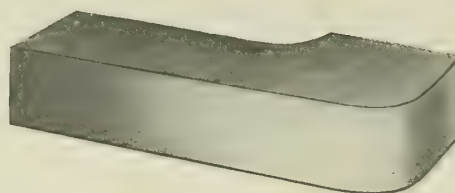
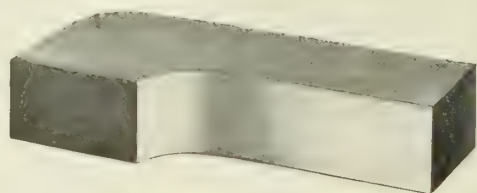
Our Hydraulic Pressed Enameled Bricks are made in American, Roman and English sizes, as shown in table. Colors, White, Buff, Brown, Green, Blue, Agate and Delft.

ENAMELED BRICKS

	Approximate Size	Enameled Surfaces
American Size Stretcher	$8\frac{1}{8} \times 2\frac{1}{4} \times 4$	$8\frac{1}{8} \times 2\frac{1}{4}$
American Size Header	$8\frac{1}{8} \times 2\frac{1}{4} \times 4$	$4 \times 2\frac{1}{4}$
American Size *Quoin	$8\frac{1}{8} \times 2\frac{1}{4} \times 4$	$8\frac{1}{8} \times 2\frac{1}{4}$ and $4 \times 2\frac{1}{4}$
American Size Return	$8\frac{1}{8} \times 2\frac{1}{4} \times 4$	$8\frac{1}{8} \times 2\frac{1}{4}$ and $2\frac{1}{4} \times 4$ and $2\frac{1}{4} \times 4$
Roman Size Stretcher	$11\frac{1}{8} \times 1\frac{1}{8} \times 4$	$11\frac{1}{8} \times 1\frac{1}{8}$
Roman Size Header	$11\frac{1}{8} \times 1\frac{1}{8} \times 4$	$4 \times 1\frac{1}{8}$
Roman Size *Quoin	$11\frac{1}{8} \times 1\frac{1}{8} \times 4$	$11\frac{1}{8} \times 1\frac{1}{8}$ and $4 \times 1\frac{1}{8}$
Roman Size Return	$11\frac{1}{8} \times 1\frac{1}{8} \times 4$	$11\frac{1}{8} \times 1\frac{1}{8}$ and $4 \times 1\frac{1}{8}$ and $4 \times 1\frac{1}{8}$
Roman Tile Enameled on Flat	$11\frac{1}{8} \times 1\frac{1}{8} \times 4$	$11\frac{1}{8} \times 4$
Roman Tile Enameled on Flat Quoin	$11\frac{1}{8} \times 1\frac{1}{8} \times 4$	$11\frac{1}{8} \times 4$ and $4 \times 1\frac{1}{8}$
English Size Stretcher	$9 \times 3 \times 4\frac{1}{2}$	9×3
English Size Header	$9 \times 3 \times 4\frac{1}{2}$	$4\frac{1}{2} \times 3$
English Size *Quoin	$9 \times 3 \times 4\frac{1}{2}$	9×3 and $4\frac{1}{2} \times 3$
English Size Return	$9 \times 3 \times 4\frac{1}{2}$	9×3 and $4\frac{1}{2} \times 3$ and $4\frac{1}{2} \times 3$
English Size Enameled on Flat	$9 \times 3 \times 4\frac{1}{2}$	$9 \times 4\frac{1}{2}$
English Size Enameled on Flat *Quoin	$9 \times 3 \times 4\frac{1}{2}$	$9 \times 4\frac{1}{2}$ and $4\frac{1}{2} \times 3$
Soap Brick, American Size	$8\frac{1}{8} \times 2\frac{1}{4} \times 2\frac{3}{8}$	$8\frac{1}{8} \times 2\frac{1}{4}$

* These Quoins are made with either square or round corners.

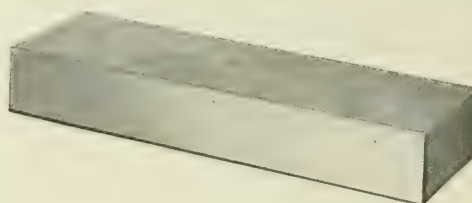
Continued on next page



Norman Size Bull-Nose Internal and External Reversible Angle



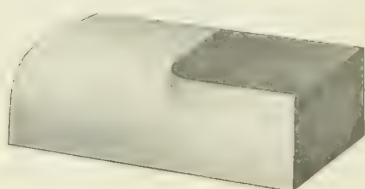
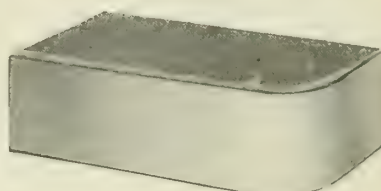
Sanitary Cove No. 410



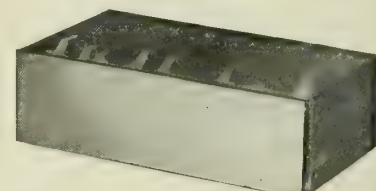
Roman Size Stretcher



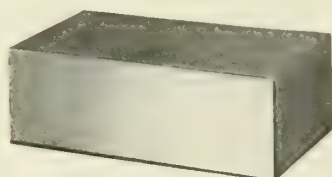
Bull-Nose Return for No. 404

Bull-Nose Internal Panel Miter (Right)
for No. 404 and No. 233

Bull-Nose Quoin No. 233



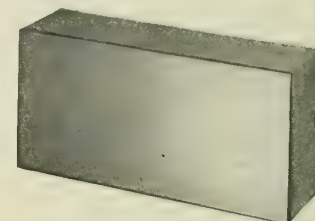
American Size Stretcher



English Size Stretcher



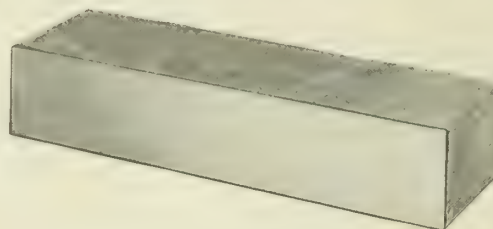
Bull-Nose Stretcher No. 404



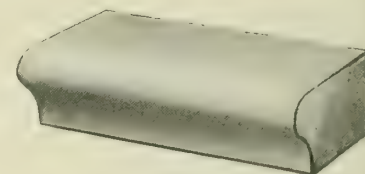
English Size on Flat



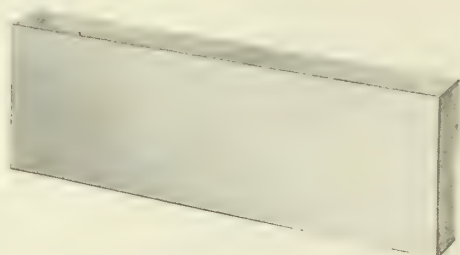
Cap Mould Return No. 407



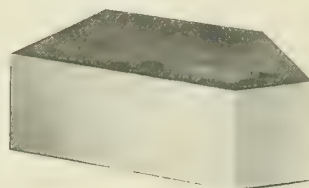
Norman Size Stretcher



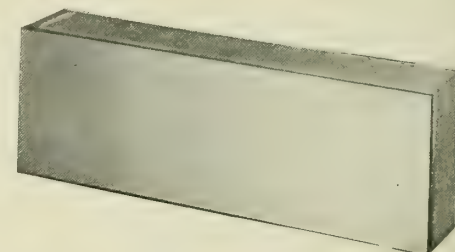
Cap Mould No. 407



Roman Size on Flat



45° Angle Brick No. 204



Norman Size on Flat

A FEW OF OUR REGULAR SHAPES OF ENAMEL BRICK

PROCESS OF
MANUFACTURE.

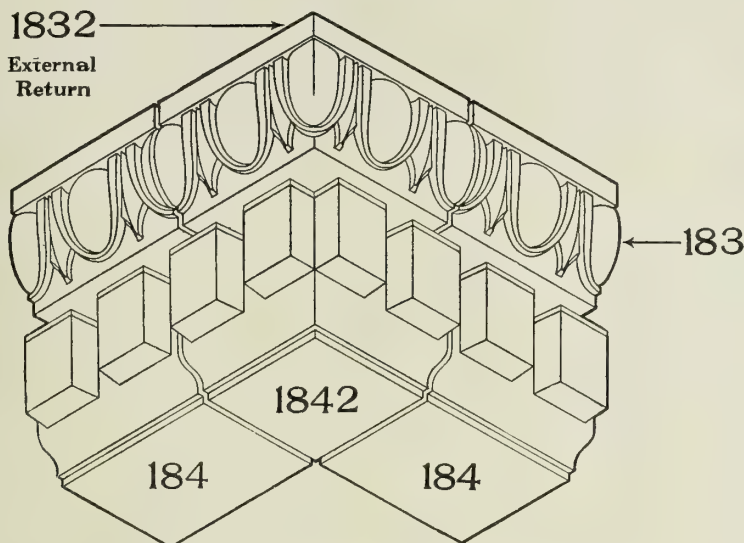
By our hydraulic process of manufacturing bricks we are able to give each brick, when being moulded, a pressure far greater than has ever been found possible in any other manner. This pressure, in conjunction with the fact that dry clay is used, means that we must put more material into our bricks, giving them unusual density and weight. We also manufacture stiff-mud, impervious brick by the latest and most improved process.

QUALITY
OF COLOR.

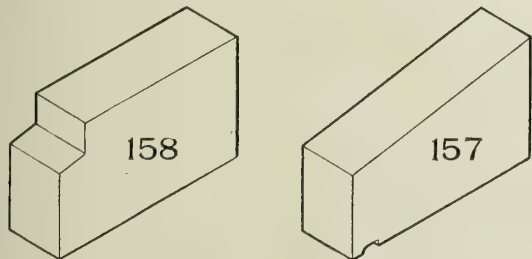
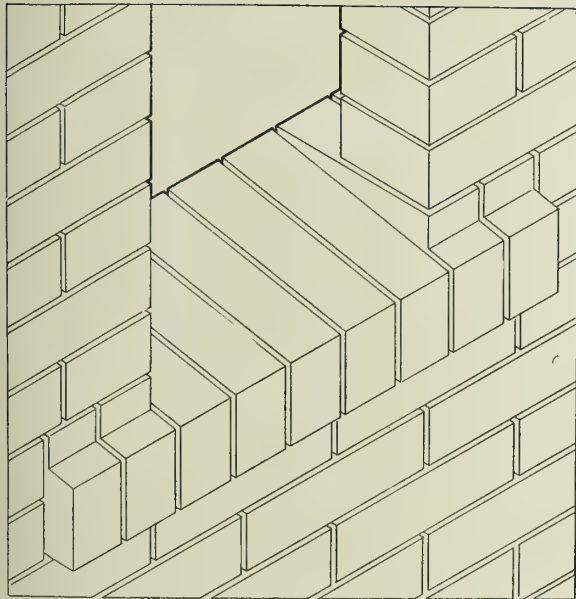
The permanency of color in our bricks is due to the mixture of clays and ores and the scientific application of fire, and not to the use of artificial coloring matter.

CAPACITY.

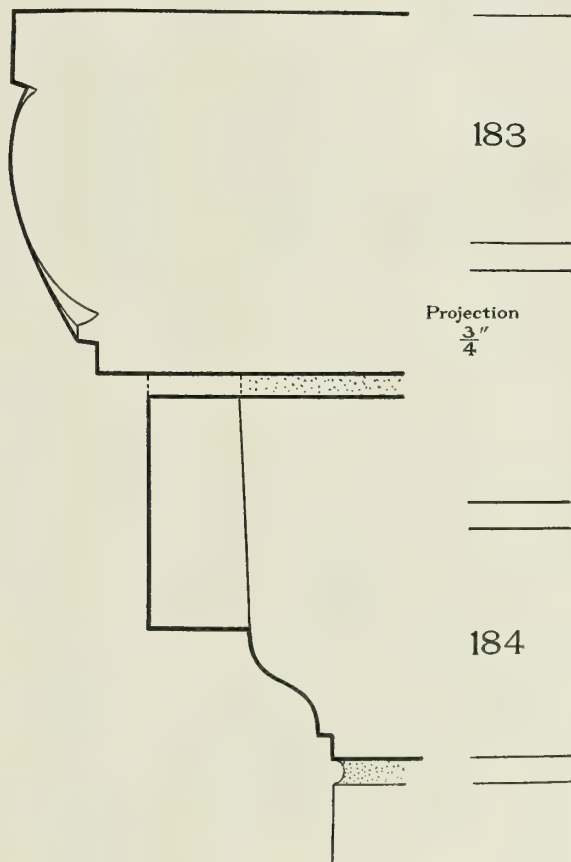
Our immense capacity renders it possible to serve a uniformity of colors that can not be obtained elsewhere. The large stock constantly carried enables us to take care of all ordinary size orders immediately upon receipt of the same.



Isometric View of Moulded Cornice Bricks



Moulded Sill Bricks



Sections of Moulded Cornice Bricks

SPECIMEN ILLUSTRATIONS FROM OUR MOULDED BRICK CATALOGUE

V. H. KRIEGSHABER

Building Supplies

97½ Peachtree Street

ATLANTA, GA.

WAREHOUSE

383-5-7 WHITEHALL STREET

PRODUCTS.

I represent throughout the Southern States the leading manufacturers of

PORTLAND CEMENTS
HYDRAULIC CEMENTS
HARD WALL PLASTERS
FIRE CLAY
MARBLE DUST
BULK LIME
HYDRATED LIME

PRESS BRICK
COMMON BRICK
PAVING BRICK
FIRE BRICK
FLUE LINING
FIREPROOFING
SEWER PIPE

METAL LATH
EXPANDED METAL
METAL STUDDING
CORNER BEAD
VAULT LIGHTS
WALL TIES
MAIL CHUTES

TOCH BROS. R. I. W. DAMP-RESISTING PAINTS

PRESS
BRICK.

I represent the Ohio Mining & Manufacturing Company, makers of the superior Shawnee Face Brick "Indian Brand"—Dry-Pressed, Impervious, Wire-Cut, and Repressed, in Buff, Speckled Buff, Gray, Speckled Gray, and Old Gold (Mottled) in various shades and shapes. Factory at Shawnee, Ohio.



TRADE-MARK
Reg. U. S. Pat.
Office

RED PRESS
BRICK.

I represent in this section the Spar Red Press Brick. There is no better red press brick made in the United States. That is a strong statement, but a trial will convince you that it is true. Even in color, densely burned, and made so well that a sample simply reflects an entire carload shipment.

MISSION
BRICK.

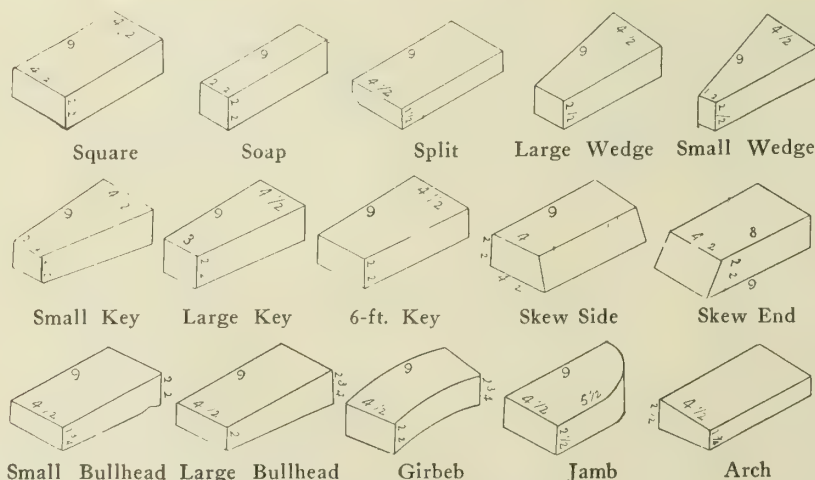
Beautiful effects in Red, Brown and Gun-Metal colors in the old Colonial styles. Write for samples.

PAVING AND
COMMON
BRICK.

Standard make, low in price, high in quality, will meet rigorous tests.

FIRE BRICK.

Stevens No. 1 Repressed. No better made in the United States for boiler and stack lining.



TYPICAL SHAPES OF OUR FIRE BRICK

CEMENTS.

I represent the Atlas Company. The name carries with it the best recommendation. Louisville and Dixie Hydraulic Cements in paper or cloth sacks. Excellent cements of their class.

FLUE LINING,
FIREPROOFING.

Flue Linings in all sizes. Fireproofing, porous and semi-porous, shipped to all southern points.

LIME.

The Victor Cumberland Lime, for which I am the general Sales-Agent, is one of the most satisfactory limes on the market. Abundant putty, no waste, slacks readily in cold weather.

HYDRATED
LIME.

Hydrated Portland Lime, made by the Chickamauga Cement Co. Economical and strong, and will keep indefinitely.

MARBLE DUST.

Made from White Georgia Marble, always in stock.

SEWER PIPE.

Salt Glazed Vitrified Sewer Pipe in all sizes, made by the H. Stevens Sons Co. and Stevens Bros. & Co., and the Georgia Vitrified Brick & Clay Co.'s plants. We can ship the largest orders promptly. Prices the lowest.

LATH, STUD-
DING, CORNER
BEADS,
WALL TIES.

Cleveland Expanded Metal Lath, 3-inch No. 10 Expanded Metal.

Approved make of Wall Ties, Corner Beads and Studding always kept in stock.

VAULT LIGHTS.

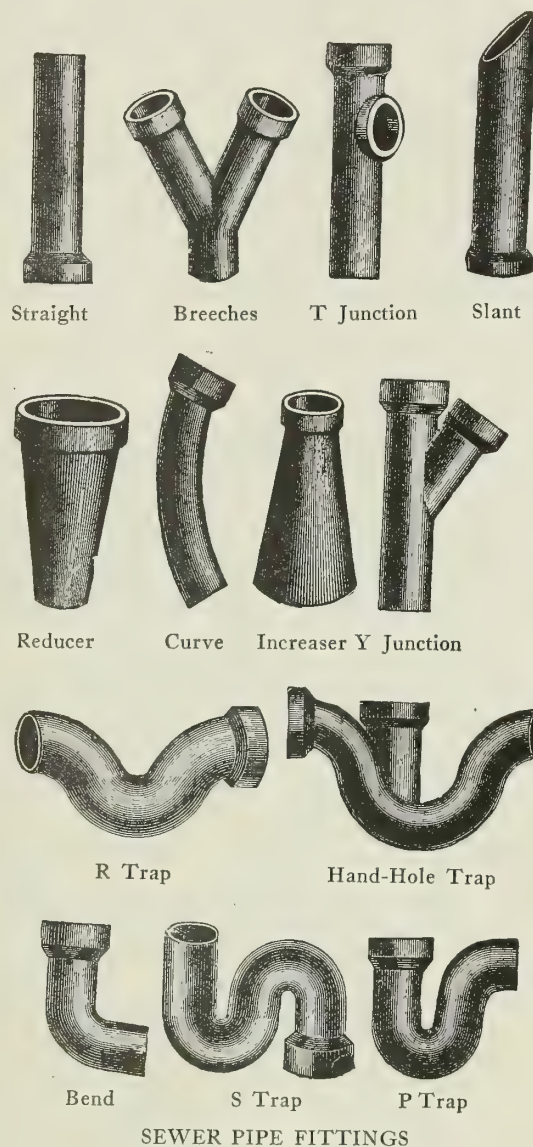
The Bar Lock Lights, prism and arch glass. The best on the market. Estimates cheerfully furnished.

MAIL CHUTE.

I represent the U. S. Mail Chute Equipment Co. Not in the Trust, and manufacturing one of the best and most economical chutes on the market.

FACILITIES.

The best arranged and most up-to-date warehouse in the South, from which shipments can be made promptly. Every order, no matter how small or large, will receive careful attention. *Inquiries solicited.*



SEWER PIPE FITTINGS



WAREHOUSE OF V. H. KRIEGSHABER

B. MIFFLIN HOOD

Shale-Face Common Brick

218-219 Century Building

ATLANTA, GA.

WORKS

ROCKMART, GA.
ADAIRSVILLE, GA.

CARTERSVILLE, GA.
CALHOUN, GA.

TRIMBLE, GA.
ROME, GA.

WE REPRESENT THE FOLLOWING FIRMS

CALHOUN, GA., LEGG BRICK Co.
COLUMBUS, OHIO, COLUMBUS BRICK AND TERRA COTTA Co.
MASSILLON, OHIO, THE EVERHARD Co.
COLUMBUS, OHIO, THE IRONCLAY Co.
COLUMBUS, OHIO, THE COLUMBUS & HOCKING COAL AND IRON Co.
ST. LOUIS, MO., HYDRAULIC PRESS BRICK Co.
HANOVER, OHIO, HANOVER RED PRESSED BRICK Co.

BLACKFORK, OHIO, THE BLACKFORK Co.
MINERAL CITY, OHIO, THE FEREDAL CLAY PRODUCTS Co.
NEW YORK, N. Y., AMERICAN ENAMELED BRICK AND TILE Co.
KNOXVILLE, TENN., LONSDALE FACE BRICK Co.
ROCKMART, GA., ROCKMART BRICK & SLATE Co.
ROME, GA., CRUCIAL BRICK Co.



OFFICE OF B. MIFFLIN HOOD, ATLANTA, GA.

PRODUCTS.

DRY-PRESSED, IMPERVIOUS, WIRE-CUT, REPRESSED, ENAMEL, ORIENTAL WIRE-CUT FACE, ORNAMENTAL, MANTEL, SIDEWALK and STREET PAVING BRICK, and every kind of brick manufactured.

COLORS.

Red, Buff, Gray, Brown, Flashed, Iron-Spot, Mottled, Chocolate, and every color any other market affords.

KINDS.

Standard, Roman, and Norman sizes, plain and ornamental.

FACILITIES.

Our agency arrangements, together with our own plants, enable us to fill orders of any quantity, or quality and color.

PROMPT
SHIPMENTS.
PRICES AND
SAMPLES.

Atlanta is the ideal distributing point for the South and Southeast. All orders receive prompt attention and immediate shipment.

Prices will be quoted and samples furnished on application.

LEGG BRICK COMPANY

B. MIFFLIN HOOD, VICE-PRESIDENT and SALES MANAGER

218, 219 Century Building
ATLANTA, GA.

PRODUCTS.

We manufacture the finest RED DRY-PRESSED BRICK in the South; RED and BROWN WIRE-CUT ORIENTAL or TAPESTRY FACE BRICK. We also make a specialty of MANTEL BRICK.

DESCRIPTION.

Our brick are made by the dry-press process from the purest of shale, only recently discovered in North Georgia, which is pulverized to the fineness of flour, pressed to a uniform size and burned.



MINING SHALE AT LEGG BRICK COMPANY'S QUARRY, CALHOUN, GA.

SHADES.

Fourteen different shades of red, ranging from a very dark to a very light tone. Red and reddish-brown oriental effects in wire-cut face.

FACILITIES.

Our location on the Western and Atlantic Railroad at Calhoun, Ga., gives us direct shipping facilities through Atlanta, the natural distributing point for the entire South and Southeast.

SHIPMENTS.

As we carry a large stock of all shades, shipments are guaranteed.

SAMPLES AND PRICES.

We solicit your correspondence and will gladly furnish samples and quote prices.

PHILADELPHIA & BOSTON FACE BRICK CO.

Pressed Brick, Moulded Brick, Fireplace Mantels, Arches, etc.

165 Milk Street
BOSTON, MASS.

PRODUCTS.

Manufacturers of PRESSED FRONT BRICK, Plain and Ornamental MOULDED BRICK, BRICK FIREPLACES, MANTELS, BRICKETTES, TILES; Combinations of MOULDED BRICK for CORNICES, BELT COURSES, WATER TABLES, DOOR and WINDOW TRIM, CORBELS, etc.; GAUGED ARCHES, plain and moulded. All the above for both Exterior and Interior Work. Also, GAS GRATES, GAS LOGS, ANDIRONS and other FIREPLACE APPLIANCES and FURNISHINGS.

FIREPLACES AND MANTELS.

We make a specialty of Brick Fireplaces and Mantels, combined from our stock patterns or to special designs from architects. There is no question of the superiority of a brick facing over one of tile for a fireplace that is to be used and is not merely an ornamental show-piece. Tile facings and their slight metal frames soon become distorted and detached, especially under the action of a log fire. The scorching and utter destruction of wood mantels in such cases is well known.

Architects should specify All-Brick Fireplaces even for coal basket grates. For all large fireplaces in club houses, country mansions and hotels, bungalows, railroad stations, dutch rooms, etc., in which wood is to be burned, they should call for entire Brick Mantels, as much for substantial and peculiarly attractive appearance as for security against fire danger.

BOOK OF STOCK DESIGNS.

Our Book of Designs, mostly photographs of mantels actually built, shows some seventy stock designs ranging from \$12.00 up in price. We send the book free on application.

ARCHITECTS' DESIGNS.

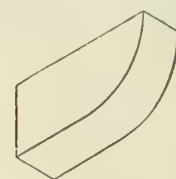
We also execute, carefully, Architects' special designs made up wholly from our stock patterns or with original features added, and do so at lowest possible prices.



MANTEL DESIGN NO. 12



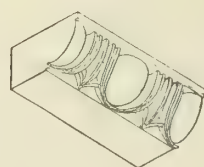
MANTEL DESIGN NO. 31



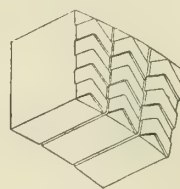
No. 46 Header



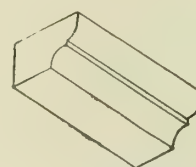
No. 46 Bonds with two Headers



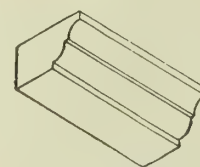
No. 104 Stretcher



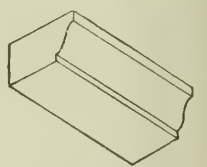
No. 112 Header



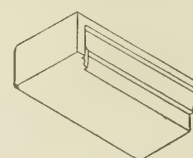
No. 6 Stretcher



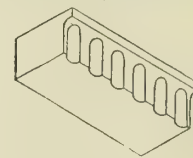
No. 7 Stretcher



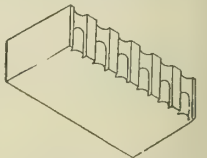
No. 8 Stretcher



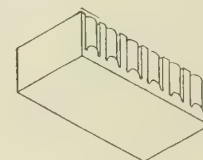
No. 11 Left-Face Return In



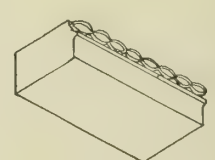
No. 101 Stretcher



No. 101b Stretcher



No. 101c Stretcher



No. 100 Stretcher

EXAMPLES OF STANDARD MOULDED AND ORNAMENTAL BRICK

MOULDED AND
ORNAMENTAL
BRICK.

In the adjoining cuts we show a few examples of our standard shaped bricks of which we have over 500 varieties. We are able to make up almost any design from these shapes. Send us your ideas or sketches and we will work them up and submit an estimate promptly. Special moulds made at lowest cost.

COLORS AND
COMBINA-
TIONS.

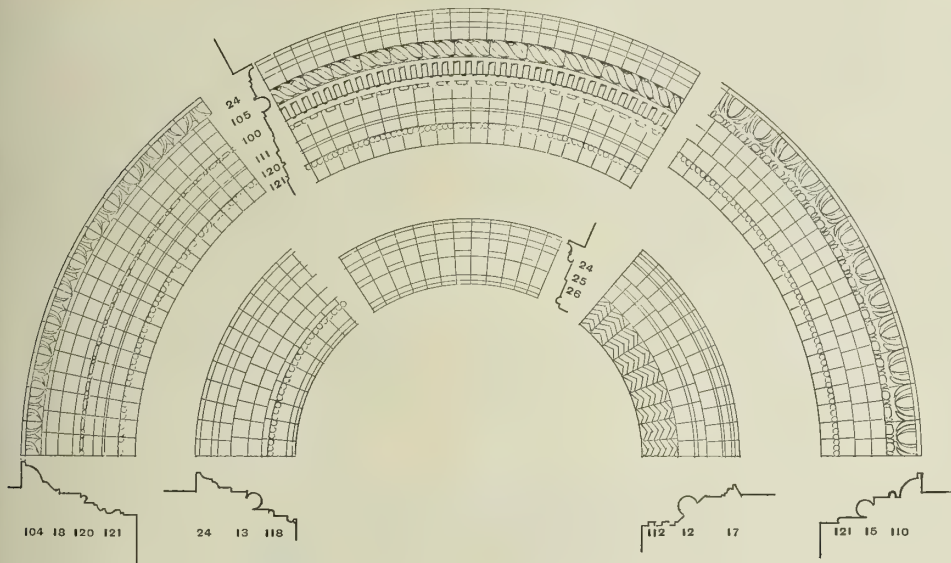
We furnish our bricks in red, brown, pink, and buff. A large variety of combinations for doorways, windows, cornices, string-courses, panels, arches, etc., can be made with these bricks.

SIZES.

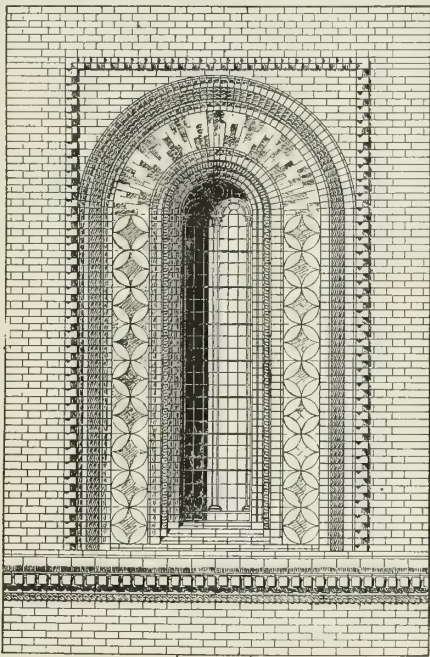
Our bricks are made in the standard sizes of 8" x 4" x 2 1/4" in single-course patterns, to insure proper bonding. We make headers, stretchers, corners, etc., as required.

INFORMA-
TION.

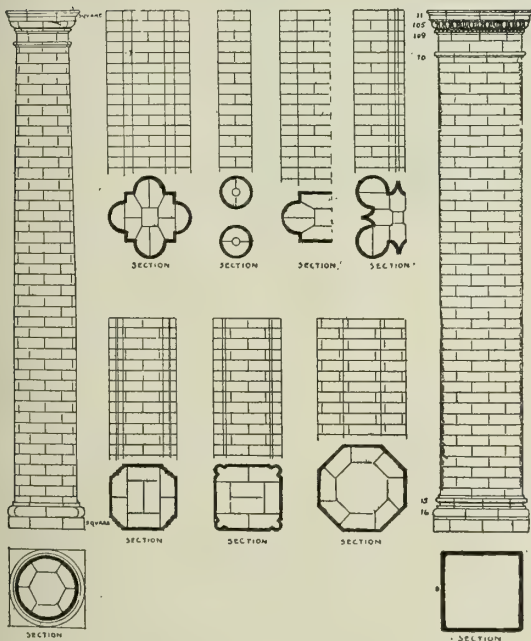
Illustrated special catalogues of the different lines of our manufactures will be sent free on application.



EXAMPLES OF GAUGED ARCH MOULDINGS GROUND TO ANY RADIUS

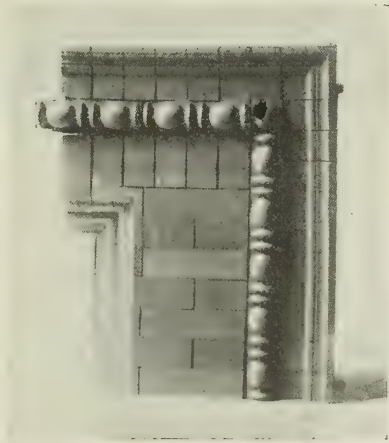


CHURCH WINDOW DESIGN



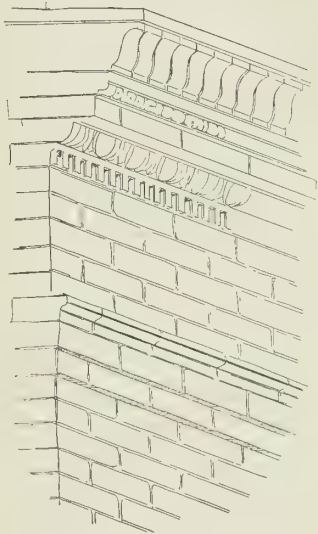
PIERS AND COLUMNS

Details for interior or exterior use



ARCHITRAVE FOR DOORWAY,
WINDOW OR FIREPLACE

Price 95 cts. in red or \$1.43 in any other color per lineal foot, f. o. b. cars, Boston. Plain brick included



MOULDS FOR BELT
COURSES AND CORNICES

Details of application

PROGRESS BRICK COMPANY

SETAUKET, N. Y.

PRODUCT. HIGH-GRADE FRONT BRICK.

DESCRIPTION. Our Bricks are manufactured by a Special Process and in all colors and shapes to meet the requirements of Architects' Specifications. Correspondence solicited. The standard size of our bricks is $4 \times 2\frac{1}{4} \times 8\frac{1}{4}$ inches, but we can make any size or style required.

UNIFORMITY AND PERMANENCE OF COLOR. We guarantee uniformity of color in our product and also permanence. By means of a special process in the manufacture the possibility of fading has been eliminated.



FACSIMILE OF STAMP ON BRICK

CAPACITY. The capacity of our works is 12,000,000 bricks annually.

FACILITIES. We are in a position to make prompt shipment by rail or by water as preferred.

SERVICE. It is our aim to give careful attention to small as well as large orders. We will guarantee prompt shipment. We are at all times prepared to make bricks in any color desired by architects to suit particular conditions.

PRICES. Prices will be quoted and samples furnished upon application.

HISTORY.

The Guthmann plant at Berlin, Germany, which at the present time has an output of about 150,000,000 bricks annually, was established sixteen years ago through the use of a special process invented by Prof. Dr. Michaelis of that city.

The reasons for the phenomenal growth of the Guthmann plant and the popularity of its product are:

- (1) Uniformity of sizes, quality and colors.
- (2) Higher fire-resisting qualities than other front bricks on the market.
- (3) Strict adherence to and the fulfilment of guarantees, and prompt delivery of orders.

OUR CON-
NECTIONS.

Owing to intimate connections with this company we are able to manufacture a front brick equal in every way to the bricks manufactured by the Guthmann plant. Our General Manager brings all his experience, gained through active association with the growth of the Guthmann Company, to this country for the establishment and upbuilding of the PROGRESS BRICK COMPANY through hearty co-operation with architects and contractors.

ENDORSE-
MENT.

In order to show the trade that we are manufacturing bricks possessing the qualities above mentioned, as well as the highest factors of strength, we submit the following letter from Prof. Ira H. Woolson, E. M.:

NEW YORK, February 14, 1908.

PROGRESS BRICK Co., Setauket, N. Y.

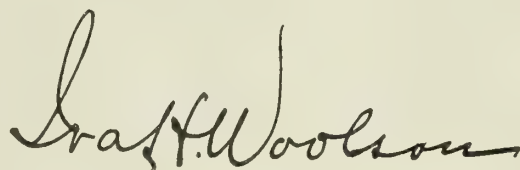
Gentlemen—Enclosed find reports of test made upon the samples of brick submitted and I congratulate you upon the results.

They met the specifications of the New York Bureau of Buildings in every test made, and with a good margin.

I quote you below Article No. 14 of the specifications that you may make your own comparisons.

Thanking you for your patronage, and hoping we may be able to serve you in the future, I am,

Yours very respectfully



Consulting Engineer on Tests of Materials, Engineering Building, Columbia University.

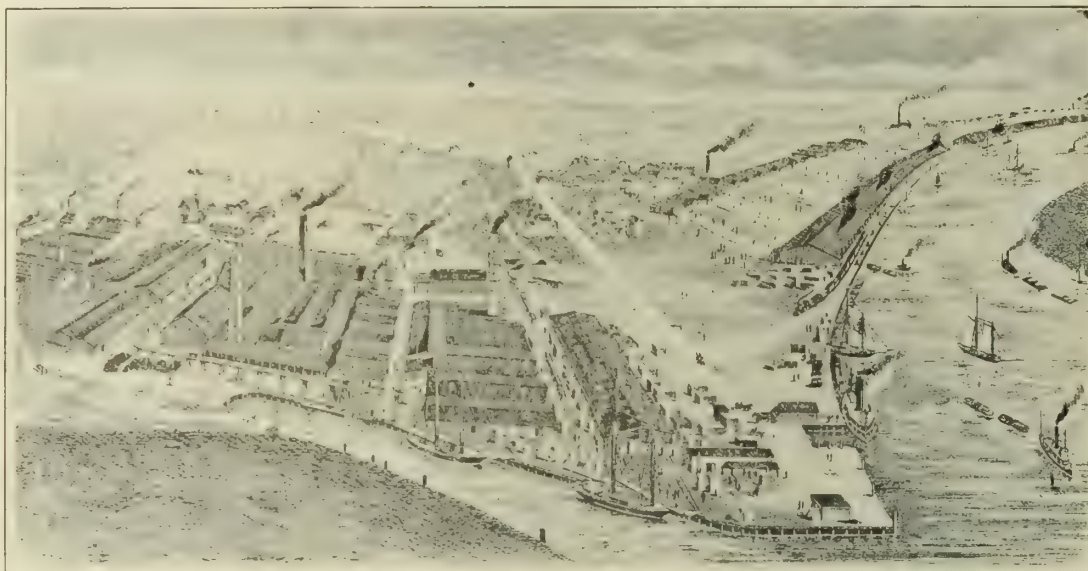
Telephone, 400 Morningside.

SAYRE & FISHER COMPANY

All Kinds of Brick

261 Broadway (Cor. Warren Street)

NEW YORK, N. Y.



BRICK WORKS OF THE SAYRE & FISHER CO., SAYREVILLE (ON RARITAN RIVER), N. J.

PRODUCTS.

FINE PRESSED FRONT BRICK, SPECIAL BRICK, BRICK FOR ARCHES or ORNAMENTAL WORK, SUPERIOR ENAMELED BRICK, PORCELAIN FACE BRICK, FIRE BRICK, HOLLOW BRICK (for fireproofing purposes).

FRONT BRICK IN VARIOUS COLORS.

These we manufacture in a great variety of colors: White, Ocher, Light and Dark Buff, Red, Gray, Old Gold, and Mottled, other shades to order; enabling architects to select a material that, while fire-resisting and easily handled, shall permit them to lighten and beautify and add strength and variety to a street facade.

SPECIAL BRICK. BRICK FOR ARCHES OR ORNAMENTAL WORK.

We manufacture these to meet architects' designs in any particular color or size.

These we produce in any desired shape, plain or moulded.

SUPERIOR ENAMELED BRICK.

We manufacture Superior Enameled Brick in large quantities. They are coming into more general use for a great variety of purposes, and are especially adapted for lining of waiting-rooms of railroad stations, tunnels, markets, hospitals, engine and boiler rooms, kitchens, etc.

PORCELAIN FACE BRICK.

Porcelain Face Brick for front brick purposes.

SHIPPING FACILITIES.

The favorable location of our works at deep water on the Raritan River, N. J., enables us to load vessels of large draught.

Shipments can also be made direct to all points, connecting with any line of railroad.

EXPORT TRADE.

We make a specialty of loading large vessels for export trade.

SAYRE & FISHER COMPANY

Red Brick Department

261 Broadway (Cor. Warren Street)

NEW YORK, N. Y.

PRODUCTS.

COMMON BRICK, SELECTED COMMON BRICK, "TAYLOR" BRICK, and "HILL" SPECIALS for Facing; "RAIN-WASHED," "OLD ENGLISH RED," REPRESSED DOWN-DRAFT RED and REPRESSED UP-DRAFT RED STRETCHERS; BLACK HEADERS and HOLLOW BRICK; FIRE BRICK.

COMMON BRICK.

Hard-burned, dark red color. Shipments, in cargo lots, via our fleet of barges or schooners or via rail to all points. A very economical building brick for heavy construction work. Millions used in the Hudson Terminal (Clinton & Russell, Architects); Pennsylvania Terminal (McKim, Mead & White, Architects), etc., New York City.

SELECTED COMMON BRICK.

For facing. Of general dark red color and sufficiently varied in color and shape for "Harvard" work. These are very desirable for Colonial work.

"TAYLOR" BRICK.

These are also for facing. Sometimes called "Clinker Brick" because they are nearest the fire in the kilns and are burned black and twisted. Very popular with some architects for residences, etc., such as the Heinsheimer residence (R. L. Daus, architect), Breezy Point, Far Rockaway, Long Island, N. Y.

"HILL" SPECIALS."

Also for facing. A brick with a pinkish tone, made popular by Mr. Hill, of Hill & Stout, architects, and used by him on many buildings and residences, notably the Tichenor Stables on 60th Street, near Broadway, New York, N. Y.

"RAIN-WASHED" STRETCHERS.

These are laid either with or without Black Headers. A "chance" product caused by rain on the brick when in a green state on open yards. The Orpheum Theater, Brooklyn, N. Y.; Rogers, Peet Building, 13th Street, 4th Avenue and Broadway, New York, N. Y., are built of this brick.

"OLD ENGLISH" RED STRETCHERS.

This product is something new and is about the size of the Old English Brick, made in dark red tone and measuring about $8\frac{7}{8} \times 2\frac{7}{8} \times 4$ inches. Over six hundred thousand in the new Curtis Publishing Company's Building in Philadelphia, being selected by the architects after searching the Old World for ideas that were unique and artistic. Very popular.

REPRESSED DOWN-DRAFT STRETCHERS.

These are of a uniform dark red color and a great seller. They were used in the new Astor Hotel, Broadway and 44th Street, also in the new Royal Insurance Building, William Street and Maiden Lane, New York, N. Y., and in the Royal Insurance Building, San Francisco, Cal.

REPRESSED UP-DRAFT STRETCHERS.

Same as the Down Draft, except that these show the dark kiln marks on the stretcher side, which gives a diversified effect. St. Veronica School, Washington and Barrow Streets, New York, N. Y., and St. James Rectory, Jay Street, Brooklyn, N. Y., are built of them.

BLACK HEADERS.

Made to be used with the Selected Common Brick or Repressed Stretchers for the "Harvard" effect if desired.

HOLLOW BRICK.

Both Stretchers and Headers of a very superior quality. They can be furnished in cargo lots.

FIRE BRICK.

Two grades: No. 1 "Sayre & Fisher" and No. 1 "Phenix." Very desirable for boiler settings, furnace linings, etc., in all standard sizes.

EXPORT TRADE.

We have such adequate and satisfactory facilities for shipment as well as such large and complete stock always on hand that our export trade has grown to large proportions and is still increasing.

SIBLEY-MENGE PRESS BRICK CO.

842-845 Brown-Marx Building

BIRMINGHAM, ALA.

FACTORY AND SHIPPING DEPOT
SIBLEYVILLE, ALA.

AGENCIES

ATLANTA, GA., SCIPLE SONS
AUGUSTA, GA., W. E. JACKSON
COLUMBUS, GA., A. H. BICKERSTAFF
MACON, GA., SOUTHERN MATERIAL SUPPLY CO.
MEMPHIS, TENN., JOHN A. DENIE'S SONS.

MONTGOMERY, ALA., MONTGOMERY LIME &
CEMENT CO.
SAVANNAH, GA., NEAL-BLUN COMPANY
JACKSONVILLE, FLA., BAKER & HOLMES CO.
TAMPA, FLA., I. W. PHILLIPS & COMPANY

MOBILE, ALA., MOBILE COAL CO.
NEW ORLEANS, LA., THE RODD-BLACK COM-
PANY
HOUSTON, TEX., F. M. PENNINGTON
CHATTANOOGA, TENN., SLOAN & CO.

PRODUCTS.

HIGH-GRADE FACE BRICK in Red, Buff, Mottled, and Flash Colors; MOULDED and ORNAMENTAL BRICK for MANTELS; GAUGED ARCH BRICK, to order.

PROCESS.

Our bricks are manufactured by the Dry Press Process. The clay is ground and stored in bins for from six to eight weeks before being made into bricks, thus insuring uniformity of mixture and texture.

DETAILS, COLOR.

The color of our bricks is permanent. No artificial coloring matter is used. The original shade is retained indefinitely.



GOVERNOR'S MANSION, JACKSON, MISS.

FLASH BRICKS.

Our Flash Bricks are especially popular in smoky or dusty cities because their faces are washed every time it rains; the faces are vitreous. Beautiful mosaic effects are produced by combining various shades of flash brick.

SIZES, CAPACITY, SORTING.

Only standard sizes are carried in stock. Special sizes made to order. Our annual capacity is 12,000,000 bricks, and we carry an average stock of 3,000,000 in various colors. All bricks are carefully sorted regarding quality, shape, and size.

MOULDED
BRICK.

We keep on hand a moderate assortment of Moulded and Ornamental Bricks for corners, panels, mantels, etc. Larger contracts of such are supplied on order. Catalogue of Moulded Brick sent on application.

SHIPPING
FACILITIES.

Situated on the line of the Louisville and Nashville Railroad, we have the best transportation facilities in the South.

SAMPLES.

We send samples, prepaid, to Architects and Contractors promptly on request.

APPLICATION.

The Sibley-Menge Press Bricks have been used with gratifying success and fine effect in residences, colleges, office buildings, court houses, schools and public buildings, as shown by the subjoined list.



NEW CHAMBER OF COMMERCE BUILDING, BIRMINGHAM, ALA.

REFERENCES.

BUILDING	LOCATION	ARCHITECT	ADDRESS
Masonic Temple	Atlanta, Ga.	Morgan & Dillon	Atlanta, Ga.
3rd and 5th Ward Schools	Atlanta, Ga.	E. C. Wachendorff	Atlanta, Ga.
Chamber of Commerce	Birmingham, Ala.	Warren & Welton	Birmingham, Ala.
Empire Building	Birmingham, Ala.	Warren & Welton	Birmingham, Ala.
Terrace Court Apartments	Birmingham, Ala.	W. C. Weston	Birmingham, Ala.
Phoenix Club	Birmingham, Ala.	Miller & Martin	Birmingham, Ala.
Farley Building	Birmingham, Ala.	H. D. Breeding	Birmingham, Ala.
Abraham Building	Montgomery, Ala.	Frederick Ausfeld	Nashville, Tenn.
Grand Theatre	Montgomery, Ala.	Okel & Cooper	Montgomery, Ala.
Blount Building	Pensacola, Fla.	Frederick Ausfeld	Montgomery, Ala.
City Hall	Pensacola, Fla.	Ausfeld & Blount	Pensacola, Fla.
Osceola Club	Pensacola, Fla.	Ausfeld & Blount	Pensacola, Fla.
American National Bank	Pensacola, Fla.	J. E. R. Carpenter	New York, N. Y.
Battle House	Mobile, Ala.	Frank M. Andrews	Cincinnati, Ohio, and New York, N. Y.
Tulane University	New Orleans, La.	Andry & Bendernagle	New Orleans, La.
Whitney Central National Bank	New Orleans, La.	Emile Weil	New Orleans, La.
Knights of Pythias	New Orleans, La.	Diboll, Owen & Goldstein	New Orleans, La.
Court House	Franklin, La.	W. S. Hull	Jackson, Miss.
Court House	Tuscaloosa, Ala.	W. E. Spink	Birmingham, Ala.
Governor's Mansion	Jackson, Miss.	W. S. Hull	Jackson, Miss.
Court House	Pulaski, Tenn.	B. B. Smith	Montgomery, Ala.
Church, Episcopal	Savannah, Ga.	Percy Sugden	Savannah, Ga.
Church, Hyde Park Avenue	Tampa, Fla.	Shaw & Jay	Tampa, Fla.
Elyton School	Birmingham, Ala.	D. O. Whildin	Birmingham, Ala.
Frank White Building	Birmingham, Ala.	Wheelock & Co.	Birmingham, Ala.

TIFFANY ENAMELED BRICK CO.

1202 Chamber of Commerce Building

CHICAGO, ILL.

WORKS
MOMENCE, ILL.

PRODUCTS.

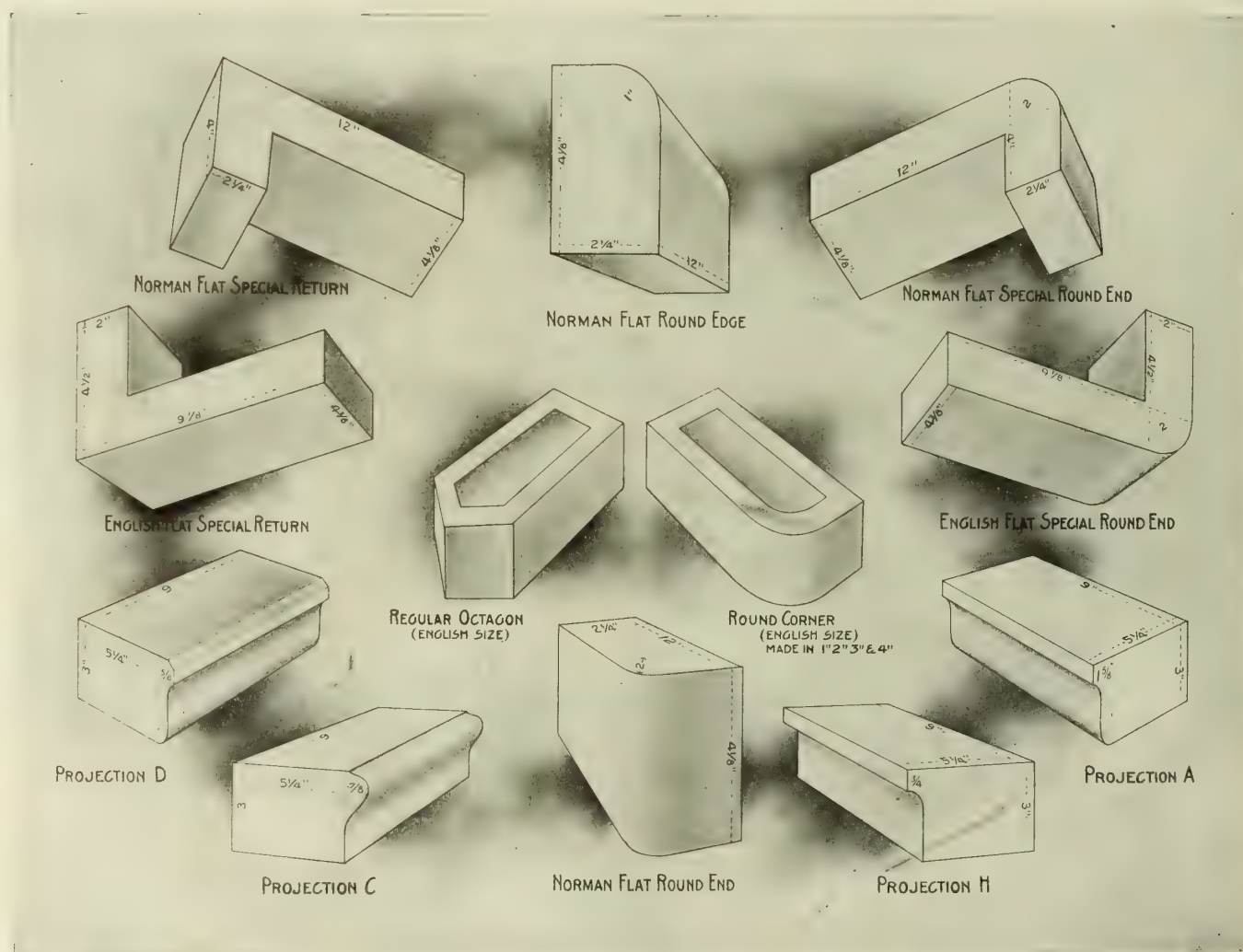
Manufacturers of the highest grade of ENAMELED BRICK and TILE in all textures and colors.

TIFFANY QUALITY.

The quality is attested by the fact that we were awarded the Grand Prize at the Louisiana Purchase Exposition, St. Louis, Mo., 1904; also, the highest award at the World's Columbian Exposition, Chicago, Ill., 1893. On account of the durability and beauty of the Tiffany products their use for the facing of buildings is very extensive. The new Steger Building, Marshall & Fox, Architects, Chicago, a nineteen-story sky-scraper, will be entirely faced with our cream Norman Flat non-staining brick.

SECONDS AND THIRDS.

In the selection of our first-quality brick, we accumulate second- and third-quality brick, suitable for garages, laundries, stables, basements and factory linings, where light impervious surfaces are desired. These we sell at very reasonable prices.



TIFFANY BRICK SHAPES

SPECIAL
RETURNS.

Norman Flat special returns and round ends are intended to be used with Norman Flat and Roman Stretchers where more of a return is wanted than the ordinary depth of the Norman Flat Stretcher. The same remarks apply to our special returns for English Flat Stretchers.

PROJECTION
BRICKS.

The projection A, C, D, and H bricks are used for ornamental stretcher courses and are usually enameled about half way back on top and bottom. Returns are made for these.

SIZES.

American,	8 $\frac{1}{4}$ " x 2 $\frac{1}{4}$ " x 4"
English,	9" x 3" x 4 $\frac{1}{2}$ "
Norman,	12" x 2 $\frac{1}{4}$ " x 4"
Norman Flat,	12" x 4" x 2 $\frac{1}{4}$ "
Roman,	12" x 1 $\frac{1}{2}$ " x 4"
Roman Flat,	12" x 4" x 1 $\frac{1}{2}$ "
English Tile,	9" x 3" x 1 $\frac{1}{2}$ "

In addition to above standard sizes we make both Round and Square Returns for these sizes and a number of special moulded brick as shown in our catalogue.

GUARANTEE.

Our product is positively guaranteed against crazing and scaling.

FACILITIES
AND
REFERENCES.

At present we are busy on orders aggregating over 2,000,000 brick, among them the following:

BUILDINGS AND ARCHITECTS

Chicago & North Western Railway Depot,
interior lining, Frost & Granger

Steger Building, Marshall & Fox

People's Gas Light & Coke Building, D. H.
Burnham & Co.

Cleveland Municipal Market, Burns & Hub-
bell

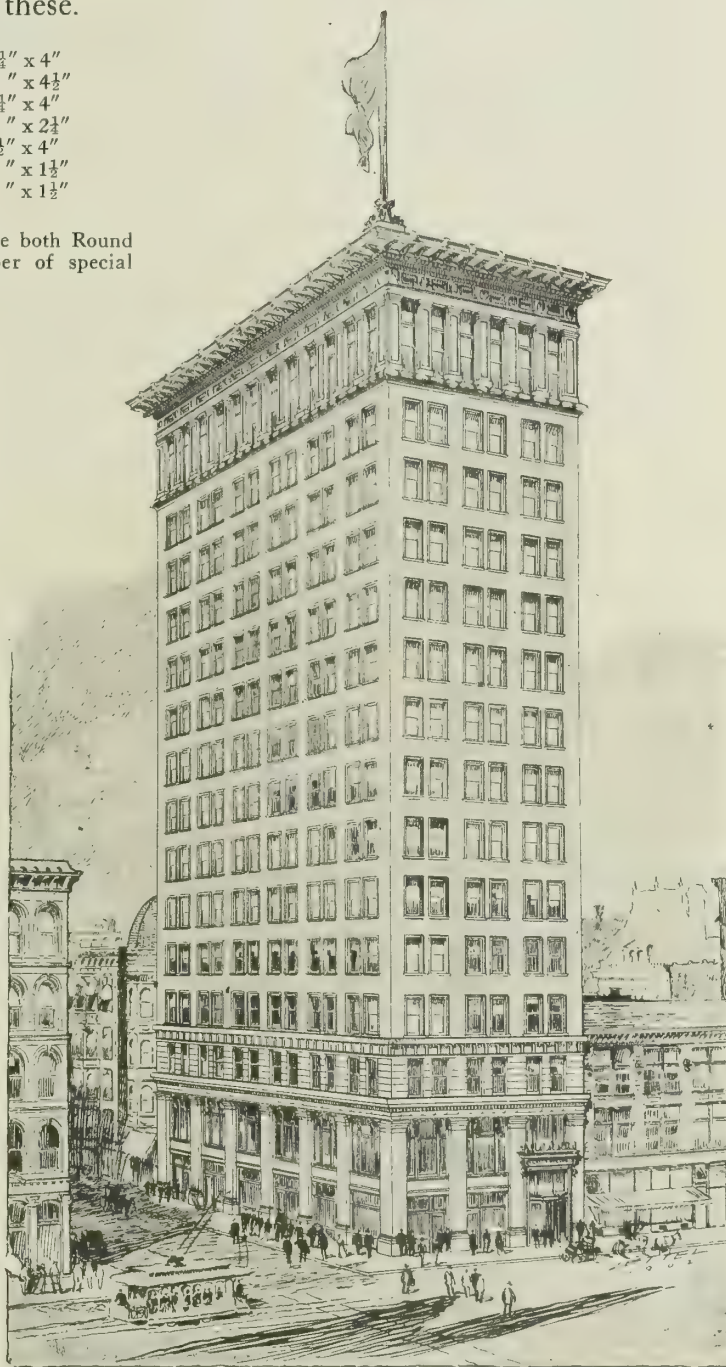
St. Louis County Court House, Duluth, D. H.
Burnham & Co.

Addition to Republic Building, Holabird &
Roche

Vendome Building, Holabird & Roche



TIFFANY BRICK



INGALLS BUILDING, CINCINNATI, OHIO

Reinforced-concrete building, Street Fronts faced with Tiffany Enameled
Brick, Granite, Satin finish, English size
ELZNER & ANDERSON, Architects

NATIONAL GLASS BRICK CO.

Manufacturers of Glass Brick

CONNELLSVILLE, PA.

EXCLUSIVE SALES AGENTS

L. AND R. WISTER & COMPANY

672 Bullitt Building, Philadelphia, Pa.

507-508 Frick Building, Pittsburg, Pa.

PRODUCTS.

GLASS BRICKS in all standard and special shapes, sizes and colors, including a special Single-Faced Brick, three inches wide, for lining purposes only, and sold at lower prices than the Regular Brick.

DESCRIPTION.

Our Glass Bricks are made in the form of a hollow shell with notched ends (see illustration) from white opalescent glass, and on account of their greater durability are especially designed to replace the highest grade of enamel brick in all building operations.

ADVANTAGES.

These bricks, on account of their peculiar shape, can be laid either hollow or filled with cement. When laid hollow they reduce the weight of the wall without reducing its strength and give a series of air pockets which prevent sweating. The tendency to slip is eliminated when they are laid, as the notched ends and concave surfaces when filled with cement become an integral part of the wall.

They will not absorb moisture, will never craze, and frost will not cause them to flake.

Their homogeneousness gives them a uniform expansion which prevents crazing or cracking, and when accidentally marred the defect is scarcely noticeable.

COLOR.

The light which they reflect will illuminate wells and areas. Being glass they are non-conductors of heat and cold, and can not be stained by indefinite exposure to the elements.

CRUSHING STRENGTH.

Their crushing strength is about three times that of granite, being 1,800 tons to the square foot. Rubble masonry has only 76 tons, concrete 97 tons, brickwork in cement 60 tons, bricks 170 tons, sandstone 200 to 350 tons, limestone 625 tons, and granite 750 tons, per square foot.

UTILITY.

Our Glass Brick is designed to be used to the best advantage in basements (inside linings), elevator shafts, areas, light courts, subways (street railway work), tunnels (including passways beneath railroad tracks, warehouses and store buildings (inside lining), grain elevators (including bins), office buildings (from subcellar to roof), swimming-pools, cemetery vaults (inside linings), toilet-rooms, water fountains, fish hatcheries, cisterns, chemical vats, stables (private or livery), engine-rooms, fireplaces, porch piers, all buildings for outside work in color or plain, cellars (including wine, fruit and vegetable cellars), railroad depots, fire departments, police and pumping stations, schools, hospitals, oil tanks, refrigerators, packing houses (including killing and dressing depots), court houses and city halls, electric conduits, manholes and other underground electric work, partition walls in office buildings, etc.

TEST.

The following tests of our Glass Bricks was made at the Pittsburg Testing Laboratory, limited:

Sample of opal glass brick, hollow, submitted to heating and cooling tests, 150° F. two hours, no effect whatever.

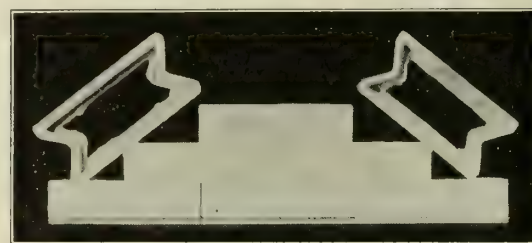
Five degrees F. below zero, no effect.

Twenty degrees F. below zero, no effect except extension of annealing crack pre-existing.

Opinion: Bricks of this design, if properly made and carefully annealed, will stand all ordinary atmospheric temperatures.

CO-OPERATIVE SERVICE.

Orders can be filled with reasonable promptness. Prices and terms quoted on application. Correspondence solicited. Address all communications to L. and R. Wister & Co.



"NATIONAL" GLASS BRICKS
Showing Hollow Shell and Notched Ends

THE NORTHWESTERN TERRA COTTA COMPANY

CHICAGO, ILL.

PRODUCT. ARCHITECTURAL TERRA COTTA. (We are the largest manufacturers in the world.)



WHITE ENAMELED TERRA COTTA STAIRWAY AND ROTUNDA, RAILWAY EXCHANGE BUILDING, CHICAGO, ILL.
D. H. BURNHAM & Co., Architects

ARCHITECTURAL TERRA COTTA.

The durability of Terra Cotta has been proven by the many examples which have withstood the elements for ages.

Our product is made from the most carefully selected clay. Over thirty years of experience in manufacturing Terra Cotta and the uniform care given throughout our plant to all work entrusted to us produces a material which for practical qualities and artistic effects is unsurpassed.

We have studied skeleton and concrete construction in connection with Terra Cotta from its very inception.

On the following pages we present a few suggestions regarding construction. Our experience is at your disposal.

The range of artistic expression through the medium of polychrome Terra Cotta in the embellishment of buildings of all classes is aided by the countless colors and effects in Faience and Enameled and Unenameled Terra Cotta which we produce.

ESTIMATES, SAMPLES, ETC.

Approximate and bona fide estimates, color samples, and suggestions as to construction, and any other information, will be cheerfully furnished on application.



GRAY GRANITE TERRA COTTA FACADE, COMMERCIAL NATIONAL BANK BUILDING, CHICAGO, ILL.

D. H. BURNHAM & Co., Architects

SPECIFICATIONS.

We submit herewith a brief but safe specification:

Specifications for Terra Cotta for..... located at
 All the terra cotta work for this building is colored on the general drawings, and this contractor shall furnish and deliver f. o. b. cars (or deliver at building; or deliver at building and erect in place) all the terra cotta thus shown.

All material and workmanship must be strictly first-class and in accordance with general drawings, details and specifications, and the absolute durability of the material must be guaranteed. It must be burned as hard as the standard sample of THE NORTHWESTERN TERRA COTTA COMPANY, and must have webs or partitions in sufficient number to give it a compressive strength equal to that of the brick work.

This contractor to submit promptly to architect, for his approval or correction, diagrams showing all points involving special construction which may not be clearly shown on architect's drawings; as, for instance, jointing, bonds, bed, anchoring, engagements with structural iron, construction of cornices, railings and transoms, arrangements for gutters, downspouts, etc.

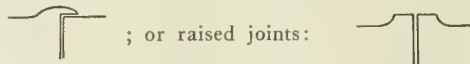
In the following features the ornament is to be of a color different from the background, namely:

In the following features 3 (4) colors are to be used, namely:

Where Terra Cotta engages concrete backing, this contractor is to submit, as soon as possible, drawings showing method of engagement and anchoring.

All work to be pointed in a manner best suited to the nature of the material. Roll covers to be used for vertical joints of

sills and copings:



Provide anchor holes necessary to secure the terra cotta firmly to the structural iron, brickwork, etc.; anchors, however, to be furnished by others.

All ornaments to be modeled by experienced artists. This contractor shall promptly submit to architect photographs of ornaments for his approval or correction (or the architect will inspect ornamental work at factory).

Finish of plain surfaces. (The usual finish for the plain surfaces of unenameled terra cotta work is a somewhat irregular drove of eight lines to the inch. The usual finish of enameled terra cotta is smooth).

Finish of molding and washes. (Usually specified to be smooth).

Finish of background for ornaments. (Usually smooth or hatched rough).

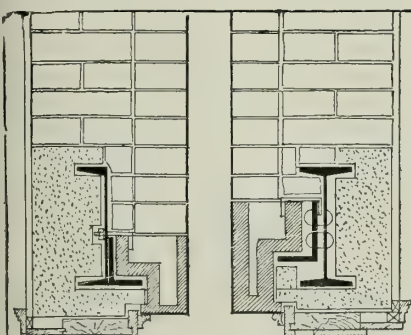
All work must be straight and true. All materials must be laid out and fitted to exact sizes at the factory, with allowance made for joints of such thickness as directed by the architect or agreed upon. Joints for enameled work to be ground on rubbing bed to a thickness not to exceed one eighth inch. Full setting diagrams, showing corresponding marks on the terra cotta pieces, must be provided.

No discolored, painted, crocked, or spawled pieces will be accepted. The color to be uniform and according to sample selected.

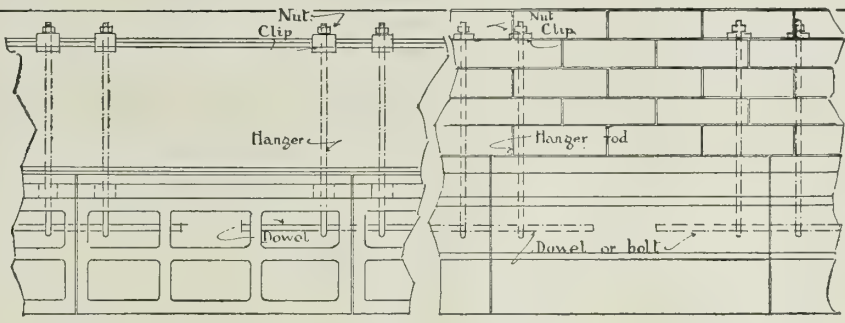
This contractor will, on request of architect, furnish such copies of shop drawings as may be desired by other contractors whose work engages terra cotta.

Setting—The mason will provide and erect scaffolding, and all mortar delivered on the scaffold, to set the terra cotta, and will furnish hoisting apparatus and power to raise the terra cotta. The carpenter will do all centering required, and protect with board covers the terra cotta set in place, where considered necessary in the judgment of the superintendent. The mason will fill and back up all terra cotta when set in the wall, and will clean down all terra cotta, together with brickwork, when completed.

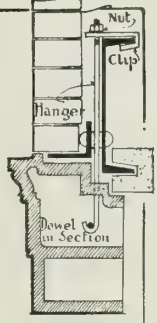
This contractor will furnish and place all anchors necessary to fasten the terra cotta securely to the iron, brickwork, etc. All joints must have a uniform thickness and must be carefully filled and pointed by this contractor as the work progresses.



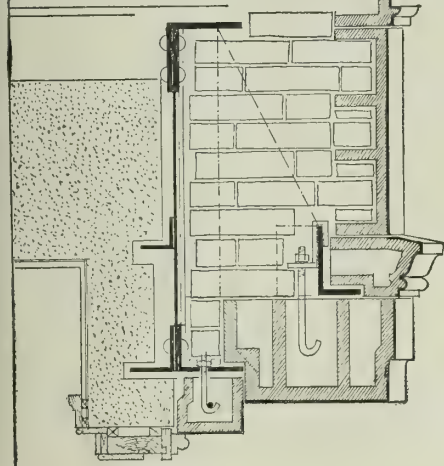
Two examples showing treatment of 4" reveal ; One anchored thro' channel web the other hooked over top of angle which is separated from beam.



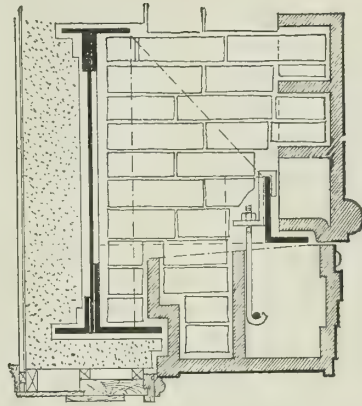
Rear and Front Elevations of Lintel , Showing method of hanging & explaining functions of clips, dowels, hangers, etc .



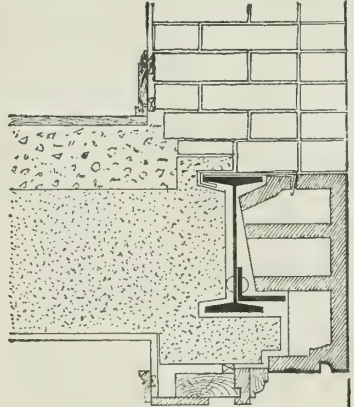
Section Note shelf for brickwork



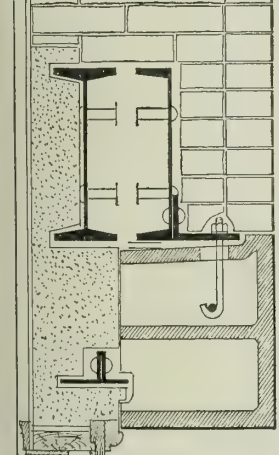
Example showing combined use of shelf bearing & rod suspension - Double Lintel



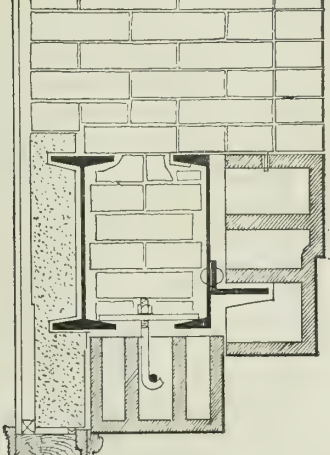
Single Lintel resting both on shelf & hooks the material above the Lintel having a shelf bearing



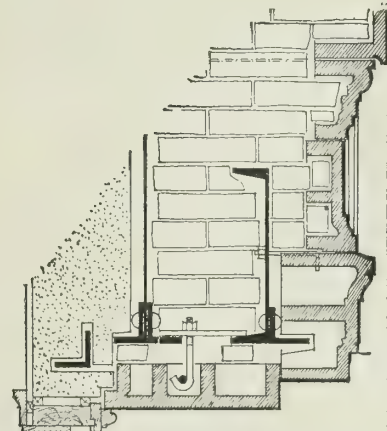
Lintel with shelf bearing with anchor clamped over top flange of beam- Note arrangement of staff bead for preventing injury to T.C. by deflection of beam



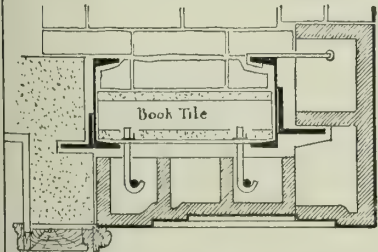
Example showing lintel suspended from shelf;- this shelf supporting brickwork



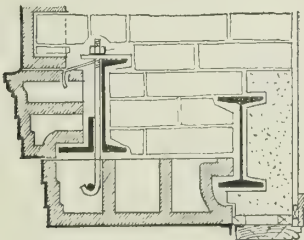
Double Lintel. One with shelf bearing being anchored to top flange of channel & the other hung by means of hangers



Example showing shelf bearing anchored through channel web, & Soffit hung by means of hangers



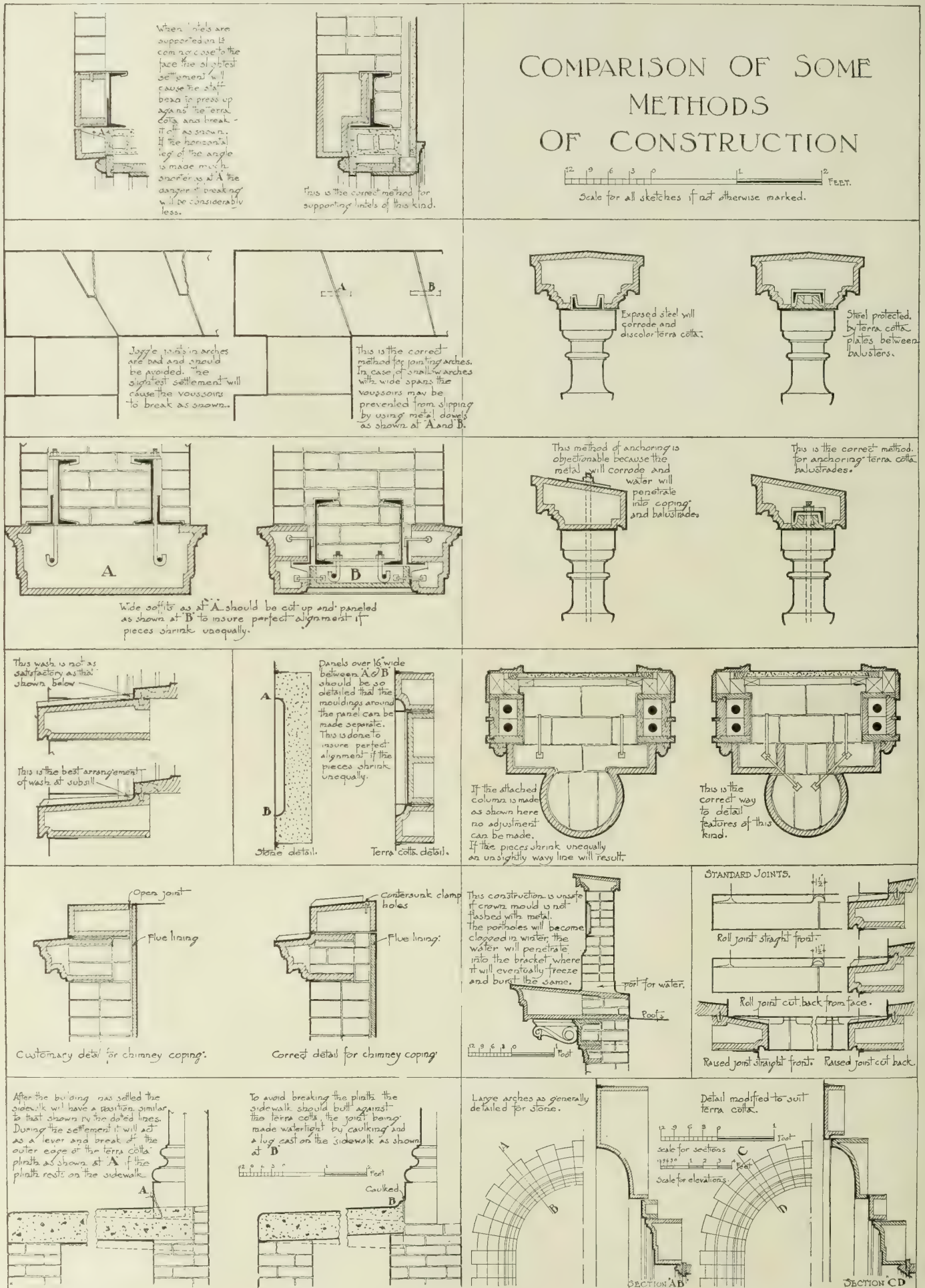
Example showing suspended Soffit, with face of lintel bedded on shelf, and anchored to top flange of channel



The soffit in this case is both suspended and bedded on beam flange the upper course having a shelf bearing

SPECIMENS OF
LINTEL CONSTRUCTION
SHOWING VARIOUS
METHODS OF
SUPPORTING, HANGING
AND ANCHORING.





NB. WHEN PROJECTION OF CORNICE EXCEEDS 3'-6" TWO OFFSETS IN WASH WILL BE REQUIRED INSTEAD OF ONE AS SHOWN AT "C"

ROLL JOINT COVER

C

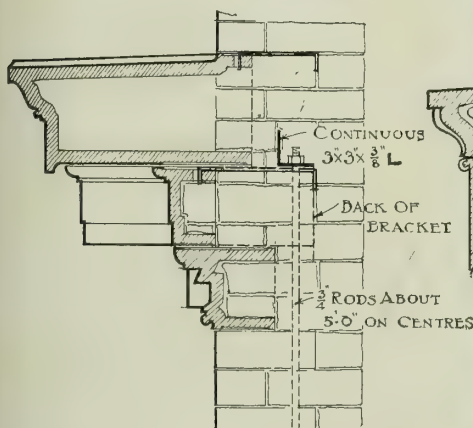
ANGLE

PLATE

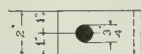
7 HOLES OR 6 CENTERS FOR ANCHOR

SPECIMEN ARCHITRAVES & CORNICES FOR SKELETON CONSTRUCTION.

SCALE 12 9 6 3 0 1 FEET.

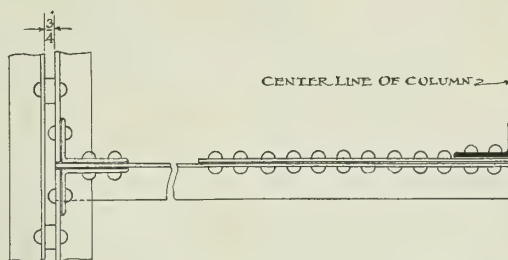
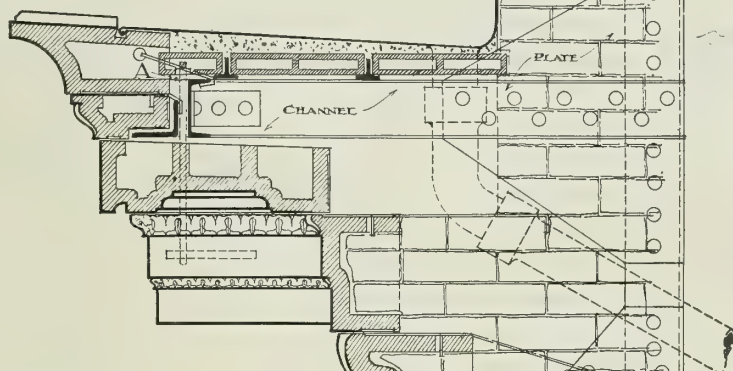


SKETCH SHOWING METHOD OF ANCHORING SMALL CORNICES



DETAIL OF CLIP HANGER AT A & B

DETAIL OF CLIP HANGER AT A & B



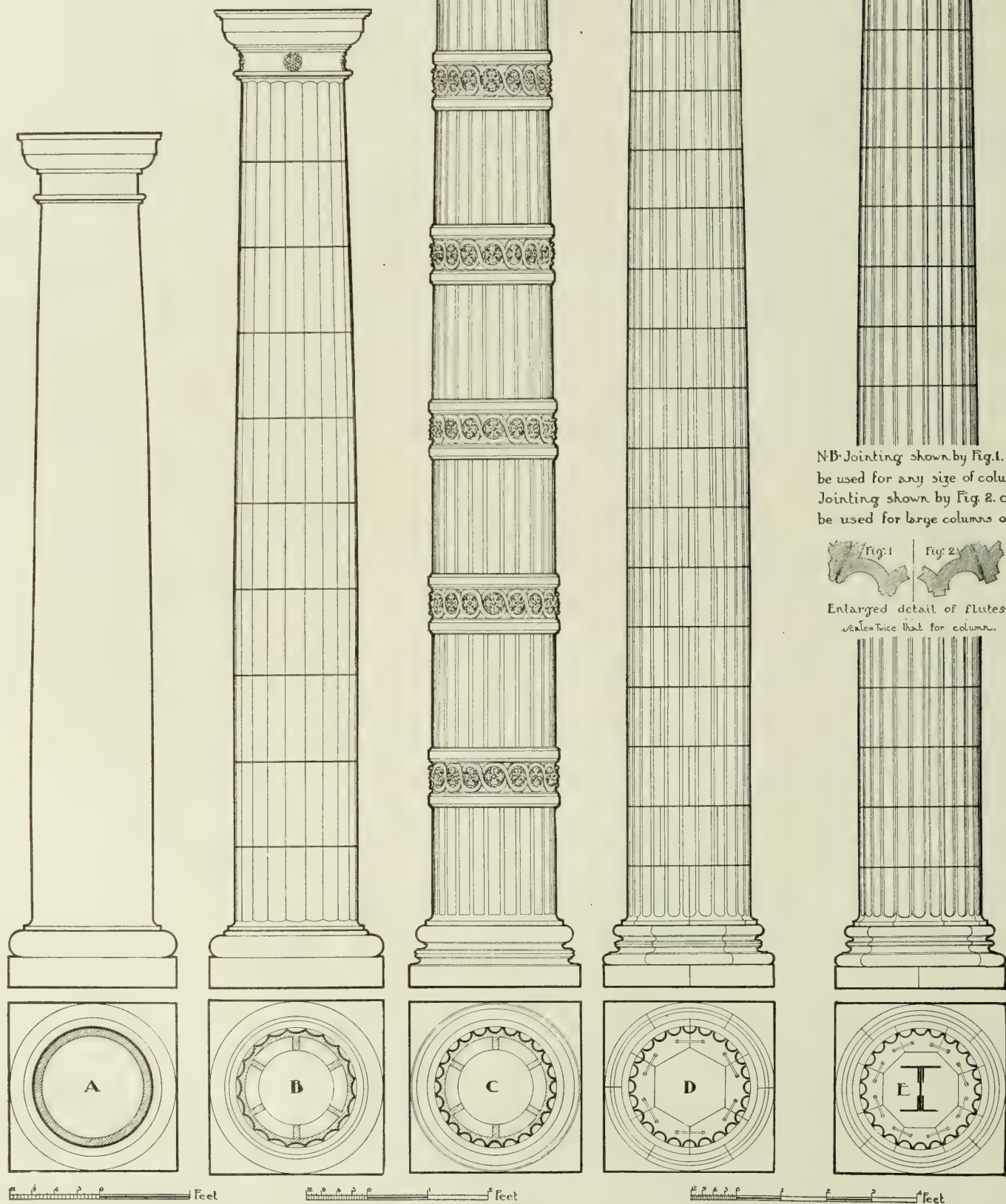
PLAN SHOWING CONNECTIONS OF LOOKOUT IN CORNICE OF FIG. 1. CONNECTIONS FOR LOOKOUT IN CORNICE OF FIG. 2, ARE SIMILAR. ALL LOOKOUTS TO BE SPACED ABOUT 6'-0" CENTER TO CENTER.

FIG. 1.

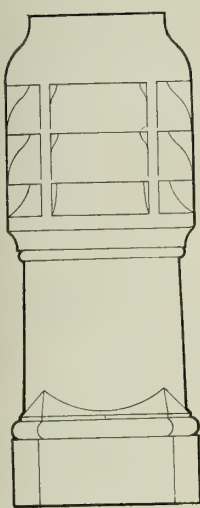
FIG. 2

COLUMN CONSTRUCTION

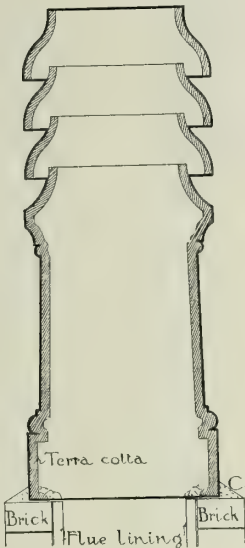
- A. Example of shaft in single piece, practical limit 8'-0" in length.
 B. Shaft built up of drums, diameter not to exceed 2'-0".
 C. Design dispensing with vertical, and concealing horizontal joints diameter not to exceed 3'-0".
 D. The only feasible method of jointing Classical column shafts over 2'-0" in diameter.
 E. Two designs of modified fluting for Classical column shafts concealing vertical joints.



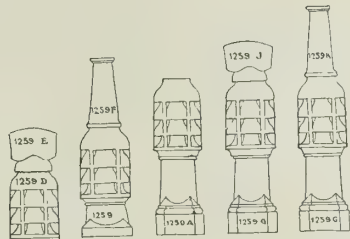
CHIMNEY TOPS



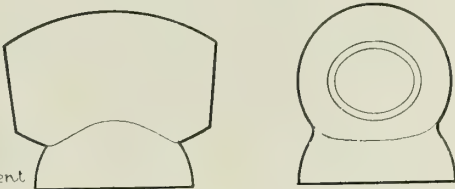
No 1259
ABC & G



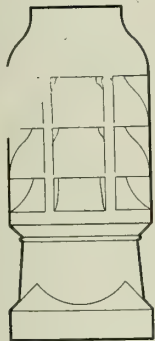
Section
Method of setting
top on brick



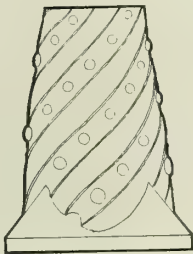
Sketch showing varying conditions which
may be met by combinations of tops



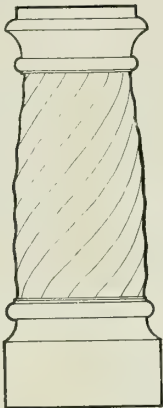
No 1259
EH & J



No 1259



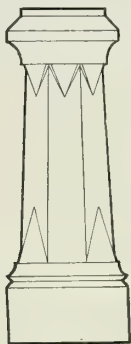
No 1256



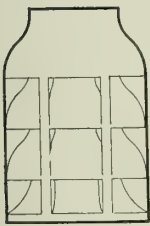
No 1248
A & G



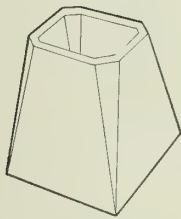
No 2041
ABC



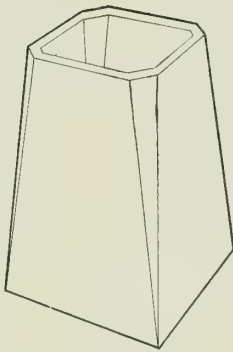
No 1254



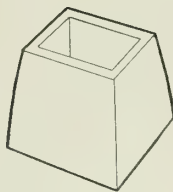
No 1259
D



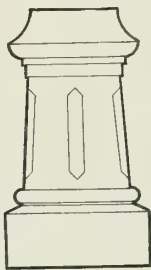
No 1248
BCDE & F



No 1248
A & G



No 3000
ABCDE & F



No 1255

Stock of chimneys carried in red and buff
Special work from stock moulds requires
four weeks time
Drawings of patterns not shown in
catalogue may be had on application
In such cases state requirements and
style if possible
When flue plan is irregular or spacing
between flues insufficient to accommodate full
size top the superfluous portions of tops
can be cut away in making
In such cases full figured plans are
required.

SCHEDULE

Number	Device	Size at base	Opening at top	Height	Diameter at base	Shape of shaft	Price	Number	Device	Size at base	Opening at top	Height	Diameter at base	Shape of shaft	Price
1248	Top	10" x 1'2"	6" x 8"	1' 1"	.....	Octagon	\$1.50	1259 E	Bonnet	(For 1259, 1259 A & D)	5" diam.	1' 1"	1' 1"	Round	\$1.25
1248 A	Top	1'0" x 1'0"	8" x 8"	2' 0"	.....	Octagon	2.50	1259 F	Pipe			1' 6"	8"	Round	1.25
1248 B	Top	1'0" x 1'0"	8" x 8"	1' 1"	.....	Octagon	1.50	1259 G	Top	1' 1" x 1' 5"	7" x 11" diam.	3' 8"	.....	Oval	7.00
1248 C	Top	10" x 1'4"	8" x 1'0"	1' 1"	.....	Octagon	2.00	1259 H	Bonnet	(For 1259 B)	.....	1' 3"	1' 2"	Round	1.50
1248 D	Top	1'4" x 1'4"	1'0" x 1'0"	1' 1"	.....	Octagon	2.25	1259 J	Bonnet	(For 1259 G)	.....	1' 3"	10 1/2" x 1' 0 1/2"	Oval	1.25
1248 E	Top	1'4" x 1'8"	1'0" x 1'4"	1' 1"	.....	Octagon	2.50	1259 K	Pipe		4' x 6" diam.	1' 9"	8" x 10"	Oval	1.75
1248 F	Top	1'8" x 1'8"	1'4" x 1'4"	1' 1"	.....	Octagon	3.00	2041 A	Top	1' 1" x 1' 1"	9" diam.	2' 2"	.....	Round	4.00
1248 G	Top	1'5" x 1'5"	1'1" x 1'1"	2' 0"	.....	Octagon	4.00	2041 B	Top	1' 1" x 1' 5"	9" x 1'1" diam.	2' 2"	.....	Oval	5.00
1254	Top	11" x 11"	6 1/2" diam.	2' 6"	.....	Octagon	3.50	2041 C	Top	1' 5" x 1' 5"	1' 1" diam.	2' 2"	.....	Round	6.00
1255	Top	1'1" x 1'1"	7" x 7"	2' 0"	.....	Square	3.50	3000 A	Top	8" x 1' 0"	4" x 8"	10"	.....	Square	1.25
1256	Top	1'5" x 1'5"	7" diam.	1' 10"	.....	Round	5.00	3000 B	Top	1' 0" x 1' 0"	8" x 8"	10"	.....	Square	1.50
1259	Top	1'1" x 1'1"	7 1/2" diam.	2' 6"	.....	Round	3.50	3000 C	Top	1' 0" x 1' 4"	8" x 1' 0"	10"	.....	Square	1.75
1259 A	Top	1'1" x 1'1"	7 1/2" diam.	3' 8"	.....	Round	5.00	3000 D	Top	1' 4" x 1' 4"	1' 0" x 1' 0"	10"	.....	Square	2.00
1259 B	Top	1'5" x 1'5"	11" diam.	3' 8"	.....	Round	8.00	3000 E	Top	1'4" x 1' 8"	1' 0" x 1' 4"	10"	.....	Square	2.25
1259 C	Top	10" x 1'2"	6" x 8"	3' 8"	.....	Oval	5.00	3000 F	Top	1' 8" x 1' 8"	1' 4" x 1' 4"	10"	.....	Square	2.50
1259 D	Top		7 1/2" diam.	1' 7"	1' 1"	Round	2.50	3001	Top	1' 2" x 1' 2"	9" diam.	3' 0"		Round	7.50

ATLANTIC TERRA COTTA COMPANY

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PERTH AMBOY TERRA COTTA COMPANY
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PRODUCTS.

Manufacturers of ARCHITECTURAL TERRA COTTA, including POLYCHROME and ONE-COLOR GLAZE, both LUSTROUS and MAT FINISH; STANDARD TERRA COTTA with VITREOUS and ordinary surfaces in many colors. For use in the construction of Hotels, Churches, Schools, Office Buildings, Apartment Houses, Hospitals, Theaters, Garages, Stations, Private Homes, Public Edifices, and for every possible purpose to which Terra Cotta as a building material for exterior or interior use may be put.

QUALITIES.

Its value and superiority are demonstrated in its ability to resist fire, its imperviousness to the other elements, its strength and durability, its relative cheapness of cost, its comparatively light weight, which implies saving in freight, cartage and labor, the possibility of obtaining an agreeable texture and beauty of design, and its extraordinary adaptability for color effects and flexibility of decorative treatment. Absolute durability of material and thoroughness of workmanship are guaranteed.

POLYCHROME
TERRA COTTA.

To secure esthetic polychromatic effects the glazed and colored Terra Cotta made by this Company provides the architect with a broader range of shades than the parti-colored marble of the Italian architects, and marble and stone are more expensive than architectural terra cotta. We were the first to introduce and develop Architectural Ceramics or Colored Faience.

Architects are recognizing the growing importance, the artistic and economical advantages, and the desirability, from the standpoints of quality, thoroughness of execution, skill and beauty, of Polychrome Terra-Cotta work.

FACILITIES.

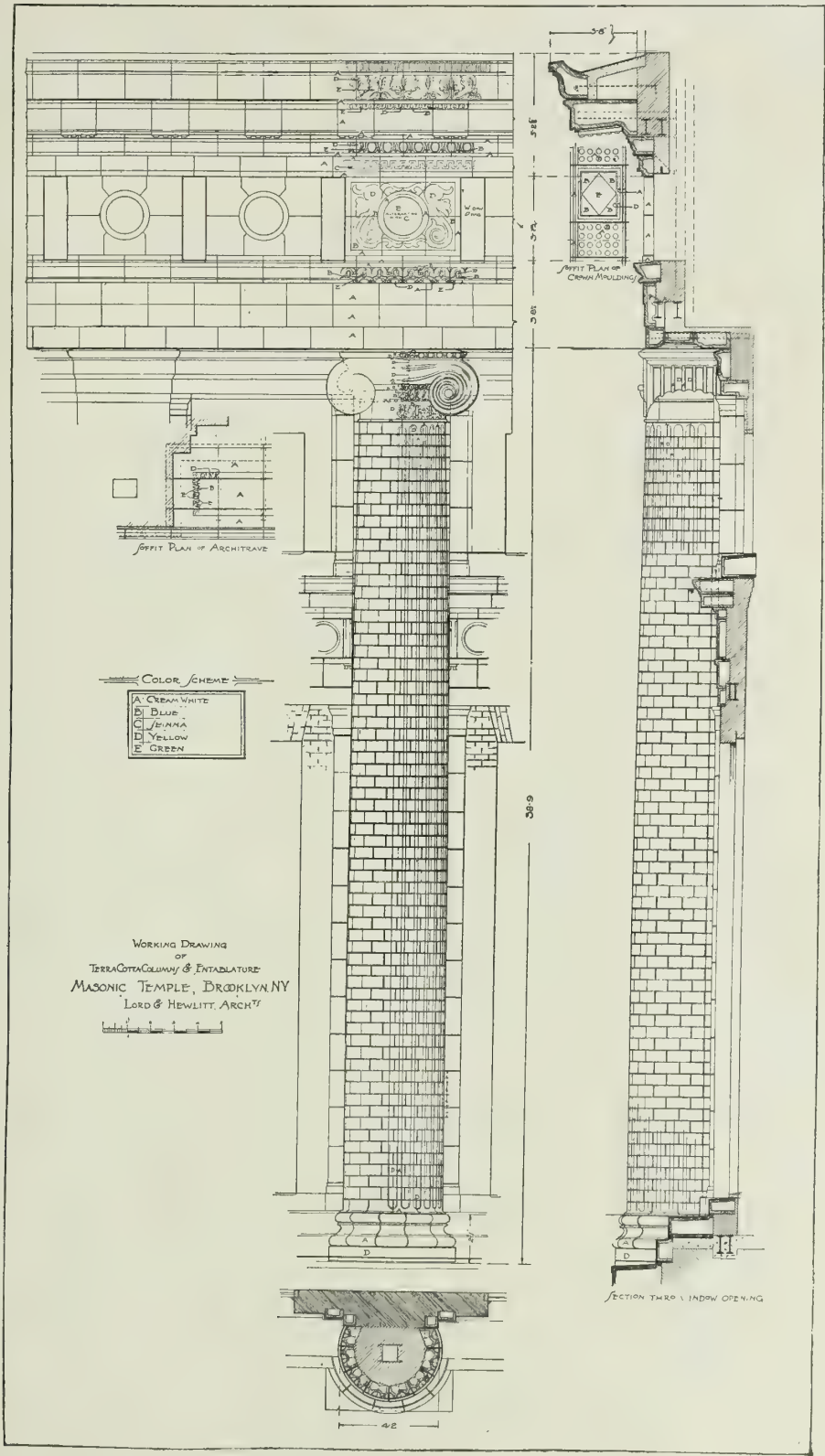
The four factories of the ATLANTIC TERRA COTTA COMPANY are the largest and most completely equipped in the world. Their railway and water transportation facilities provide for shipments expeditiously to any part of the globe. We are supplying Architectural Terra Cotta to all parts of the United States and Canada.

PRICES AND
INFORMA-
TION.

Our organization is equipped for furnishing architects and builders with all information relative to the adaptability of material, or the proper use of Terra Cotta, or advice and suggestions as to the best and most economical methods of construction. Preliminary and final estimates will be submitted promptly on receipt of drawings and data. Correspondence regarding prices or covering any details of information is respectfully solicited.

ILLUSTRATION.

The illustration shows a satisfactory method of construction of large columns and cornice. The work was made in terra cotta in five colors and the construction was carefully designed with a view to securing the best possible results in manufacture.



DETAILS OF MASONIC TEMPLE, BROOKLYN, N. Y.
LORD & HEWLETT, Architects; PELL & CORBETT, Associated Architects

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High-Grade Architectural Terra Cotta

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Manufacturers of ARCHITECTURAL TERRA COTTA, for use in the INTERIOR and EXTERIOR of Office Buildings, Hotels, Churches, Schools, Theaters, etc.

Also, ARTISTIC GARDEN VASES; URNS; POTTERY; STATUARY; FLOWER BOXES; FOUNTAINS, etc.

FINISH.

Red, Cream, Buff, Stone colors, Fire-flashed, Semi-glazed, Mat-glazed, Mottled, and Enameled in white or colors.



THEATER. OTTO ZIPPWALD, Architect

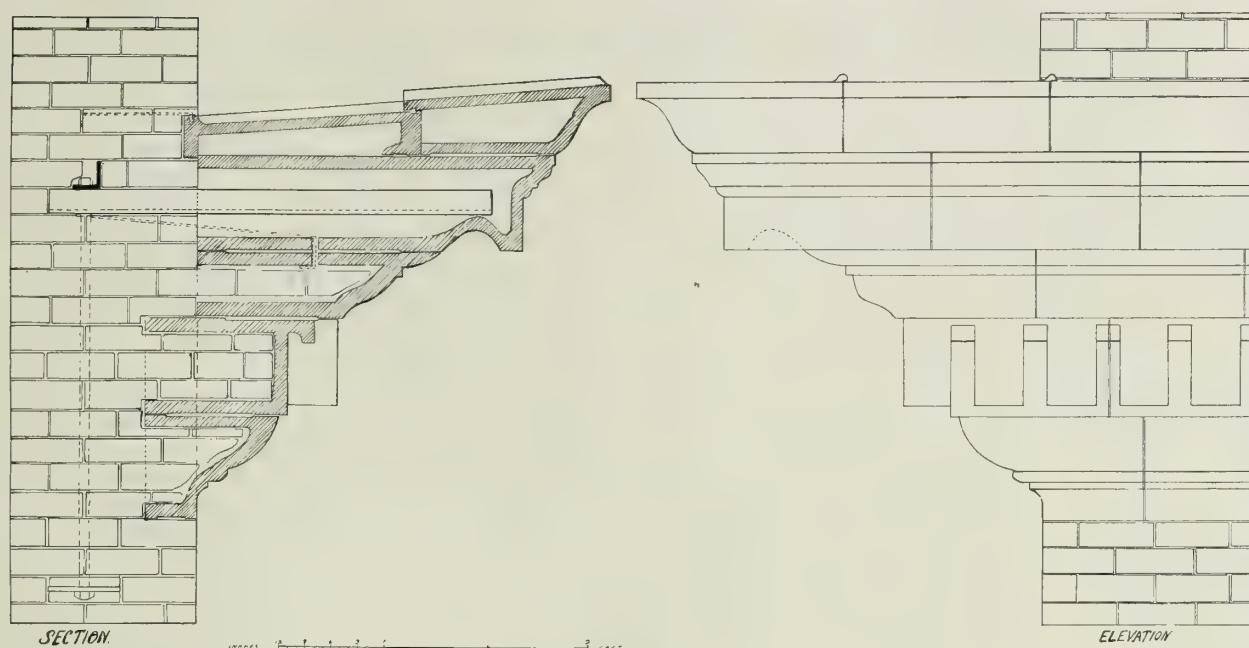


ILLUSTRATION OF CORNICE CONSTRUCTION



MODEL OF ORNAMENTAL TERRA-COTTA PANEL

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ESTIMATES.
FACILITIES.

We shall be pleased to furnish estimates. All orders will receive prompt and careful attention.

SAMPLES.
REFERENCES.

Good shipping facilities, being located near Chicago, with connections to all main lines throughout the United States.

Will furnish samples on application.

Write for references if desired.

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Manufacturers of ARCHITECTURAL TERRA COTTA for both Exterior and Interior purposes and for all classes of buildings, making a specialty of the finer grades, such as ENAMELS and GLAZES, in any color or finish desired.

FACILITIES.

Our plant, located in Philadelphia, has recently been rebuilt and much enlarged and is of the most modern equipment.

We are Construction Specialists, and have been for twenty years perfecting a thoroughly well-equipped organization, which is at your service for consultation or advice.

ESTIMATES.

Preliminary or final estimates for Terra Cotta work are furnished promptly.

SPECIFICATION.

Terra Cotta—All Terra Cotta work as shown on the plans and detail drawings, and herein specified, shall be of the best grade, manufactured by the CONKLING-ARMSTRONG TERRA COTTA Co., of Philadelphia, Pa. All of the work shall be delivered at the site of the building in perfect condition, boxed if necessary, and in the order and quantity required by the progress of the building. Each piece shall be marked, and must be accurately fitted and set in its proper place.

Trimnings—The trimmings of windows, arches, mouldings, quoin blocks, architraves, copings, etc., on all fronts, where shown on plans, must be of the best quality Terra Cotta, of an even shade of color, with fair and even faces, and made to form true surfaces throughout.

Construction—All the Terra Cotta work shall be properly secured together and in place with clamps, dowells, ties, tees, angles, and strips of galvanized iron.

All projecting or other parts of the exterior work liable to be damaged shall be covered with board casings, carefully applied.

Ornamental—Models in clay or plaster of paris shall be made by the contractor for all the ornamental Terra Cotta work, and all models or photographs must be submitted to the architect for approval.

REFERENCES.

We have executed some of the largest contracts for Terra Cotta in the United States, notably:

Wanamaker Building, New York, D. H. Burnham & Co.,
Architects

Bowling Green Building, New York, Messrs. Audsley,
Architects

Broadway Tabernacle, New York, Barney & Chapman,
Architects

Engineers Building, New York, Hale & Rogers and H. G.
Morse, Architects

Broad Street Station, Philadelphia, Furness, Evans & Co.,
Architects

Witherspoon Building, Philadelphia, Jos. M. Huston,
Architect

Horticultural Hall, Philadelphia, Frank Miles Day &
Bro., Architects

Bulletin Building, Philadelphia, Edgar V. Seeler,
Architect

Land Title Building, Philadelphia, D. H. Burnham & Co.,
Architects

Lafayette Building, Philadelphia, J. T. Windrim,
Architect

W. P. Story Building, Los Angeles, Morgan and Walls,
Architects

Worcester R. R. Terminal, Worcester, Mass., Watson &
Huckel, Architects

Jordan Marsh Building, Boston, Winslow & Bigelow,
Architects

Curtis Building, Philadelphia, Edgar V. Seeler, Architect



HOME OFFICE, PACIFIC MUTUAL LIFE INSURANCE CO., LOS ANGELES, CAL.
PARKINSON & BERGSTROM, Architects

The entire building above the granite base, except the window trim between pilasters, is of Terra Cotta

ILLUSTRATION.

This building contains nearly 300 tons of white enameled terra cotta made by the CONKLING-ARMSTRONG TERRA COTTA CO. of Philadelphia, Pa., and is considered one of the best specimens of this class of work in this country.

O. W. KETCHAM
 Burnt Clay Products
 Main Office, Master Builders' Exchange
 PHILADELPHIA, PA.

ORNAMENTAL TERRA COTTA PLANT
 CRUM LYNNE, PA.

BRANCH OFFICES

NEW YORK, N. Y., Johnston Building, 1170 Broadway

WASHINGTON, D. C., Home Life Building, 15th and G Streets, N. W.

BALTIMORE, MD., American Building, Baltimore and South Streets

PRODUCTS
 AND
 SERVICES.

Our TERRA COTTA is manufactured at our own Plant situated at Crum Lynne, Pa., and includes POLYCHROME WORK as well as regular Commercial TERRA COTTA. We sell all kinds of BURNT CLAY PRODUCTS, such as FRONT BRICK, including HARVARD BRICK, HARD BRICK, and MOULDED BRICK; also, HOLLOW BRICK, FIRE BRICK, PAVING BRICK, ENAMELED BRICK, HEADER BRICK, STRETCHER BRICK, RADII and PIER BRICK, JAMB BRICK, BASE MOULDINGS, etc. Of TERRA COTTA FIREPROOF MATERIALS we sell: FLOOR ARCHES, PARTITION BLOCKS, GIRDER COVERINGS, COLUMN COVERINGS, BOOK TILE, FURRING TILE, ROOFING TILE, etc. We also sell VITRIFIED SALT-GLAZED WALL COPING.

We contract for the furnishing and erection of HOLLOW TILE FIREPROOFING.

DESCRIPTION.

Some idea as to the variety and adaptability of our moulded brick forms may be obtained from the following:

HEADER
 BRICKS.

In Header Bricks the starters, stops, external and internal angles and miters of the header profiles may be placed wherever they are desired.

STRETCHER
 BRICKS.

In the Stretcher Bricks the external and internal angles and miters can be made wherever they are required. The Stretcher Bricks can be used for pilasters.

RADII ANGLE
 AND PIER
 BRICKS.

These Bricks may be made to bond with themselves in the formation of piers and columns.

BASE
 MOULDINGS.

Base Mouldings may be used in cornices and string-courses. Both external and internal angles are made.

JAMB BRICKS.

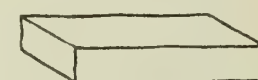
In our Jamb Bricks, made for window and door openings, the miters can be made wherever desired. We have a special construction for flat lintels.

SIZES.

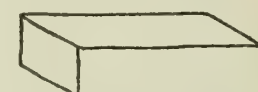
Some idea as to the relative sizes of bricks may be obtained from the accompanying illustrations (Fig. 1). Short Roman is Standard length, Roman thickness; Flemish is Standard length on each side; Norman is Roman length, Standard thickness.

FLOOR
 ARCHES.

We have three kinds of Terra Cotta Floor Arches, the oldest method that of the Segmental Arch, and also the flat arches for side or end construction. Of these, that of the end construction is undoubtedly the best, because it is lighter in weight and can carry a heavier floor load than either of the other two.



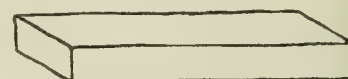
SHORT ROMAN



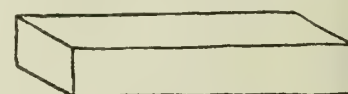
STANDARD



FLEMISH



ROMAN



NORMAN

FIG. 1. RELATIVE SIZES OF
 FRONT BRICKS

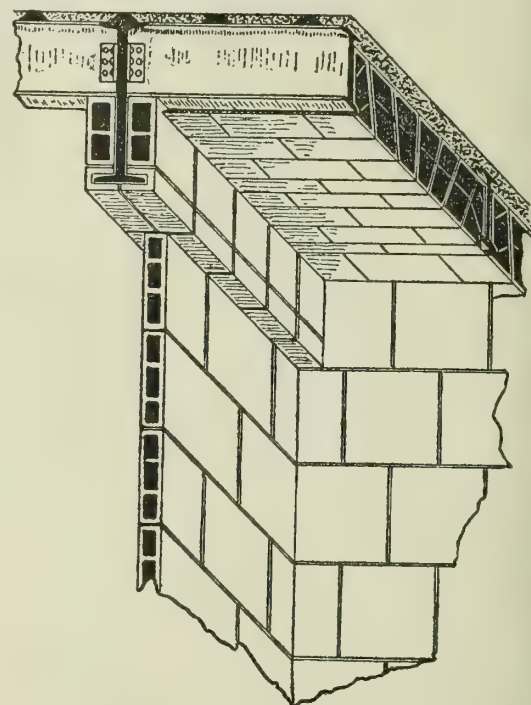


FIG. 2. PARTITION BLOCKS AND GIRDER
 COVERINGS

PARTITION
BLOCKS AND
GIRDER
COVERINGS.
FURRING
TILE.

Our Partition Blocks can be obtained in any size or thickness desired. They are either hard or porous, and are scored for plaster unless otherwise ordered. The illustration (Fig. 2) shows a flat arch, partition blocks, and girder coverings.

Our Furring Tile, manufactured for exterior walls, is made in blocks which can be separated at building. They are made of any desired thickness, hard or porous, scored or smooth.

BOOK TILE.

Our Book Tile is made 3" thick, 12" wide, and in lengths up to 24". Special sizes are made if ordered in sufficient quantity.

COLUMN
COVERINGS.

Our Column Coverings are made in a variety of shapes—circular, elliptical, square, octagonal, or any flat-sided shape. They can be made of any required thickness. They are hard or porous, and scored, unless otherwise ordered.

STOCK
VITRIFIED,
SALT-GLAZED
WALL
COPING.
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Our Stock Vitrified, Salt-Glazed Wall Coping supplies the constant demand for cheap and durable wall coping (Fig. 3). It is made in sizes to fit 9, 13 and 18 inch walls. The coping is usually made in 2-foot lengths, but smaller pieces, used for the purpose of filling out, are also kept in stock. We have right-angled returns and closed finished ends.

We have a competent corps of men who are constantly employed in assisting architects and contractors in making out the details of their work. When necessary we will be glad to furnish details for any special construction upon which the architect or contractor may be working. We will also be glad to suggest means whereby results beneficial to all parties concerned may be obtained.

TERRITORY.

We are willing to ship our goods, whether in large or small amounts, to any part of the world.

SPECIFICA-
TIONS.

In making their specifications architects, builders, etc., are requested to use the name O. W. KETCHAM, in order to insure a high grade of material. They should also state the shade, number or color desired, as marked on our samples, which we will send on request.

GUARANTEES.

We guarantee that both the goods which we manufacture and the goods which we sell are of standard size and quality. We also guarantee that our fireproof materials are strictly fireproof.

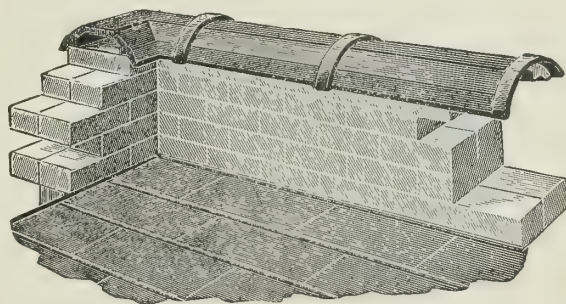


FIG. 3. VITRIFIED SALT-GLAZED WALL COPING



ORNAMENTAL TERRA COTTA PLANT, CRUM LYNNE, PA.

ROOKWOOD POTTERY COMPANY

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Complete Architectural and Pottery Plants unrivaled in their technical resources and representing twenty-five years' experience in the making of faience bodies and colored glazes.

"ROOKWOOD" MAT GLAZES.

The charm of "Rookwood" Mat Glazes lies largely in their variations of shade and texture. These arise from delicate changes in the glaze structure occurring in the fire and calculated upon in the composition of the glazes. These variations are not great nor sufficient to throw any color out of harmony but only such as stamp the material with its true character as a product of one of the arts of fire. No attempt is made to have it otherwise and those who are seeking the monotonous uniformity of a painted wall will not find it in Rookwood.

SPECIAL DESIGNS.

We are thoroughly equipped to execute the designs of architects and decorators or special designs by our own artists, working in collaboration or independently, as may be desired.

ADAPTABILITY.

The widest range of decorative possibilities in color, combined with absolute permanence, sanitary merit, and fireproof qualities.

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Assistance will be given in the adaptation of material and architects' designs, and in estimating costs for appropriations. Satisfactory results require that Faience should be specified under allowance, reserving to the architect the right of selection. Appropriate forms sent on request.

INSTALLATION. HONORS.

We do not contract for installation.

Grand Prizes: Paris, 1900; St. Petersburg, 1901; Turin, 1902; St. Louis, 1904; and other awards.

REPRESENTATIVE WORK.

West Street Office Building, New York, N. Y., Cass Gilbert, Architect. Ornamental arch construction and paneling, main corridors.
Fort Pitt Hotel, Pittsburg, Pa., Janssen & Abbott, Architects; J. D. Wareham, Rookwood Staff, designer. Norse room, complete.
La Salle Hotel, Chicago, Holabird & Roche, Architects. Palm room and German restaurant.
Claypool Hotel, Indianapolis, Ind., W. F. Behrens, Decorator. Billiard room and large floor fountain.
Metropolitan Life Building, San Francisco, Cal., N. LeBrun & Sons, Architects. Exterior frieze.
Carnegie Woman's Technical School, Pittsburg, Pa., Palmer & Hornbostel, Architects. Exterior frieze.
Rodef Scholem Synagogue, Pittsburg, Pa., Palmer & Hornbostel, Architects. Electrolier standards.
United States Military Academy, West Point, N. Y., Cram, Goodhue & Ferguson, Architects. Colored tile wainscot.
Sinton Hotel, Cincinnati, Ohio, F. M. Andrews, Architect; J. D. Wareham, Rookwood Staff, collaborating. Tile mural decorations, main dining-room.
Store Front, J. M. Gidding & Co., Cincinnati, Ohio, F. M. Andrews, Architect.
Seelbach Hotel, Louisville, Ky., F. M. Andrews, Architect. Decoration of rathskeller.
Southland Hotel, Dallas, Tex., Parkinson & Bergstrom, Architects. Entire lobby walls.
New York Subway System, W. Barclay Parsons, Engineer; Heins & La Farge, Architects. Cornice and plaques at Fulton Street and five other stations.
Hudson Tunnels, New York, N. Y., Jacobs & Davies, Engineers; Robins & Oakman, Architects. Colored tile work, stations of the uptown branch and at Hoboken.
Flatbush Avenue Terminal, Long Island R. R., Jacobs & Davies, Engineers, H. F. Saxelbye, Architect. Entablature and wainscot, main waiting-room and concourse.
First Presbyterian Church, Poughkeepsie, N. Y., P. M. Lloyd, Architect. Faience spire.
Complete mantels, fountains, etc., in other public and private buildings.



ORNAMENTAL ARCHES AND PANELING, WEST STREET OFFICE BUILDING, NEW YORK, N. Y. CASS GILBERT, Architect



TILE WAINSCOT, HOTEL DEVON, NEW YORK, N. Y.
 . ISRAELS & HARDER, Architects; W. P. McDONALD of Rookwood Staff, Designer



ALL-FAIENCE MANTEL, PRIVATE RESIDENCE
 W. P. McDONALD of the Rookwood Staff, Designer

THE SOUTH AMBOY TERRA COTTA CO.

Architectural Terra Cotta

150 Nassau Street
NEW YORK, N. Y.

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SOUTH AMBOY, N. J.

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- TERRITORY.** We are prepared to execute contracts in any part of the United States or Canada, having first-class shipping facilities.
- FACILITIES.** Our factory is located at South Amboy, N. J., on the Central Railroad of New Jersey and on Raritan Bay. It is large, well arranged, and equipped to execute all orders with promptness. Your inspection of our plant is invited.
- ESTIMATES.** Estimates furnished upon receipt of scale drawings.



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NORWICH, CONN.

J. KNOX TAYLOR, Architect

REFERENCES. Architectural Terra Cotta and Faience of our manufacture have been used exclusively in the following buildings. We refer you to the architects:

BUILDING	LOCATION	ARCHITECT
Waterbury R. R. Station	Waterbury, Conn.	McKim, Mead & White
Chemistry Building, Rutgers College	New Brunswick, N. J.	Hill & Stout
German-American Insurance Co.	New York, N. Y.	Hill & Stout
Huntington Residence	Staatsburgh, N. Y.	Hoppin & Koen
Lotos Club	New York, N. Y.	Donn Barber
98th Street and Riverside Drive	New York, N. Y.	Wm. L. Rouse
Hartford State Armory	Hartford, Conn.	Benj. Wistar Morris
Supreme Court Library	Hartford, Conn.	Donn Barber
Firemen's Insurance Co.	Newark, N. J.	Marvin & Davis
St. Barbara's R. C. Church	Brooklyn, N. Y.	Helmle & Huberty
Stock Quotation Telegraph	New York, N. Y.	Clinton & Russell

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ALBANY, N. Y., 43 Eagle Street and 141-147 Broadway

PRODUCTS.

ARTIFICIAL CONCRETE BUILDING STONE of all Colors and Surface Finishes; ARTIFICIAL ROMAN and POMPEIAN STONE; MODELERS and WORKERS in CONCRETE and STUCCO; GARDEN SETTEES, VASES and STATUARY, ORNAMENTS, MANTELS, etc., all in either Natural or Artificial Stone or Stucco; DECORATIVE METALLIZED PRODUCTS of CONCRETE, STUCCO, STONE, TERRA COTTA, WOOD, PLASTER and PORCELAIN; NATURAL STONE, MARBLE and GRANITE SCULPTURED PRODUCTS.

Also, PATENT REINFORCED HOLLOW TILE or CONCRETE-BLOCK FIREPROOF BUILDING CONSTRUCTION, for which see General Index.

DESIGNS.

We execute designs from architects and decorators or submit designs and models of our own in antique or modern art styles for any purposes.



ENTRANCE TO KENSINGTON, GREAT NECK, LONG ISLAND, N. Y.

MATERIAL.

We work in Natural Stone, Marble or Granite cut from the block, or in Artificial Roman and Pompeian Stone (natural stone crushed and mixed with cement matrix) which is everlasting, weather-proof and fireproof, and can be furnished in any desired color.

Our Artificial Concrete Stone is of the best composition and manufacture, and we can furnish it in any desired color and surface effects, for which we have a special process.

The Metalized Products are electroplated by a method of our own, which adds great strength and durability to the material and imparts the beauty of a metallic effect where such is an appropriate addition to the plastic design.

FACILITIES.

We have experienced men in charge of every department, and our extensive plant, covering 36,000 square feet of working floor space and equipped with the best machinery, enables us to handle contracts of any size successfully and promptly.

CO-OPERATIVE SERVICE.

Our technical and artistic experts are qualified to design, model and carry out the most difficult propositions in the line of our work. Their suggestions and advice are at the service of architects and the general public. Correspondence is respectfully invited.



POMPEIAN STONE VASE

THE ARCHITECTURAL STONE CO.

2072-2074 Reading Road
CINCINNATI, OHIO

TELEPHONE, NORTH 2398

PRODUCTS.

Manufacturers of "LAWSON'S" COMPOSITE STONE for building purposes; COMPOSITE SPANISH ROOFING TILE; COMPOSITE INTERLOCKING GERMAN TILE; ORNAMENTAL DESIGNS in COMPOSITE STONE, including STATUARY, GARDEN FURNITURE, VASES, POOLS, STEPS and PORCHES.

COMPOSITE STONE.

Composite Stone is manufactured by us under our own special process and represents the nearest approach to perfection of any cement composed stone. It is impervious to moisture, will outwear natural stone, its hardness increases with age, and its ability to resist atmospheric conditions is without question greater than that of any other known building material. In appearance and color it rivals either cut stone or granite.



A FEW OF "LAWSON'S" COMPOSITE STONE TRIMMINGS

ADVANTAGES.

The advantages of Composite Stone are many. In strength and lasting qualities it has all the merits of concrete; in appearance it is equal if not superior to the highest grades of cut stone, and the cost is at least 50 per cent less.



THE UNION SAVINGS BANK TRUST CO.,
CINCINNATI, OHIO



STOCK YARDS BANK TRUST CO.,
CINCINNATI, OHIO

On account of its plastic character its artistic possibilities are unlimited. The stone having once been moulded the same design can be reproduced as often as desired at an exceedingly small cost, as this mould may be used over and over again, whereas with cut stone each of these designs would have to be hand carved at considerable expense.

ORNAMENTAL
GARDEN
FURNITURE
OF COM-
POSITE STONE.

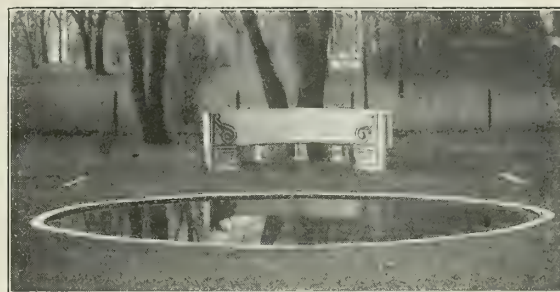
Having the practical knowledge of concrete, together with the experience in elaborate detail in architectural work, this firm has executed the ornamental work for numerous large bridges.

Attractive Garden Furniture, adding beauty to the house and grounds, such as Seats, Sun-Dials, Statuary, Pergolas, Flower Vases, etc., are artistically and economically executed with the greatest skill in "Lawson's" Composite Stone.

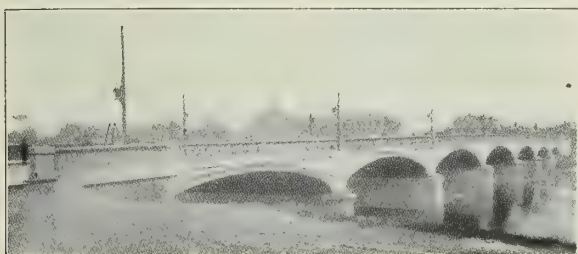
Special attention is given to executing architects' designs and sketches. Estimates furnished.



GARDEN SEAT OF COMPOSITE STONE



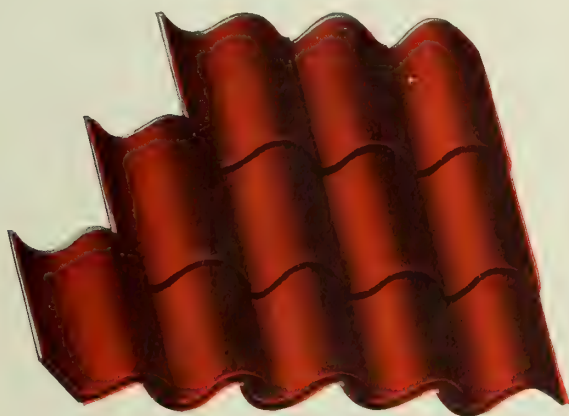
CIRCULAR GARDEN SEAT AND POOL OF
COMPOSITE STONE



WASHINGTON STREET BRIDGE, DAYTON, OHIO



GARDEN FURNITURE OF COMPOSITE STONE



"LAWSON'S" COMPOSITE SPANISH
ROOFING TILE



"LAWSON'S" COMPOSITE INTERLOCKING
GERMAN TILE

ROOFING
TILES.

"Lawson's" Composite Roofing Tile is made in a variety of exquisite color schemes and in all the popular tiles, as American, Spanish and Roman. The use of these tiles adds materially to the artistic appearance of the house and should be interesting to architects both from an economical and artistic standpoint.

This tile may be had at an extremely low figure in comparison with other tiles.

THE GEORGE RACKLE & SONS CO.

"Artstone" and Cement Products

Superior Avenue and East 32nd Street

CLEVELAND, OHIO

PRODUCTS.

We manufacture HIGH-GRADE "ARTSTONE" and CEMENT PRODUCTS, specializing in CHURCH BUILDINGS and GOTHIC TRACERY WINDOWS. In addition, we make ORNAMENTAL STONE for Building Purposes, BUILDING TRIMMINGS, BRIDGES, FOUNTAINS, GARDEN VASES, BALUSTRADES, ORNAMENTAL LIGHTING COLUMNS—from Architects' designs or from our own patterns.

DESCRIPTION.

This "Artstone" is a composition which unites durability with beauty. Its color, texture, strength and general appearance greatly surpass limestone or sandstone. Whether used in plain blocks or in the thousands of styles and designs, modern or ancient, in ornamental finishing, it is rich in coloring and impressively beautiful. There is no composition of its character which equals it in any particular.



COST.

Although we employ none but the most skilled artisans in our work we are in a position to furnish our material at a great saving, ranging from 20 to 50 per cent less in cost than natural stone, all in accordance with the richness of a design.

FOUNTAIN IN "ART-
STONE" ERECTED IN
WADE PARK, CLEVELAND,
OHIO

CAPACITY.

Our large factory facilities and equipment make rapid deliveries possible on time limit contracts, and enable us to handle large work in any part of the country.



FOUNTAINS IN "ARTSTONE" ERECTED IN WOODLAND CEMETERY, CLEVELAND, OHIO

REFERENCES.

We offer as references the following—a few of our completed Churches:

First Baptist, Saginaw, Mich.
St. Mary's, McKees Rocks, Pa.
First Methodist Episcopal, Decatur, Ill.
First Methodist Episcopal, Freeport, Ill.
First Methodist Episcopal, Winchester, Ill.
First Methodist Episcopal, McPherson, Kan.
First Methodist Episcopal, St. Joseph, Mo.
Methodist, Chillicothe, Ohio
Methodist, Canal Dover, Ohio

St. John's Methodist Episcopal, Cleveland, Ohio
Zion Lutheran, Cleveland, Ohio
Mayfield Chapel, Cleveland, Ohio
Hough Avenue Congregational, Cleveland, Ohio
St. Peter's, Cleveland, Ohio
Croatian Church, Cleveland, Ohio
Church of Christ, Lakewood, Ohio
Emanuel Evangelical, Cleveland, Ohio
First Presbyterian, Ionia, Mich.

West Side Methodist Episcopal,
Wichita, Kan.
Ver. Evangelical Protestant, Brook-
lyn, Ohio
Methodist Church (Tracery Win-
dows), Pensacola, Fla.
First Methodist Episcopal, Athens,
Tenn.

Other buildings to
which we refer are as
follows:

John Anisfield Building, Cleveland,
Ohio
Residence, Theodore Kundtz,
Cleveland, Ohio
Haddam Apartments, Cleveland,
Ohio
De Klyn Apartments, Cleveland,
Ohio
Pergola and Gateway, William
Mather, Cleveland, Ohio
Case School Mining Building,
Cleveland, Ohio
Warehouse, Cleveland Illuminating
Co., Cleveland, Ohio
People's Savings & Loan Bank,
Cleveland, Ohio
Public Library, Willoughby, Ohio
Fire Station, Coshocton, Ohio
Gaurley Block, Coshocton, Ohio
Fire Station, Lorain, Ohio
Sieben Burgen Club, Lorain, Ohio
Residence, William Seher, Lorain,
Ohio
Kent Street Bank, Lorain, Ohio
St. Mary's Hospital, Lorain, Ohio
Carnegie Library, Kent, Ohio
Chardon Town Hall, Chardon,
Ohio
Residence, William Rommel, Canton, Ohio
Residence, O. C. Barber, Barberton, Ohio
Residence, Ernest Venn, Detroit, Mich.
Dobson Building, Akron, Ohio
Gary Pumping Station, Gary, Ind.
Trimp Dancing Academy, St. Louis, Mo.
Grade School, Flint, Mich.
Balustrade, Edgewater Park Bridge, Cleveland, Ohio
Balustrade, Detroit and Nickel Plate Bridge, Cleveland, Ohio

CO-OPERATIVE
SERVICE.

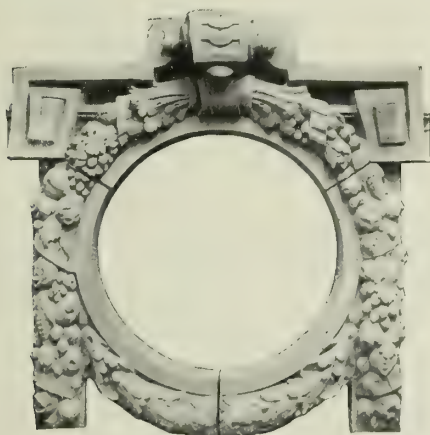
It will please us to co-operate with archi-
tects, contractors or designers at all times.

We solicit specific enquiries.



FIRST METHODIST CHURCH, DECATUR, ILL.

Executed in "Artstone"



DETAILED ORNAMENTS IN "ARTSTONE" SELECTED FROM MANY USED IN THE TRIMP DANCING
ACADEMY, ST. LOUIS, MO.

THE TEMPLE CEMENT STONE COMPANY

Manufacturers of Artificial Stone

Baer Building
READING, PA.

PRODUCTS.

NATIONAL TWO-PIECE HOLLOW WALL, PATENT CEMENT BUILDING BLOCKS, SILLS,
LINTELS, WATER-TABLES, PORCH, PIER, and CHIMNEY BLOCKS.
MANHOLES, CATCH BASINS, RADIUS STONES, PAVERS and CURBING.
PARMLEY'S PATENT REINFORCED SEWERS and CONDUITS, Circular or Egg-Shaped.
MONARCH FENCE POSTS.

ESTIMATES
AND SPECIFI-
CATIONS.

Estimates and specifications furnished on application.



GERMAN LABEL

ALSEN'S PORTLAND CEMENT WORKS

MANUFACTURERS OF

German and American Portland Cement

45 Broadway
NEW YORK, N. Y.

W. P. CORBETT, GENERAL MANAGER SALES



AMERICAN LABEL

PRODUCTS.

Manufacturers of "ALSEN'S" GERMAN PORTLAND CEMENT, "ALSEN'S" AMERICAN PORTLAND CEMENT, "ALSEN'S" INSTANTANEOUS SET PORTLAND CEMENT.

CAPACITY.

Annual capacity is about 3,000,000 barrels.

DESCRIPTION.

German "Alsen" is the lightest colored, high-grade Portland. It is naturally more *waterproof*, and for *stucco* and special purposes has *great* advantages, as architects are noting from actual results. Its color can not be equaled. American "Alsen" has a fine, uniform bluish tint. Medium slow set is always the safest in the long run. Forced strength in cement (like forced growth in living things) is dangerous, and means less strength at maturity. We supply Cement having a quick set, when it is required, for special work.

"Alsen's" is made by the oldest manufacturers of high-grade cements in the world.

Tests of old date, or from special samples, which some companies publish, are obviously unreliable, and not a criterion of regular quality. "Alsen's" almost invariably shows superior *long-time* tests when properly conducted under equal conditions, as proved by results in various countries.

ANALYSIS.

ANALYSIS OF "ALSEN'S" AMERICAN PORTLAND CEMENT

Silica	21.9	Lime	63.98
Alumina	7.58	Magnesia	1.48
Iron Oxide	3.42	Sulphuric Acid	0.75
Specific Gravity 3.17			

ADVANTAGES.

"Alsen's" German and American Portlands are scientifically prepared to endure severe climatic changes and stand the maximum of abuse; they are more durable, attractive in appearance, and are *uniform*. They are thoroughly tested throughout the entire process of manufacture by trained German experts, which insures careful and intelligent attention in every detail.

The manufacturers have had a long experience in supplying the *varying* needs of leading architects and engineers in *all* countries. Their unlimited capital, superior facilities and raw material, enable them to produce a cement seldom equaled.

PRICES,
SHIPMENTS,
ETC.

The location of the Alsen plant *directly on tide water* permits shipment by either *boat or rail*, so that at many points enough is *saved in the freight* to more than offset the slightly higher factory price. There is *less handling with consequent saving in sifting*, and *decidedly better packages*. Shipments made in any quantity *from either Hamburg, Germany, or from New York to any part of the world*, depending upon destination and freight rate.

REFERENCES.

"Alsen's" American Portland Cement was the only American cement passing the tests in the special Panama Canal contract of May, 1905. Not a barrel was rejected; in fact "Alsen's" American Portland Cement exceeded all requirements. Both foreign and American Cements have since been used in the canal work, but only on modified specifications, and positively no other *American Cement* upon the test which "Alsen's" guaranteed and successfully passed. This is of great importance to engineers conducting hydraulic or steel construction.

170,000 barrels of "Alsen's" American Cement were used in the construction of the N. O. Filtration Plant, and the Rochester Reservoir. "Alsen's" is being used exclusively in the more important work of the most difficult engineering project so far attempted in this country, the extension of the R. R. over the Florida Keys, in which about 300,000 bbls. is required; reinforced concrete and monolithic construction in sea water—in some cases building up viaducts upon coral reefs—because "Alsen's" is the "*Absolutely Safe Cement*."

"Alsen's" has been awarded the only contract which has ever specified over *one million barrels* of Cement for a specific work in this country—Ashokan Dam.

We gladly refer to some two million barrels of orders for "Alsen's" Cement now on our books for Government, State and Municipal work, important contracts, where every lot has to stand a most rigid test, and which we are supplying without a *single rejection* in any part of the country, probably a unique record. *Facts are Better than Assertions.*

THE AMERICAN HARD WALL PLASTER COMPANY

MANUFACTURERS OF

Wall Plasters and Finishes, and Dealers in Masons' Supplies

119 Columbia Street

UTICA, N. Y.

LONG DISTANCE TELEPHONES

FACTORY AND WAREHOUSE
119-121 BROAD STREET

PRODUCTS.

Manufacturers of WALL PLASTERS and FINISHES.

We are Distributing Agents in this territory for the following material:

FACE BRICK—

ALUMINA SHALE BRICK CO.
IRONCLAY BRICK CO.
KITTANNING BRICK CO.
AMERICAN ENAMELED BRICK CO.
TAPESTRY BRICK.

FIRE BRICK—

OSTRANDER FIRE BRICK CO.'s Products in all sizes and shapes in stock.

CEMENTS—

ALPHA PORTLAND CEMENT CO.
CATSKILL CEMENT CO.
CONSOLIDATED ROSENDALE CEMENT CO., Brooklyn Bridge brand.
CUMMINGS CEMENT CO., Akron (Obelisk) brand.
STAR CEMENT OR WATER LIME.
MEDUSA WHITE PORTLAND CEMENT.

GENERAL SUPPLIES—

HERRINGBONE EXPANDED METAL LATH; BOSTWICK TRUSS-LOOP METAL LATH; EXPANDED METAL; SAMUEL CABOT'S SHINGLE STAIN, SHEATHING QUILT, and other products; BERGER'S METAL LUMBER, "RAYDIANT" SIDEWALK LIGHTS; SACKETT'S WALL BOARD; TOCH BROS.' R. I. W. CEMENT FILLER and FLOOR PAINT, and other technical paints; RUTTY METAL WALL PLUGS; MORSE STEEL WALL TIES; PITTSBURG STEEL WALL TIES; CLINTON MORTAR COLORS; UNION AND HANNON METAL CORNER BEAD; DRAIN TILE (all sizes); SEWER PIPE; FLUE LININGS; PAVING BRICK; BEST BROTHERS KEENE'S CEMENT; WATER-PROOFING COMPOUND for CEMENT WORK; PLASTER OF PARIS; FIRE-CLAY; WHITE SAND.

WALL
PLASTER.

Our Wall Plasters are manufactured from the best materials obtainable, are thoroughly tested, weighed and mixed by special machinery, thereby insuring a product unsurpassed for quality and uniformity of setting.

DESCRIPTION.

FIRST COAT—For use on wood lath and wall board.

LONG-FIBER FIRST COAT—For use on wire or metal lath.

BROWNING—For use on brick and terra-cotta work, and for second coat on three-coat work.

These materials are packed in 100-lb. or 125-lb. burlap bags or paper sacks and are prepared ready for use, with the addition of clean water only.

AMERICAN FIBER WALL PLASTER—This is a wood fiber or pulp plaster made especially for work to be finished in one coat. It is packed in 80-lb. paper sacks, prepared. Add nothing but clean water.

AMERICAN CEMENT—This material requires the addition of clean, sharp sand, free from loam, in the following proportions, to make it ready for use: For wood or metal lath, one part American Cement to one and one-half parts sand by measure. For brick and terra-cotta work, one part American Cement to three parts sand by measure. It is packed in 80-lb. burlap bags or paper sacks.

AMERICAN FINISH—This is a white coat for finishing, requiring the addition of an equal amount, by measure, of white lime putty. Packed in 100-lb. burlap bags.

AMERICAN COMPLETE WHITE FINISH—This is a white finishing coat ready to be applied. Add nothing but clean water. Packed in 80-lb. burlap bags.

AMERICAN SAND-FLOAT FINISH—This finish finds much favor with architects for use on public buildings, etc. It is prepared ready for use, with the addition of clean water only. Packed in 100-lb. burlap bags.

AMERICAN GRAY FINISH—This is a finishing coat a little darker than the white finishes. It is prepared ready for use, with the addition of clean water only. Packed in 100-lb. burlap bags.

All walls, stud partitions, and soffit of stairs throughout this building must be lathed with sound lath of uniform thickness, free from knots, sap or bark; spaced one fourth inch apart with at least four nailings to each lath; joints broken every seventh lath. All lath to be put on horizontally. Under no conditions must lath stop, or form a long, straight, vertical joint, nor any lath put on studding from one room to another. All grounds to be nailed solid in angles before lathing. Should there be any furring not properly secured, stop and notify the carpenters to make permanent the same. Lath must break joints over openings and not over jambs.

Metal lath to be put on with staples well driven in.

Three-Coat Work on Wood Lath—Grounds will be set and frames made $\frac{3}{4}$ inch in thickness.

Base Coat and Browning—First apply American Hard Wall Plaster First Coat with sufficient pressure to form a good clinch back of the lath and cross-scratch the same before the plaster begins to set. As soon as the first coat is set, and from the same scaffold, apply American Browning Coat, using enough to fill out to grounds, and make the walls straight and plumb with rod, and darby to a rough surface, with angles and corners true.

Two-Coat Work on Wood Lath—Grounds will be set and frames made $\frac{3}{4}$ inch in thickness. Apply American Hard Wall Plaster First Coat with sufficient pressure to form a good clinch back of the lath. Follow immediately with another coat of the same material, using enough to fill out to grounds, making the walls straight and plumb with a rod, and darby to a rough surface, making angles and corners true.

One-Coat Work on Wood Lath—Apply a good heavy coat of American Hard Wall Plaster First Coat and, after bringing to a true and even surface, trowel until smooth and hard and free from defects.

Three-Coat Work on Metal Lath—Grounds will be set and frames made $\frac{1}{2}$ inch in thickness. Apply American Hard Wall Plaster Long-Fiber First Coat with sufficient pressure to form a good clinch back of the lath, and cross-scratch same before the plaster begins to set, following when this is dry with American Browning Coat, using enough to fill out to grounds. Make walls straight and plumb with rod, and darby to a rough surface, making angles and corners true.

Two-Coat Work on Brick or Terra Cotta—Grounds will be set and frames made $\frac{5}{8}$ inch in thickness. First apply American Hard Wall Plaster Browning Coat and with rod and darby produce straight walls and true angles and corners.

Finish—As soon as the base coat is thoroughly dry apply a coat of either American Finish, American Complete White Finish, or American Gray Finish, and trowel until set to a smooth hard finish, free from trowel marks, laps, or streaks.

Sand-Float Finish—When the base coats are thoroughly dry, apply American Float Finish and bring to an even granular float finish, using felt floats. The final floating to be completed before the finish commences to set.

SPECIFICATIONS.

REFERENCES.

Buildings finished with American Hard Wall Plaster:

BUILDING	LOCATION	ARCHITECT	CONTRACTOR
United States Post Office	Elmira, N. Y.	James Knox Taylor, Washington, D. C.	A. B. Stannard, New York, N. Y.
United States Post Office	Gloversville, N. Y.	James Knox Taylor, Washington, D. C.	Barwell & Catlin, New York, N. Y.
New York State Armory	Schenectady, N. Y.	George L. Heins, Albany, N. Y.	Buckley Construction Co., Plattsburg, N. Y.
New York State Hospital Nurses Home	Utica, N. Y.	George L. Heins, Albany, N. Y.	W. D. Bennett, Schenectady, N. Y.
Medical Staff	Utica, N. Y.	George L. Heins, Albany, N. Y.	Mosier & Summers, Buffalo, N. Y.
Acute Hospital	Utica, N. Y.	George L. Heins, Albany, N. Y.	Broderick & Co., Buffalo, N. Y.
Custodial Buildings	Rome, N. Y.	George L. Heins, Albany, N. Y.	R. Richards & Son, Utica, N. Y.
Custodial Buildings	Rome, N. Y.	George L. Heins, Albany, N. Y.	R. Richards & Son, Utica, N. Y.
Golden Smith Hall, Cornell University	Ithaca, N. Y.	Carrère & Hastings, New York, N. Y.	Thomas Whalen & Sons, Ogdensburg, N. Y.
Residence of Col. Wm. Carey Sanger	Sangerfield, N. Y.	Howells & Stokes, New York, N. Y.	John F. Hughes Construction Co., Utica, N. Y.
Sigma Phi Chapter House, Hamilton College	Clinton, N. Y.	F. H. Gouge, Utica, N. Y.	John V. Schaefer Co., New York, N. Y.
Hall of Languages, Hamilton College	Binghamton, N. Y.	C. Edward Vosbury, Binghamton, N. Y.	Ithaca Contracting Co., Ithaca, N. Y.
Residence of A. Roberson	Schenectady, N. Y.	J. Metcalf Redfield, Utica, N. Y.	J. W. Bishop Co., Boston, Mass.
General Electric Co.'s Office Building	Gloversville, N. Y.	Linn Kinne, Utica, N. Y.	C. DeRegt, Clinton, N. Y.
Knox Building	Gloversville, N. Y.	Wilson Potter, New York, N. Y.	Harry Forrester, Binghamton, N. Y.
Gloversville High School	Cooperstown, N. Y.	D. D. Kieff, Watertown, N. Y.	Prescott-Buckley Construction Co., Plattsburg, N. Y.
Cooperstown High School	Scranton, Pa.	Edw. H. Davis, Scranton, Pa.	G. H. Howarth & Sons, Johnstown, N. Y.
Roth Building	Scranton, Pa.	Owen McGlynn, Wilkesbarre, Pa.	Dewitt A. Hayes, Gloversville, N. Y.
Maloney Memorial Home	Utica, N. Y.	G. Edward Cooper, Utica, N. Y.	Ingalls & Co., Binghamton, N. Y.
Parochial Residence	Utica, N. Y.	John E. Burne, New York, N. Y.	Peter Bigham, Watertown, N. Y.
Masonic Home Extensions	Utica, N. Y.	C. Edward Vosbury, Binghamton, N. Y.	Matthias Stipp, Scranton, Pa.
Olbiston Apartment House	Utica, N. Y.	R. W. Gibson, New York, N. Y.	Woelken, Bulman & Zitzilman, Scranton, Pa.
Residence of Robert MacKinnon	Utica, N. Y.	Cutter & Turner, Boston, Mass.	R. Richards & Son, Utica, N. Y.
Savings Bank of Utica	Utica, N. Y.	Cutter & Turner, Boston, Mass.	Griffith & Pierce, Utica, N. Y.
Oneida County Court House	Utica, N. Y.	Cutter & Turner, Boston, Mass.	Roberts & Williams, Utica, N. Y.
Fraser Department Store	Utica, N. Y.	Agne, Rushmer & Jennison, Utica, N. Y.	Byrnes & Roberts, Utica, N. Y.
Citizens Trust Co.	Utica, N. Y.	F. H. Gouge, Utica, N. Y.	John F. Hughes Construction Co., Utica, N. Y.
St. Luke's Hospital	Utica, N. Y.	Arthur Jackson, New York, N. Y.	Norcross Bros., New York, N. Y.
Utica Public Library	Utica, N. Y.	Linn Kinne, Utica, N. Y.	H. W. Miller, New York, N. Y.
Church of the Reconciliation	Utica, N. Y.	F. J. Neis, Hoboken, N. J.	Connors Bros., Lowell, Mass.
Delaware, Lackawanna & Western Railroad Co., Passenger Stations	Norwich, Binghamton, Oswego, N. Y.	Percy Griffin, New York, N. Y.	Eastman & Middleton, Chicago, Ill.
Otasago Hotel	Cooperstown, N. Y.		Griffith & Pierce, Utica, N. Y.

THE ATLAS PORTLAND CEMENT COMPANY

30 Broad Street

NEW YORK, N. Y.

WORKS
COPLAY, PA.
NORTHAMPTON, PA.
HANNIBAL, MO.
HUDSON, N. Y.



TRADE-MARK

PRODUCT. "ATLAS" PORTLAND CEMENT.

OUTPUT. THE ATLAS PORTLAND CEMENT COMPANY'S works are located at Northampton, Pa., Coplay, Pa., Hannibal, Mo., and Hudson N. Y., and produce over 18,000,000 barrels of "Atlas" Portland Cement per year.

RAW MATERIAL. The Company's quarries of cement stone have been selected after careful examination, and furnish in perfect form the chemical ingredients necessary in the production of a true Portland cement.

LABORATORY TESTS. Throughout the entire works the greatest care is exercised to keep the product at its high standard, and as a final check all cement is submitted to the laboratory for chemical and physical examination before shipment. The care exercised in this regard has created a reputation for reliability among the users of cement who do not have the time or opportunity to test each shipment, and who consequently rely largely upon the manufacturer.

"Atlas" Portland Cement is of uniform strength and quality, and made from genuine Portland cement materials only. It contains no furnace slag.

PACKAGES. "Atlas" Cement is shipped in barrels, and in duck and paper bags. The barrels weigh 400 pounds gross or 380 pounds net. When shipped in bags the weight is 95 pounds per bag, four bags to the barrel.

The Cooperage Department is thoroughly equipped to produce a barrel which experience has proved to be the most suitable for cement. Each barrel is lined with a specially prepared paper as an extra guard against the possible absorption of moisture.



ST. CROIX DAM, ST. CROIX FALLS, WIS.

Continued on opposite page

PUBLICATIONS.

For the benefit of those who desire to make lasting improvements about the factory, farm or home, and as a guide to those who contemplate new construction, we have published the books noted below:

"Concrete Houses and Cottages," Vols. I. and II. These books contain many half-tone cuts (in tint) of photographs, together with floor plans of concrete houses ranging in price from \$1,000.00 to \$450,000.00.

The houses not only show a large variety of design, but are of several different methods of concrete construction. They are not imaginary sketches, but have been built and designed by the best architects in the country. It is the purpose of these books to show what has been and can be done in the way of large and small concrete houses, cottages and bungalows, and that the illustrations and plans may be of material assistance, not only in planning a future home, but in deciding upon the material to be used in its construction. Vol. 1, Large Houses; Vol. 2, Small Houses. Size 10 by 12 inches. Copies will be sent, express prepaid, upon receipt of \$1.00 per volume.

"Concrete Country Residences" (out of print). Price \$2.00.

"Concrete Cottages." A sixteen-page pamphlet showing photographs, floor plans and specifications for small concrete houses ranging in cost from \$1,500.00 to \$4,000.00. Copies sent free upon request.

"Concrete Construction about the Home and on the Farm." The 1909 edition of this book contains many half-tone cuts from photographs showing several new and practical uses of Portland cement about the home and on the farm, besides full directions for making and handling concrete; also many specifications, sectional drawings, and photographs of the smaller constructions that can be built by the layman without skilled labor. Copies sent free upon request. Cloth bound copies, 25 cents each.

"Reinforced Concrete in Factory Construction." A book containing—besides several general chapters on concrete, concrete aggregate, methods and materials for reinforcement—*ten chapters, giving detailed descriptions of ten concrete factories and warehouses* erected in various parts of the country by different systems. Photographs, sectional drawings and specifications were furnished by the engineers in charge of the work. This book, profusely illustrated (two hundred and fifty pages, size six and one half by nine inches), pamphlet bound, sent free upon request to architects, engineers, and manufacturers who contemplate building. Paper cover copies, delivery charges 10 cents. Cloth bound copies, 50 cents each.

"Concrete in Highway Construction." A text-book for highway engineers and supervisors. It contains complete descriptions, drawings and photographs of every phase of highway construction in which concrete plays a part. It is the most valuable book ever published on this subject. Sent free to engineers, architects, contractors, and highway officials. Price \$1.00.

"Concrete in Railroad Construction." A text-book for railroad engineers, containing detailed description, drawings and many photographs of railroad constructions in which concrete is used. This book will be sent free to railroad officials, engineers, and contractors. Price \$1.00.

"Concrete Garages." A valuable book for any one contemplating the construction of a garage. It contains photographs of many fireproof concrete garages, together with drawings and detailed descriptions as to how they may be constructed. Sent free upon request.

PANAMA
CANAL
CONSTRUCTION.

The United States Government has bought 4,500,000 barrels of "Atlas" Portland Cement for use in the construction of the Panama Canal, the largest order ever placed for Portland cement. The Canal is one of the biggest investments the nation ever made. No public work has been the object of so much criticism, public and private, official and unofficial. The engineers in charge were satisfied that "Atlas" Cement is the best, the purest, the finest, and the most uniform.



"ATLAS" PORTLAND CEMENT USED IN CONSTRUCTION

Continued from opposite page

DELAC PLASTER COMPANY

MANUFACTURERS OF

"Delac" Wire Plaster Board, Plaster Block, Wall Plaster, etc.

1 Madison Avenue

NEW YORK, N. Y.

MAIN OFFICE AND WORKS: MUMFORD, MONROE COUNTY, N. Y.

PRODUCTS.

"DELAC" WIRE PLASTER BOARD, "DELAC" PLASTER BLOCK, "DELAC" WOOD-FIBER PLASTER, "DELAC" NEAT PLASTER (for sand), "DELAC" PLASTER STUD, "DELAC" FINISHING COAT, etc

All products of the DELAC PLASTER CO. are made from gypsum rock, which is mined at the works and calcined in kettles. This insures a uniform grade of calcined plaster.

"DELAC" WIRE PLASTER BOARD. DESCRIPTION AND USE.

"Delac" Wire Plaster Board (patents pending) is a substitute for both lath and plaster, to be used on furring, stud partitions, and ceilings.

It is made from calcined plaster, sawdust, wood fiber and galvanized woven wire reinforcement, in sheets 36 inches high, and 32, 64, and 96 inches long, containing 8, 16, and 24 square feet, and in thicknesses of $\frac{1}{4}$, $\frac{1}{2}$, and $\frac{3}{4}$ -inch.

These boards are nailed to wood studs, joists, or furring strips, at 16-inch centers, with large headed galvanized nails, $1\frac{1}{4}$ inches to $1\frac{3}{4}$ inches long; or wood screws may be used and joints filled with "Delac" Wood Fiber Plaster. If the $\frac{1}{4}$ -inch board is used a coat of Fiber Plaster should then be applied; finishing with that, or a white finish can be added as in regular lath work. If the $\frac{1}{2}$ -inch or $\frac{3}{4}$ -inch boards are used no plaster is required for papering on wall, but a skim finish coat can be added if desired for painting or tinting. One side of board, prepared under heavy pressure, is as smooth as finished plaster. The other side is left rougher for plaster finish.

ADVANTAGES.

"Delac" Wire Plaster Board gives a result practically equal to metal lath and plaster, at a much less cost than wood lath and lime plaster. It contains no paper, the plaster surface giving a perfect bond to a wood fiber or Plaster of Paris finish, and owing to its composition it will stand the severest fire test of any equal thickness of gypsum plaster and wire lath.

The advantages and strength of the woven wire reinforcement, which is entirely embedded in the plaster, are self-evident.

"DELAC" PLASTER BLOCK.

"Delac" Plaster Block is of special design, and made of same material as the Plaster Board, but without wire reinforcement, in a standard size of 12 inches by 24 inches, and 2, 3, and 4 inches thick. The 2-inch block is solid, the 3 and 4-inch blocks being cored. Thicker blocks can be had, if desired. When laid up with, and plastered over with "Delac" Wood Fiber Plaster, these blocks make a fireproof partition that is light and sound proof and of economical cost. They will hold nails, can be cut or sawed, and are remarkably uniform in thickness.

"DELAC"
PLASTER
STUD

"Delac" Plaster Stud is intended for use with "Delac" Wire Plaster Board, for partitions not carrying weight, and give absolute fireproof qualities. The studs are usually made 2 inches by 4 inches, in lengths of 8, 9, and 10 feet, but may be had of other sizes and lengths if desired. They are made of same material as "Delac" Plaster Block, reinforced with steel rods, and will hold nails or screws to fasten board to them. Special galvanized angles are furnished to fasten to ceiling and floor.

"DELAC"
WOOD-FIBER
WALL
PLASTER.

"Delac" Wood-Fiber Wall Plaster is a gypsum plaster, containing only calcined plaster, wood fiber and a small amount of retarder. It is easily worked, gives a very smooth, tough and hard wall, and is the only kind of plaster that should be used with "Delac" Wire Plaster Board. It is just as suitable for wood or wire lath, but must be used according to directions furnished in each sack. It comes in either cloth or paper sacks of convenient size.

"DELAC"
NEAT
PLASTER.

"Delac" Neat Plaster (for sand) is the same as the "Delac" Wood Fiber Plaster, except that hair is used instead of wood fiber, and sand can be added in proportions of one part plaster and two parts sand. It must be used according to directions in each sack, to get best results. Furnished in paper and cloth sacks.

"DELAC"
FINISHING
COAT.
INFORMA-
TION.

"Delac" Finishing Coat is made for hard white finish, but may be used with sand. It contains no lime. Furnished in paper or cloth sacks, with directions enclosed.

Full information, samples, specifications for use, etc., will be given any architect, builder or material dealer by writing, telephoning or calling at our New York office.

SHIPPING
FACILITIES.

Mixed cars containing "Delac" Wire Plaster Board, "Delac" Plaster Stud, "Delac" Plaster Block and "Delac" Wood-Fiber or Neat Wall Plaster can be shipped at car load rates of freight, as all are made at the same plant.

CONSOLIDATED ROSENDALE CEMENT CO.

SALES OFFICES

50 Church Street
NEW YORK, N. Y.

EXECUTIVE OFFICES

CORNELL BUILDING, KINGSTON, N. Y.

MILLS

TOWN OF ROSENDALE, ULSTER CO., N. Y.

PRODUCTS.

Manufacturers of the following brands of genuine "ROSENDALE" CEMENT:
"BROOKLYN BRIDGE," "NORTON," "BEACH," "HOFFMAN," "NEWARK ROSENDALE," and
"XXX."



BRANDS OF "ROSENDALE" CEMENT

FACILITIES.

Our mills have a daily capacity of 10,000 barrels, and our storage facilities being ample we always have a large stock of cement on hand, and can ship all orders promptly.

TERRITORY COVERED BY OUR OPERATIONS.

The situation of our mills on tide-water gives us the advantage of both rail and water connections, and the territory we cover includes the entire Middle, Eastern and Southern States, and the West Indies.

GENERAL INFORMATION.

We guarantee that our brands of Natural Cement are genuine "Rosendale," manufactured in the town of Rosendale, Ulster County, N. Y., and that they are the finest ground Natural Cement made. Their universal use on United States Government work, on many State and Municipal contracts, as well as on numerous private undertakings, has given the genuine "Rosendale" Cement a reputation that is unequalled by any other brand of Natural Cement.

FORM OF SPECIFICATION.

Architects and others specifying genuine "Rosendale" Cement should embody the name of the desired brand in their specifications, as—

"Brooklyn Bridge," "Norton," "Beach," "Hoffman," "Newark Rosendale," or
"XXX."

SAMUEL H. FRENCH & COMPANY

Sole Agents "Dexter" Portland Cement

York Avenue, Fourth and Callowhill Streets
PHILADELPHIA, PA.

WORKS
NAZARETH, PA.

PRODUCT.

"DEXTER" PORTLAND CEMENT.

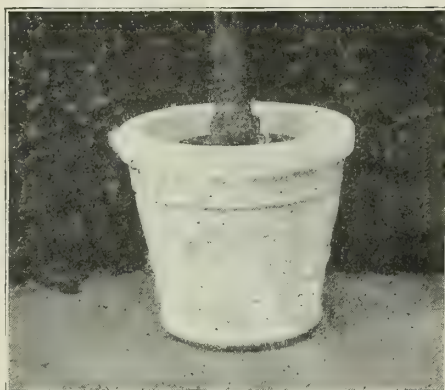
DESCRIPTION.

Light gray in color and free from yellowish blotches and bluish cast.

Owing to the method of grinding and the resulting fineness it shows enormous and continuous strength with sand after twenty-four hours. Medium slow in set.

ANALYSIS.

A test and analysis sheet, signed by the chief chemist, guaranteeing the cement, is mailed to the purchaser of every car.



USAGES IN GARDEN FURNITURE AND POTTERY MADE WITH "DEXTER"



DRINKING FOUNTAIN—EXAMPLE OF BEAUTIFUL ARTSTONE MADE WITH "DEXTER"

Designed by JOHN DONALDSON

OUTPUT.

Approximately 1,000,000 barrels annually.

SPECIFICATIONS.

"Dexter Concrete" in your specifications means "Dexter" Portland Cement used according to methods prescribed, and with water and aggregate called for, by the American Society of Testing Materials, and the American Society of Civil Engineers. Full details of proper methods for placing cement mixtures in work of every character will be mailed upon application.



CONCRETE BUILDING MADE WITH "DEXTER"

BALLINGER & PERROT, Architects

SOME PLACES WHERE USED.

Delaware, Lackawanna & Western Railroad Company
Boston Navy Yard, Charleston, Mass.
Portsmouth Navy Yard, Portsmouth, N. H.
Herr & Co., Concrete Warehouse, Lancaster, Pa.
York Felt & Paper Co., Concrete Factory Buildings, York, Pa.
Spring Grove Reservoir, York Co., Pa.
Pennsylvania Railroad, Subways at Swissvale and Bessemer, Pa.
Norfolk & Southern Power House, Bayville, Va.

Pennsylvania Railroad, Concrete Stairways and Retaining Walls at Swissvale, Pa.
Chalfont Apartments, Cleveland, Ohio
Hotel Montclair, Montclair, N. J.
Northside Baptist Church, Richmond, Va.
Lehigh and Hudson Railroad Shops, Warwick, N. Y.
Queensboro Real Estate Exchange, Jamaica, N. Y.
Hillside Garage, Richmond Hill, N. Y.

THE HARTFORD PULP PLASTER CORPORATION

73 Walnut Street
HARTFORD, CONN.

PRODUCT. Manufacturers of ELASTIC PULP PLASTER.

DESCRIPTION. Elastic Pulp Plaster contains no sand or lime. One of its most important parts is Fibrous Wood Pulp, made by a patented process that retains the fiber and strength of the wood.

This fibrous wood gives to the plaster elasticity, toughness, lightness and strength, and imparts to the plaster the many known valuable properties of the wood itself.

The other ingredients give hardness, firmness, smoothness, durability, and render it absolutely fireproof. The selecting, testing, weighing and mixing is mathematical perfection, and is the height of skill and economy in plaster making, the combination making a plaster that has no equal.

POINTS OF
Y SUPERIORITY.

Freezing does not affect Elastic Pulp Plaster. Being waterproof it does not fall off the lath when water pipes burst and flood the ceiling. Being all prepared for use (the addition of water only being required), no chance for mason to overload with sand. No delay of four weeks for mortar to ripen as with lime plaster. No burning up lawns and trees by lime, as no lime is used. No burning up of fiber by lime, as hair is burned in lime plasters. No blocking of travel in street by mixing bed; one tender can keep two plasterers busy, as plaster can be mixed in room where it is to be used, thus saving cost and labor on plastering. Being elastic instead of brittle (as all sand mortars are), Elastic Pulp Plaster will dent like wood when struck or jammed, instead of breaking. Doors, windows, pipe-holes, etc., are easily cut through, for it is as easily sawed as a wooden partition, and can be nailed like wood. It is a non-conductor of electricity and thereby prevents short-circuiting. This plaster is half the weight of other plasters and three times as strong. It adheres equally well to brick, stone, common lath, wood or iron. It contains no acids or chemicals to corrode iron, metal lath, nails, or to injure the workman's hands. Elastic Pulp Plaster does away with the necessity of expensive metal or wood ceilings. It will not burn or disintegrate by fire, thus being a perfect protection for wood frame-work and lath. It will not under any conditions pit or blister. This plaster is a non-conductor of heat and cold, thereby making the building warmer in winter and cooler in summer. It dries in less than one fourth the time required for ordinary mortar, shortening the time of completing a building and reducing the cost correspondingly. Carpenters can follow the plasterer at once without dislodging the plaster, or having woodwork swelled. The lightness of the plaster greatly lessens the weight of the building, reducing the likelihood of settling, etc. It saves repairs on wall paper, decorations and replastering, as it will not fall off, discolor, crack or crumble.

HOW PACKED.

Elastic Pulp Plaster is put up in heavy paper sacks, each containing 80 lbs., 25 sacks to the ton, making a package easily handled and doing away with the nuisance of caring for and returning empty bags.

INFORMA-
TION.

Architects are requested to write for information.

REFERENCES.

A few of the buildings in Hartford, Conn., on which Elastic Pulp Plaster was used:

Washington Street School
New Park Avenue School
Parochial School, Grace Street
College Building
St. Mary's Home
Public High School Addition
Danish Church

Hotel Garde
Phoenix Bank
Scientist Church
Parsonage, Asylum Avenue
Fire Houses (three)
Hartford Club
Trinity College Alterations

Also

The Maxwell and Sykes residences, Rockville, Conn.

The Westover School, Middlebury, Conn.

KEYSTONE PLASTER CO.

16 South Broad Street
PHILADELPHIA, PA.

MILL
FOOT OF JEFFRIES STREET
CHESTER, PA.

PRODUCTS. We are manufacturers of "ADAMANT" WALL PLASTER, "VICTOR" WALL PLASTER, "KEYSTONE" HARD WHITE FINISH, "KEYSTONE" CALCINED PLASTER, "NOVA SCOTIA" LAND-PLASTER, PLASTER BLOCK, and all other GYPSUM PRODUCTS.

DESCRIPTION. **GENERAL**—Our plasters are made from the purest Nova Scotia Gypsum. Frequent fire tests have proved the value of Gypsum products of all kinds as fire resistants. Gypsum being the basis of these plasters, they add greatly to the fire resisting qualities of a building.

"Adamant" Wall Plaster (ready mixed) has the extra strength and density that is often essential for decorative purposes.

"Victor" Wall Plaster (ready mixed) successfully meets the demand for a first-class hard plaster at a moderate price, for use on wood or wire lath, tile, concrete, brick, stone, or plaster block with the advantage that nothing need be added by the plasterers but water. We furnish "Victor" neat (without sand) if desired.

Both these brands of plaster set within twenty-four hours after being applied, and, therefore, the drying process being one of crystallization rather than evaporation, finishes can, without detriment, be applied much more quickly, and valuable saving in time be effected.

Their strength, density and elasticity render them less liable to cracking, breaking or any other casualty to which ordinary plaster walls are subject.

ADAPTABILITY. The plasters made by the KEYSTONE PLASTER CO. are suitable for interior work on every class of building, either in the city or country, and can be applied by any competent workman, in the same manner and with much greater ease than common lime-and-sand mortar.

COST. The cost of "Victor" Wall Plaster on the wall is but slightly more than that of good lime mortar, ordinarily about 5 per cent.

The cost of "Adamant" Wall Plaster on the wall exceeds that of "Victor" Wall Plaster by about 5 per cent.

Terms and payments are arranged with customers. All inquiries will be promptly answered.

SCOPE OF MARKET AND FACILITIES OF MANUFACTURE. Our mill, one of the largest in the United States, is equipped with the most improved machinery. Its situation affords excellent facilities for shipping, either by rail, over two trunk lines, whose sidings reach our doors, or by water from our own wharves to any point in the New England, Middle or Southern seaboard States. As we always carry a large supply of our plasters in stock, orders of any size can be filled at all times and delivered without delay.

SPECIFICATIONS AND CO-OPERATION. Specifications can be written "'Adamant' Wall Plaster or 'Victor' Wall Plaster as per directions of the KEYSTONE PLASTER CO.," or we will supply specification forms for any class of work on mail or personal application.

We will be pleased to furnish special information concerning any point desired.

REFERENCES. Our plasters have been used on the White House, the Capitol Building and many United States Government Buildings in Washington; the Capitol Building at Harrisburg; the City Hall in Philadelphia, and upon such a large number of prominent office buildings, business houses, factories, residences, etc., all over the East that we ask those desiring further information to write us for list, as we can not detail in our space here.

J. B. KING & COMPANY

MANUFACTURERS OF

"King's Windsor" Cement Dry Mortar, Calcined Plaster, etc.

No. 17 State Street
NEW YORK, N. Y.

BRANCH OFFICES

PHILADELPHIA, PA., JOHN H. HOLMES, Mgr., 24 South 7th Street
BUFFALO, N. Y., CHAS. C. CALKINS, Mgr., 322 East Genesee Street

BOSTON, MASS., WINDSOR CEMENT Co., 161 Devonshire Street
NORFOLK, VA., ARTHUR P. JONES

PRODUCTS.

"KING'S WINDSOR" CEMENT (neat) and DRY MORTAR (sanded), "SUPERFINE WINDSOR" CEMENT (for finishing), "DIAMOND" and "HILLSBOROUGH" BRANDS CALCINED PLASTER (all grades), PULP PLASTER, LAND PLASTER, FLYINGS, MARBLE DUST, MARBLE FLOUR, TERRA ALBA, "PERFECT" COLD-WATER PAINT, "FIBROUS" PLASTER BOARD, "J. B. WHITE & BROS." KEENE'S CEMENT, etc.

"KING'S WINDSOR" CEMENT DRY MORTAR.

It is well known now, as also it was hundreds of years ago, that whatever matrix or cementitious materials are employed in making artificial marble, mortar, stucco, or plaster for walls and ceilings, the best results can be attained only by using thoroughly *washed*, sharp, silicious bank sand.

Hence, in our aim to provide the best possible material for plastering walls and ceilings, we employ in the manufacture of our "Windsor" Asbestos Cement Dry Mortar only this quality of sand, machine-screened and so thoroughly washed that it ceases to discolor the wash water, after which it is rendered anhydrous by kiln drying—in conformity with the old adage, "Like sand, like mortar."

We are the only concern in the United States that washes sand for use in the manufacture of hard plaster for walls and ceilings.

ADVANTAGES OF "KING'S WINDSOR" CEMENT DRY MORTAR.

It saves time. It does not chip or pit and can be finished in any way that ordinary plastering can. It makes walls and ceilings more elastic, thus avoiding unsightly cracks; also, prevents falling ceilings by its great adhesiveness and strength. For additions, alterations, repairs and patching it can not be beaten and makes an excellent bond even to lime mortar. Frost will not injure the work after it has been on from twelve to twenty-four hours. The asbestos used renders the material a protection against fire and deadens sound. It is vermin and germ proof. It is air-tight and makes a house much warmer. It can be applied to *wire, iron, or metal lathing without rusting*. Neither will it rust masons' tools. It will not discolor decorations. The most delicate tints in either water or oil colors can be applied with perfect safety. It dries out from two to three weeks quicker than lime mortar, and carpenters can follow plasterers in a much shorter time. Our Superfine finish gives a very hard, smooth, white and elastic surface.

BRIEF FORM OF SPECIFICATION FOR "KING'S WINDSOR" CEMENT.

Beyond determining which form of our materials shall be used, viz: whether "King's Neat Windsor" Cement or "King's Windsor" Cement Dry Mortar, and the kind of finish, it is quite unnecessary for the architect to be very explicit in directing the mason in its use, provided he includes in his specifications that "The said materials must be applied in strict conformity with instructions of the manufacturers of the same as found with each and every package thereof."

THE NATIONAL LIME AND STONE CO.

Manufacturers of "Monarch" Hydrated Lime

CAREY, OHIO

PRODUCTS.

"MONARCH" HYDRATED LIME, for Building Purposes, HYDRATED LIME for Agricultural Purposes, CRUSHED STONE for Concrete, Road Building, Railroad Ballast, Furnace Flux and other uses.

"MONARCH" HYDRATED LIME.

"Monarch" Hydrated Lime can be used for every purpose for which lump lime can be used and, owing to absence of waste, will carry more sand for bulk than lump lime. Analysis of the stone from which it is made shows sufficient magnesium oxide to make a free spreading and cool working product and also sufficient calcium carbonate to make a mortar of more than average tensile strength.

"Monarch" Hydrated Lime is packed in paper sacks each containing forty pounds, and if kept dry will not swell and burst and will keep until used as it will not air-slack.

FACILITIES.

We are centrally located on three lines of railroad and have excellent shipping facilities, insuring prompt delivery.

USES.

"Monarch" Hydrated Lime, in addition to being accepted as the best finishing lime for plastering, is used in chemical and manufacturing processes where a dry, inert, thoroughly hydrated and carefully seasoned lime is required. It is used as a fertilizer and disinfectant, for glass making, paper making, powder mills, pigment and varnish works and tanneries.

SAVING IN COST.

"Monarch" Hydrated Lime costs less, pound for pound, than finishing lump lime.

SAVING IN LABOR AND TIME.

"Monarch" Hydrated Lime requires no screening. The screening and running off of lump lime to make a putty requires labor and time. By using "Monarch" Hydrated Lime this time and labor are saved. It can be wet up near where the wall is to be white coated or cornice run, making it unnecessary to have the putty carried to the room where the finishing is to be done. It spreads easier and requires less troweling than lump lime. It only has to be soaked from fifteen to twenty hours as against one week for lump lime.

SAVING IN HANDLING.

"Monarch" Hydrated Lime is very fine, fineness making it plastic and smooth working. To obtain best results every particle must be thoroughly wet. For finishing, we recommend that it stand in plenty of water for twenty hours.

DIRECTIONS FOR USE.

WHITE TROWEL OR FINISHING COAT—For each hundred square yards including average openings, soak five sacks at least twenty hours before using, and about thirty pounds of calcined plaster will be sufficient to gauge same under usual conditions.

MORTAR FOR SETTING STONE—One part "Monarch" Hydrated Lime added to five parts clean, sharp sand. Mix dry, and add sufficient water and mix thoroughly.

MORTAR FOR LAYING PRESSED BRICK—One part "Monarch" Hydrated Lime to four parts weight of clean, sharp sand. Mix dry then add water, mixing thoroughly.

FOR WHITEWASH.

"Monarch" Hydrated Lime will make an excellent whitewash by thorough mixing with water, and is ready for immediate use.

The following preparation is used by the Lighthouse Board for wood, brick or stone work, and it is almost as durable as oil paint and much cheaper: To 50 pounds of Hydrated Lime, made into a paste with boiling water, add one peck of salt previously dissolved in warm water; 3 pounds of rice, boiled to a thin paste and stirred in while hot; also, one half pound of powdered Spanish whiting, and a pound of clear glue, dissolved in warm water. Mix the ingredients well together and let the mixture stand for several days. When ready to apply, heat and apply as hot as possible with brush or spray.

SPECIFICATIONS.

Architects and Engineers, to prevent the substitution of an inferior article, should specify "Monarch" Hydrated Lime manufactured by THE NATIONAL LIME AND STONE CO., of Carey, Ohio.

NORTHAMPTON PORTLAND CEMENT CO.

SALES OFFICE

City Investing Building, 165 Broadway
NEW YORK, N. Y.LOCAL AND LONG DISTANCE
TELEPHONE CONNECTIONWORKS
STOCKERTOWN, PA.

BRANCH OFFICES

PHILADELPHIA, PA., 1106 Land Title Building
NORFOLK, VA., Dickson Building
CLEVELAND, OHIO, 324 Garfield Building

BRANCH OFFICES

BOSTON, MASS., 486 Albany Street
BALTIMORE, MD., 546 Monument Street, East

TRADE-MARK

DISTRIBUTERS FOR RHODE ISLAND AND CONNECTICUT: WALDO BROS., 102 Milk Street, Boston, Mass.

PRODUCTS. "NORTHAMPTON" PORTLAND CEMENT.

QUALITY. One grade. One quality. Uniform and progressive in strength.

SUPPLY. Increased capacity, 8,000 barrels daily.

ADAPTABILITY. Unequaled for reinforced-concrete construction, sidewalks and cement blocks.

ENDORSE- On the market ten years. Extensively used in United States Government work, by
MENT. prominent railroads and principal municipalities.
Send for Booklet.

TESTS. Copy of test made by the Pittsburg Testing Laboratory, April 15, 1909:

NEAT CEMENT			1 PART CEMENT	3 PARTS SAND
24 hours	7 days	28 days	7 days	28 days
400	697	840	199	302
409	697	857	201	306
430	718	884	209	328
Average 413	704	860	203	312

GAIN. Note the gain in strength. Our cement never recedes.



MONOCACY BRIDGE, "IN THE HEART OF THE LEHIGH VALLEY," NOW BUILDING
Northampton Portland Cement Used Exclusively in Construction

REFERENCES.

Dam No. 11, Ohio River, United States Government
Sea Wall, United States Government, Fort Hancock, N. Y.
Metropolitan Building Tower, New York, N. Y.
Prudential Life Insurance Co. Building, Newark, N. J.Fifth Avenue Building, New York, N. Y.
City Investing Building, New York, N. Y.
Bayway Refinery, Standard Oil Company, Bayway, N. J.

DELIVERY.

Our specialty—*Prompt Deliveries.*

ROCK PLASTER MANUFACTURING COMPANY

Wall Plasters, Plastering Materials, Marble Dust and Mortars

Metropolitan Tower, 1 Madison Avenue

NEW YORK, N. Y.

WORKS

NEW YORK, N. Y., 150th Street and East River
PORT WASHINGTON, LONG ISLAND, N. Y.

GYPSUM QUARRIES

AMHERST POINT, NOVA SCOTIA

STABLES

NEW YORK, N. Y., Nineteenth Street and East River

PRODUCTS.

Manufacturers of ROCK PLASTER (sanded and neat), ROCK PLASTER SUPERFINE FINISH, ROCK PLASTER COMPLETE FINISH, "BLUE SEAL" ROCK WALL (Neat Cement Plaster), MACHINE-MADE LIME MORTAR (wet), "RIVERSIDE" PLASTER OF PARIS, PORTLAND CEMENT MORTAR (dry).

ROCK PLASTER.

Rock Plaster is a quick setting, hard plaster, supplied to the building in a dry state, ready for use by simply adding water. The different ingredients that enter into its manufacture are carefully selected, prepared in a dry state, weighed and thoroughly mixed by machinery. Furnished as follows: *Lath Mortar* or *Scratch*, for use on wood lath; *Special Scratch*, for metal or wire lath; *Browning*, for brick or terra cotta walls. These are ready mixed, put up in bags, and require only water to be added at the building.

SUPERFINE FINISH.

This is a smooth or trowel finish, and can also be used for running cornices. Requires the addition of one half well-seasoned lime putty at the building.

COMPLETE FINISH.

This is a smooth or trowel finish. Requires only water to be added at the building.

"BLUE SEAL" NEAT CEMENT PLASTER.

Put up in bags and barrels. This material requires the addition of clean, sharp sand (free from loam) to make it ready for use.

MACHINE-MADE LIME MORTAR (WET).

For deliveries in Greater New York only. This is the highest grade of Lime Mortar made in a modern way by machinery, and delivered to the building in a wet plastic condition ready for use. The best grade of lime is used in its manufacture, the lime being thoroughly slacked, and then mixed by machinery in the proper proportions with clean, sharp sand and fiber. It is, therefore, uniform in quality. It does away with the uncertain quality of mortar mixed on the job; does away with blisters; in short, is an up-to-date Lime Mortar.

Furnished as follows: *Scratch Mortar*, for plastering; *Brown Mortar*, for plastering, and *Brick Mortar*, for bricklaying and tile setting.

"RIVERSIDE" PLASTER OF PARIS.

This plaster is made from the finest grade of imported Gypsum Rock, and for the past eighteen years has been very extensively used throughout this country and abroad. Furnished as follows: *Finishing or Masons' Plaster*; *Casting or FFF Plaster*; *Dental Plaster*.

PORTLAND CEMENT MORTAR (DRY).

This is a mixture of Portland Cement and sand in different proportions, made for deliveries in Greater New York, Jersey City, Hoboken and Newark. By carefully weighing the proportions of Portland Cement and sand and then mixing them in a dry state by machinery, it does away with the uncertainty of mixing at the building, and affords a very much greater tensile strength than when Portland Cement and sand are mixed in a wet state.

Furnished in the following proportions: 1 of cement to 3 of sand; 1 of cement to 4 of sand; 1 of cement to 5 of sand. Put up in bags. Requires only water to be added at the building.

Used for stone setting, bricklaying, setting terra cotta partitions, outside stucco work.

ROCKLAND-ROCKPORT LIME CO.

ROCKLAND, ME.

BRANCH OFFICES

NEW YORK, N. Y., Fuller Building
BOSTON, MASS., 24 Milk Street

WAREHOUSES

MESEROLE ST. AND MORGAN AVE.
GREENPOINT AVE. AND NEWTOWN CREEK
BROOKLYN, N. Y.

PRODUCTS.

"ROCKLAND-ROCKPORT" COMMON and FINISHING LIME, "PINE CONE" HYDRATED LIME, and "ROCKLAND-ROCKPORT" AGRICULTURAL LIME.

QUALITY.

Manufacturers of the Lime of Quality—established over a century.

BRANDS.

"Rockland-Rockport No. 1" is a high-grade common lime and is packed in two sizes, 200 and 300 pounds per barrel. "Rockland-Rockport" Lump Lime is a finishing lime and is packed in 200- and 300-pound barrels. "Rockland-Rockport" Selected Lime is also a finishing lime and is packed in 350-pound barrels. "Pine Cone" Hydrated and "Rockland-Rockport" Agricultural Lime are packed in 100-pound bags.

"ROCKLAND-ROCKPORT NO. 1," OR COMMON LIME.

"Rockland-Rockport No. 1" or Common Lime is used for brick work and in plastering for scratch and brown coats. For brick work it is unexcelled. The sand capacity is immense. Produces a rich mortar with great spreading qualities, thus laying more bricks per barrel than other limes. Saves labor and makes a strong, hard wall that will stand the test of time.

"ROCKLAND-ROCKPORT" LUMP AND SELECTED LIMES.

"Rockland-Rockport" Lump and Selected Limes are used principally for finishing, although sometimes used for scratch and brown in plastering and for brick work. Run it up to-day—carry to-morrow. Does not shrink in stiffening, has great spreading qualities, leaves no fire cracks, gives a strong, hard and white finish.

It's quality that counts from start to finish, and there is nothing "just as good."

"PINE CONE" HYDRATED LIME.

"Pine Cone" Hydrated Lime decreases the permeability of reinforced concrete, increases the durability and tensile strength, and diminishes the cost of labor and material. It is used in the construction of dams, reservoirs, aqueducts, sewers, etc.

The following mixture was used for the conduit of the Stony Brook sewer, Boston, Mass.: 1 part cement, $2\frac{1}{2}$ parts sand, $4\frac{1}{2}$ parts stone, 12 per cent "Rockland-Rockport Pine Cone" Hydrated Lime. The dimensions of the conduit are: Inside diameter, 16 x 20 ft.; the sides 3 ft. 6 in.; center of arch, 14 in.

AGRICULTURAL LIME.

"Rockland-Rockport" Agricultural Lime is used for fertilizing purposes.

SELLING DISTRICTS AND FACILITIES.

Home office, Rockland, Me., covers selling district of Maine, New Hampshire, and Vermont; Boston office covers Massachusetts and Rhode Island; New York office, all other points. We can make rail shipments from Rockland, Boston, and New York to any point. The New York markets' deliveries are made from barges. We have our own fleet of barges, tugs, lighters, and sailing vessels, and also two warehouses in Brooklyn.



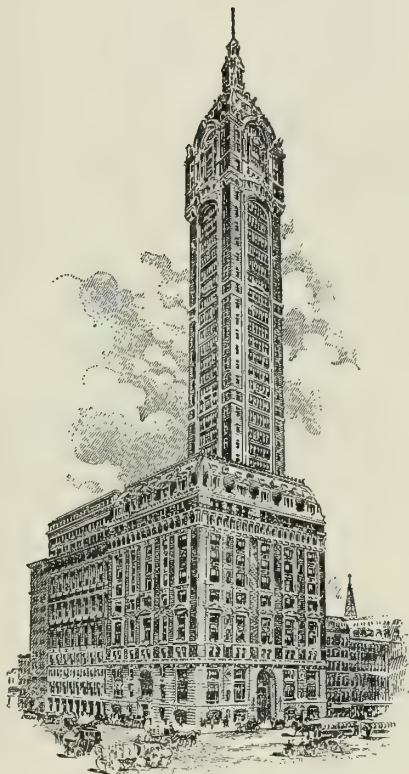
TRADE-MARK



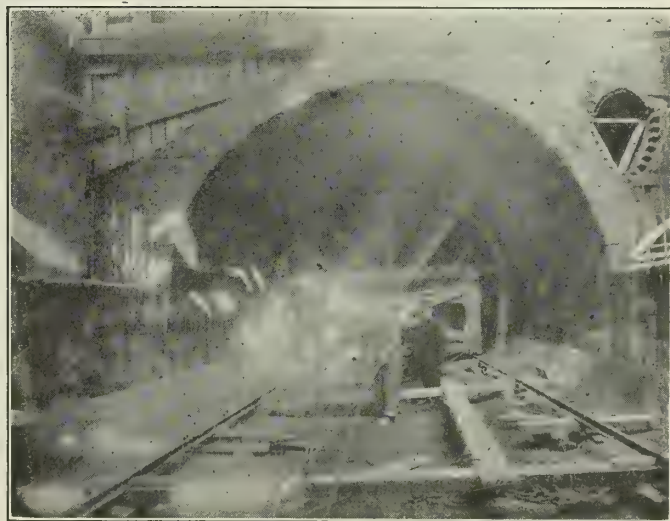
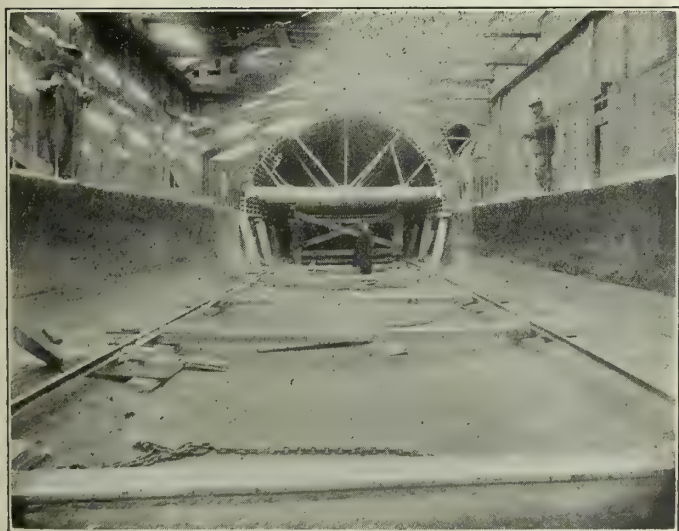
TRADE-MARK



THE METROPOLITAN TOWER,
NEW YORK, N. Y.



THE SINGER TOWER,
NEW YORK, N. Y.



CONDUIT OF THE STONY BROOK SEWER, BOSTON, MASS.

Two views, showing process of construction

WHERE USED.

The accompanying illustrations are examples of notable buildings and construction where "Rockland-Rockport" Lime was used.

In addition to these the following buildings in New York City comprise some representative work:

Addition to Hotel Astor; Public Library 40th to 42d Street, 5th to 6th Avenue; New Theater, 63d Street and Central Park West; and on practically all the large buildings and important work in the city of New York.

STANDARD PORTLAND CEMENT COMPANY

Brown-Marx Building
BIRMINGHAM, ALA.

WORKS
LEEDS, ALA.

PRODUCTS.

Manufacturers of "STANDARD" PORTLAND CEMENT.

QUALITY.

"Standard" Portland Cement is unequaled in quality. Manufactured from the finest raw materials.

SHIPPING
FACILITIES.

The plant is located on the Southern Railway and the Central of Georgia Railway, enabling us to give prompt deliveries.

TERRITORY.

Alabama, Florida, Georgia, South Carolina, North Carolina, Tennessee, Mississippi and Louisiana.

CAPACITY.

One half million barrels annually.

DESCRIPTION.

"Standard" Portland Cement is specially adapted for reinforced-concrete construction, sidewalks, stucco and ornamental work, and all classes of concrete construction where the requirements are exacting. It is the lightest-colored cement on the market and is ground extremely fine, 85 per cent passing through the 200 mesh screen. It is guaranteed for strength, uniformity and durability, and to meet all Government and standard requirements.



UNITED STATES GOVERNMENT POST OFFICE, ATLANTA, GA.

REFERENCE.

A few of the representative jobs where "Standard" Portland Cement has been used:

T. C. I. & R. R. Co., Ensley, Ala., 110,000 barrels
United States Government Post Office, Atlanta, Ga., 3,000 barrels
"The Advertiser" Building, Montgomery, Ala., 2,000 barrels
Brown-Marx Building, Birmingham, Ala., 3,000 barrels
Roden Coal Co., Marvel, Ala., 3,000 barrels
Southern Railway Co., 2,000 barrels

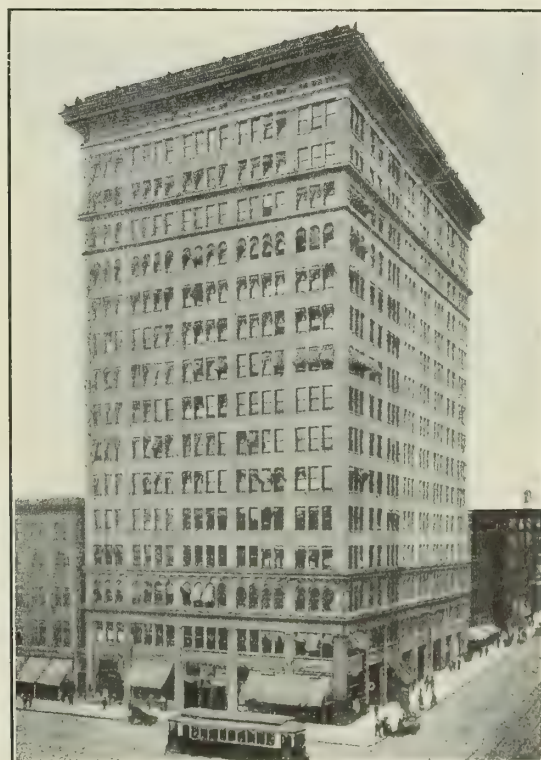
Alabama Great Southern Railroad Co., 2,000 barrels
Central of Georgia Railway Co., 2,000 barrels
City of Pensacola, Florida, 25,000 barrels
City of West End, Alabama, 20,000 barrels
City of Birmingham, Alabama, 3,000 barrels
City of Atlanta, Georgia, 5,000 barrels
City of Tuscaloosa, Alabama, 10,000 barrels



THE ADVERTISER BUILDING, MONTGOMERY, ALA.
2,000 barrels of "Standard" Portland Cement used



FARLEY BUILDING, BIRMINGHAM, ALA.
1,000 barrels "Standard" used



BROWN-MARX BUILDING, BIRMINGHAM, ALA.
3,000 barrels "Standard" Portland Cement used in
this building

UNITED STATES GYPSUM CO.

MANUFACTURERS OF

Wall Plasters and the Products of Gypsum

NEW YORK

CLEVELAND

CHICAGO

MINNEAPOLIS

SAN FRANCISCO

BRANCHES

NEW YORK, N. Y., 1123 Broadway
PEORIA, ILL., 100 Cedar Street

KANSAS CITY, MO., Long Building

MILWAUKEE, WIS., 480 Virginia Street
SUPERIOR, WIS., Foot of Tower Avenue

PRODUCTS.

CEMENT WALL PLASTER of the following brands: "ALABASTER," "BAKER," "BIG FOUR," "DIAMOND," "ELDORADO," "FLINT," "GRANITE," "IMPERIAL," "IVORY," "MINERAL CITY," "ROCK," "ZENITH," "PYRAMID."

PREPARED WALL PLASTER of the following brands: "ADAMANT," "ALABASTER," "BAKER," "BIG FOUR," "DIAMOND," "FITZGERALD," "FLINT," "GRANITE," "IMPERIAL," "IVORY," "ROCK," "ZENITH."

WOOD-FIBRE WALL PLASTER of the following brands: "ALABASTER," "BAKER," "FLINT," "GRANITE," "IVORY," "ROCK," "ZENITH."

"U. S. G. BOND" PLASTER, for Concrete Surfaces.

"ADAMANT" EXTERIOR PLASTER, for Stucco Architecture.

"UNIVERSAL" PLASTER FINISH.

"SILICO," a Sand Finish.

"CEMENTICO" WALL COATING.

"U. S." GYPSUM HOLLOW TILE, a fireproofing material for Partitions, etc.

"GYPSINITE," a fireproof studding instead of wood.

"UNIVERSAL"
PLASTER
FINISH.

"Universal" Plaster Finish—a new "no lime" finish coat. Developed to give the builder a finish free from the imperfections of lime putty. "Universal" Plaster Finish makes a beautiful glossy surface, hard and durable, like polished marble. It contains no lime, will not injure the most delicate wall tints, and gives better results than the best lime. "Universal" requires no slaking or preparation of any kind; just mix it with water and apply. Under average conditions 500 pounds will finish 100 square yards.

"ADAMANT."

"The Perfection of Wall Plaster." Write for complete printed specifications for application of "Adamant" base coats and prepared finishes, of which we manufacture a full line for all purposes.

"ADAMANT"
EXTERIOR
PLASTER.

A plaster for stucco exteriors. Twenty years' practical demonstrated success. Possesses the strength of Portland, plus plasticity and adhesiveness; machine mixed; ready for use, water only to be added.

"U. S. G.
BOND."

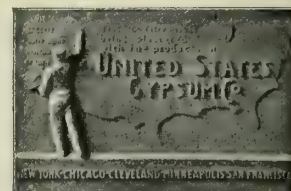
A plaster that may be applied direct to concrete walls and ceilings, and will not fall off if specifications and directions are followed. Used with perfect results in many prominent concrete buildings; machine mixed; ready for use, water only to be added. Must be applied as directed by manufacturers.

"GYP-
SINITE."

A Fireproof Studding composed of two well-seasoned, straight-grained nailing strips, embedded in gypsinite concrete. The standard sizes are 3 x 3 inches, in lengths from 8 to 12 feet.

It is handled and erected in the same manner as wooden studding, set on 16-inch centers, using plates and sills of same material.

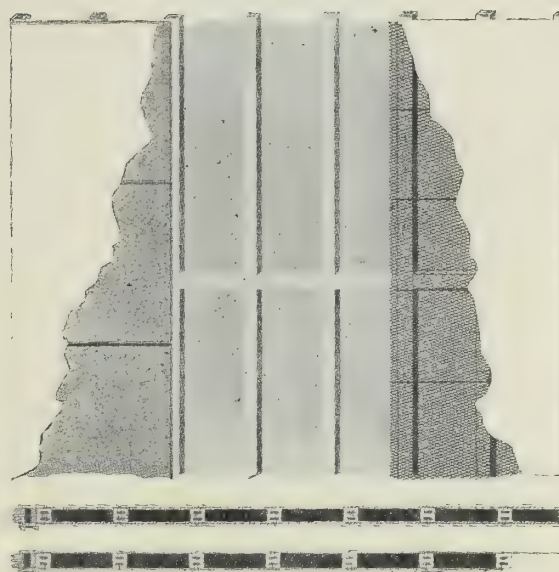
Sackett Plaster Board or Metal Lath on "Gypsinite," plastered in the usual manner, completes a light-weight, hollow, fireproof partition. Being hollow, it forms a dead air space, which is the best non-conductor of sound, allows concealment of pipes and wires and



TRADE-MARK

weighs from 12 to 15 pounds per square foot, finished. Lighter than fireproof blocks or solid partitions of equal thickness. Forms its own door frame, gives perfect nailing for door jambs, casings, picture mouldings, etc. Easily and quickly erected, cut with saw, forms strong, stiff, straight partition. Means economy in plaster and in applying same. Will carry all weight imposed in ordinary frame dwellings. If necessary, light structural steel can be enclosed within partitions. Bridging is required only where partitions exceed 10 feet 6 inches in height.

Light galvanized iron sockets are used for securing studding to sills and plates, and are more economical than toe-nailing.



"GYPSINITE," PLASTER BOARD AND METAL LATH

SPECIFICATIONS FOR
U. S. G.
CEMENT
PLASTERS.

Grounds—For wood lath, to be $\frac{3}{4}$ inch.
For brick or tile, to be $\frac{1}{2}$ inch.
For wire lath or expanded metal, to be $\frac{3}{4}$ inch.
For Sackett Plaster Board, to be $\frac{3}{4}$ inch.
Wood Lath—Use a good grade of wood lath, free from sap or bark. Green lath are best; full seasoned lath are too dry. Must be well nailed; not less than four 3d. common nails to each 4 feet of lath, driven well home.
Mortar—To be cement plaster of any of the following brands: "Alabaster," "Baker," "Eldorado," "Flint," "Granite," "Imperial," "Ivory," "Rock," or "Zenith," and to be applied under instructions furnished by the manufacturers.
For wood or wire lath, or Sackett Plaster Board, mix two parts of clean, sharp, dry sand with one of plaster.
For brick or tile walls, mix three parts of sand with one of plaster.
Mixing: Put in first a layer of sand, then one of plaster. Hoe dry from one end of the box to the other, and back again, working sand and plaster thoroughly together. When thoroughly mixed, the material should be in the *high end* of the box.
Use only clean sand, free from loam or soil.
Do not mix sand and plaster until ready to add the water.
Never retemper plaster after it has commenced to set.
Applying on wood lath walls and ceilings:
For two-coat work, apply the base coat in the usual way, until time to darby, then sprinkle sparingly with water. Darby lightly, thus not forcing the mortar through the keys of lathing. Do not apply more at one time than you can darby before material begins to set.
For three-coat work, walls and ceilings to receive a scratch coat, and after it has set firm and hard (but before it is dry) apply a second coat of browning, bringing it to a level surface ready to receive the finishing coat.
For Wire or Metal Lath—Apply a scratch coat, lightly covering the lath. After the first coat has set firm and hard, apply the second coat, bringing it to a true surface, ready to receive the finishing coat. In all cases darby lightly and use water sparingly.
For Brick or Tile Walls—First wet the walls thoroughly to reduce the suction, and apply sufficient material to bring wall to a true and even surface, ready for the finish.
For Sackett Plaster Board—Do not wet the boards before applying plaster. Adhesion between the plaster and dry board is perfect. Apply the same as on wood lath.
* *For "Universal" Finish*—Scratch or rub well into the brown coat a thin coat of "Universal" Finish, which is tempered rather thin. When stiffened up or starting to set, lay on another coat of finish mortar tempered a little stiffer, and trowel up to a smooth surface retroweling as many times as necessary after mortar has commenced to set, the last troweling to be made after it has pretty thoroughly set, in order to obtain the glossy finish.

SPECIFICATIONS FOR
U. S. G.
PREPARED
WALL
PLASTERS.

Grounds—To be $\frac{3}{4}$ inch for wood lath; $\frac{1}{2}$ inch for brick or tile; $\frac{3}{4}$ inch over face of wire lath; $\frac{3}{4}$ inch for Sackett plaster board.
Wood Lath—To be white pine, spruce or yellow poplar, free from knots, sap or bark. To be spaced $\frac{1}{4}$ -inch apart and well nailed. If lath are dry they should be liberally sprinkled with water before mortar is applied. Half green lath are best.
Mortar—To be prepared plaster of any of the following brands: "Alabaster," "Baker," "Diamond," "Fitzgerald," "Flint," "Granite," "Imperial," "Ivory," "Rock," or "Zenith," and to be applied under instructions furnished by the manufacturers.
Mortar for Wood Lath—All work to receive one coat of Prepared Wall Plaster and a finish coat.
For Wire or Expanded Metal Lath—All work to receive a scratch coat of Prepared Wall Plaster, to be followed up when set with a second coat of the same, and when dry with a finish coat.
For Brick or Tile—All work to receive one coat of Prepared Wall Plaster, and when dry, a finish coat.
For Sackett Plaster Board—All work to receive one coat of Prepared Wall Plaster and a finish coat.
Base Coat—Mix in water-tight box about $3\frac{1}{2}$ by 7 feet, raised about 4 inches at one end. If an old box is used, be sure that it is free from dirt and lumps of old cement. Put plaster in raised end and water in lower end and hoe former into water, mixing thoroughly as you go along. Mix thin at first, as this insures free chemical action and prevents the material from getting lumpy. Stiffen with the dry material and work to the proper consistency. Do not mix up more material than can be handily used in about one hour. Clean box after each gauging and *do not mix one batch with another*. In applying on wood lath, lay on lightly, filling up grounds as you go along. Sprinkle lightly with water to prevent tearing under darby. Straighten with rod and darby; and before leaving finally, use the float, knocking off bumps and filling up cat-faces, but do not water the float, as you are liable to *kill face* of work.
Dry wood lath should be wet before applying mortar, as otherwise they are liable to buckle.
On brick or tile, it is well to wet the work liberally before plastering. For repair work, soak old lath with water before plastering.
For Sackett Plaster Board, do not wet the boards before applying the plaster. Adhesion between the plaster and dry board is perfect. Apply the same as on wood lath.
Caution—These goods *must not* be used after having been allowed to set once, as the chemical action has been lost and you will get a rotten wall.

For "Universal" Finish—Scratch or rub well into the brown coat a thin coat of "Universal" Finish, which is tempered rather thin. When stiffened up or starting to set, lay on another coat of finish mortar tempered a little stiffer, and trowel up to a smooth surface, retroweling as many times as necessary after mortar has commenced to set, the last troweling to be made after it has pretty thoroughly set, in order to obtain the glossy finish.

SPECIFICATIONS FOR
U. S. G.
WOOD-FIBRE
PLASTERS.

Grounds—For wood lath, to be $\frac{3}{4}$ inch; for brick or tile, to be $\frac{1}{2}$ inch; for wire lath or expanded metal, to be $\frac{3}{4}$ inch over face of lath; for Sackett Plaster Board, to be $\frac{3}{4}$ inch.

Wood Lath—Use a good grade of wood lath, free from sap or bark. Green laths are best; full seasoned lath are too dry. Must be well nailed, not less than four 3d. common nails to each 4 feet of lath, driven well home.

Mortar—To be Wood-Fibre Plaster of any of the following brands: "Flint," "Granite," "Ivory," "Rock," "Zenith," "Alabaster," or "Baker," and to be applied under instructions furnished by the manufacturers. Water only is needed to fit this material for application to the work, and under no circumstances will the contractor be allowed to mix in sand or other solid material.

Mixing: Elevate one end of your mixing box 3 or 4 inches. Place your plaster at the upper and the water at the lower end of your box. Mix this with water first, then add sufficient dry material to bring it to the right consistency for proper application.

Applying on wood lath walls and ceilings:

For two-coat work apply the base coat in the usual way until time to darby, then sprinkle sparingly with water. Darby lightly, thus not forcing the mortar through the keys of lathing. Do not apply more at one time than you can darby before the material begins to set. A little experience quickly teaches you how much you can apply before using the darby.

For three-coat work, walls and ceilings to receive a scratch coat, and after it has set firm and hard (but before it is dry) apply a second coat of browning, bringing it to a level surface ready to receive the finishing coat.

For Wire or Metal Lath—Apply a scratch coat, lightly covering the lath. After the first coat has set firm and hard, apply the second coat, bringing it to a true surface ready to receive the finishing coat. In all cases, darby lightly and use water sparingly.

For Brick or Tile Walls—First wet the walls thoroughly to reduce suction and apply sufficient material to bring wall to a true and even surface ready for the finish.

For Sackett Plaster Board—Do not wet the boards before applying. Adhesion between the plaster and dry board is perfect. Apply the same as on wood lath.

For "Universal" Finish—Scratch or rub well into the brown coat a thin coat of "Universal" Finish, which is tempered rather thin. When stiffened up or starting to set, lay on another coat of finish mortar tempered a little stiffer, and trowel up to a smooth surface, retroweling as many times as necessary after mortar has commenced to set, the last troweling to be made after it has pretty thoroughly set, in order to obtain the glossy finish.

SPECIFICATIONS FOR
"U. S. G.
BOND"
PLASTER.

Important—Rough boards should be used for concrete casting forms. Oiled boards should not be used under any circumstances.

Grounds—For Reinforced Concrete, to be $\frac{1}{2}$ inch.

Mortar—To be "U. S. G. Bond" Plaster, manufactured by the UNITED STATES GYPSUM CO. and to be applied under instructions furnished by the manufacturers. Water only is needed to fit this material for application to the work, and under no circumstances will the contractor be allowed to mix in sand or other solid material. Concrete work must be thoroughly dry before base coat is applied.

General Instructions for Mixing and Applying—Mix in water-tight box about 3 1-3 x 7 feet, raised about 4 inches at one end. If an old box is used, be sure that it is free from dirt and lumps of old cement or plaster.

Put water in box and throw in the amount of Bond Plaster that you have decided to use for one mixing. Now allow the plaster to soak in the water for ten or fifteen minutes without hoeing.

We have found from experience that this period of soaking is necessary owing to the peculiar composition of "U. S. G. Bond" Plaster and the great avidity with which it takes up the water. If not allowed to soak at this stage, the resultant mixture will prove "poor" and will not work satisfactorily.

After this period of soaking has elapsed, work up the mixture in the usual manner, adding sufficient water as you go along to bring it to the proper consistency. Apply as you would any hard plaster.

Use rod and darby, then float to knock off bumps and fill up cat-faces. In floating, however, do not drench the work with water. Use damp brush only, and do not attempt to float after material has set, as you will kill the face of the wall.

The work can be left under the trowel for papering, or under the float for frescoing; but can be hard finished or float finished in the customary manner.

If the work is to be hard finished, however, the base coat should be lightly broomed before setting. Cut off joinings at angle of forty-five degrees.

Do not apply finish until base coat is dry and hard. This is especially important on concrete walls.

Caution—Base coat must be dry and hard before applying finish.

Concrete work must be thoroughly dry before applying base coat.

Do not retemper mortar after it has once set. You will kill the work. Do not mix more material than you expect to use in about one hour. Clean box after each gauging, and do not mix one gauging with another. Use clean water only, and keep your tools clean. Keep temperature above freezing in winter, and keep out hot blasts of wind in summer. Should, however, the work show soft, white spots after drying, wet up with a clean brush and water until these spots set up and harden.

Base coat must be dry and hard before finishing.

Store in a dry place; never on the bare ground.

SPECIFICATIONS FOR
"ADAMANT"
EXTERIOR
PLASTER NOS.
2C AND 2D.

Grounds—To be $\frac{3}{4}$ inch for wire-cloth or metal lath, $\frac{3}{4}$ inch for waterproof-plaster board or wood lath.

Lathing—On brick, stone, concrete block, or wood surfaces, to be painted wire-cloth or galvanized, expanded metal lath, acceptable to the architect, and to be applied on $\frac{3}{4}$ x 1-inch furring strips on 8-inch centers, so as to leave an air space behind the plaster. On brick, stone, and concrete block, drive wooden cleats into the joints, picking out the mortar, if necessary, and nail furring strips to these cleats.

Sackett Plaster Board can be used with good results if a coat of waterproof paint is applied to it after the board is nailed in place. For this purpose use any good brand of waterproof paint containing none but light, evaporative oils and to which plaster will adhere, of which there are several brands on the market. Nail plaster board securely to furring on 16-inch centers, with large head 3d. slater's or roofer's nail, not over 4 inches apart on edges and in center, breaking all horizontal joints. All corners to be protected with a 4-inch strip of $\frac{1}{2}$ -inch mesh painted wire-cloth run vertically, and securely nailed over the plaster board.

Mortar—All mortar to be "Adamant" Exterior Plaster Nos. 2C and 2D as furnished by the manufacturers. No sand or other material to be added, except water, unless required in finish coat, as stated below.

On Painted Wire-Cloth or Metal Lath, apply scratch coat of No. 2C fibered, filling the meshes. When this has set, follow with a second coat of the same material, straightening same with rod and darby. When the second coat has set, apply a coat of No. 2C, unfibered, finishing same as specified below.

Where the plastered surface reaches or comes near the ground, for a distance of two feet from the bottom up use "Adamant" No. 2D, applying it in three coats, the same as No. 2C. "Adamant" No. 2D will not absorb or be injured by any amount of moisture.

On Waterproofed Plaster Board, apply scratch coat of No. 2C, fibered, straightening with rod and darby. When this has set, apply a coat of No. 2C, unfibered, finishing same as specified below.

Where the plastered surface reaches or comes near the ground, for a distance of two feet from the bottom up use "Adamant" No. 2D, applying same as No. 2C.

On Wood Lath—Same as on Waterproofed Plaster Board.

General Directions for Mixing and Applying—Mix in water-tight box about 3½ by 7 feet, raised about 4 inches at one end. If an old box is used, be sure that it is free from dirt and lumps of old plaster. Put "Adamant" in raised end and water in lower end, and hoe former into water, mixing thoroughly as you go along. Mix thin at first, as this insures free chemical action and prevents the material from setting lumpy. Stiffen with dry "Adamant" and work to the proper consistency. Do not mix up more than can be handily used in about one hour. Clean the box after each gauging, and do not mix one batch with another.

In applying on wood lath use sufficient pressure to force enough plaster between the lath to form a strong key or clinch, filling up grounds as you go along. Sprinkle lightly with water to prevent tearing under the darby. Straighten with rod and darby.

Dry wood lath should be thoroughly soaked with water the day before applying mortar.

For repair work, soak old lath thoroughly with water the day before plastering.

Summer Work—In hot, dry weather, especially if windy, care should be taken while plastering to prevent the drying out of the material before crystallization has taken place, or, in other words, before it has set. In cases where this has occurred, however, it can be easily remedied by sprinkling thoroughly with a spray of clean water until the material has taken enough water to set it. If possible avoid applying it in hot sun; work on the shady side of building.

Winter Work—On outside work, care must be taken to keep the plaster from freezing until it has set. Plaster must be protected from freezing for at least 15 hours after being applied. On this account summer work is more satisfactory.

Caution—No attempt should be made to use plaster after it has been allowed to set, for the reason that it breaks down the formation of crystals and results in its being like so much clay and having neither strength nor adhesiveness.

Finish Coat—There are various kinds of finish obtainable with this material: trowel finish, sand or float finish, pebble-dash, slap-dash, rough or fine stone-cast, rough or fine cinder-cast, and stippled, specifications for which are as follows:

Trowel Finish: Apply finish coat and follow with trowel and damp brush, troweling to a smooth and even surface. Brush lightly with damp brush, and do not drench with water as this will take off the face. Work top and bottom together.

Sand or Float Finish: Two men are required to obtain best results in applying this finish. First man to apply finish coat of plaster; and second man to follow up with cork or carpet float, bringing work to a true and even surface. Do not water float, as this is liable to kill the face of the work.

Pebble-Dash Finish: Two men are required to obtain best results in applying this finish. First man to apply finish coat of plaster; and second man to follow closely, applying clean pebbles about ½ inch in diameter and running uniform in size. Pebbles must be wet just before using. Throw pebbles on fresh plastered surface, beginning at top with a sweeping motion, using sufficient force to embed them securely in the plaster. Care must be observed to distribute the pebbles uniformly over the surface, and that the whole surface is made continuous, that is, one patch of plaster must not be allowed to dry before the adjoining space is covered.

A similar finish can be obtained by mixing the washed pebbles with the finish coat of plaster in the proportion of five parts of plaster to one part of pebbles, by volume. This mixture is applied either with a trowel or by dashing it on with a wooden paddle about six inches wide. The first method is preferable.

Slap-Dash Finish: In applying the finish coat of plaster throw it on with a wooden paddle about six inches wide. For this finish add nothing but water to the finish coat of plaster, using it as furnished by the manufacturers. To obtain good results in the appearance of this finish an expert mechanic is required.

Rough or Fine Stone-Cast Finish: Mix with the finish coat of plaster crushed stone of the size desired in the proportion of five parts of plaster to one part of stone, by volume. Apply this mortar either with a trowel or by dashing it on with a wooden paddle about six inches wide.

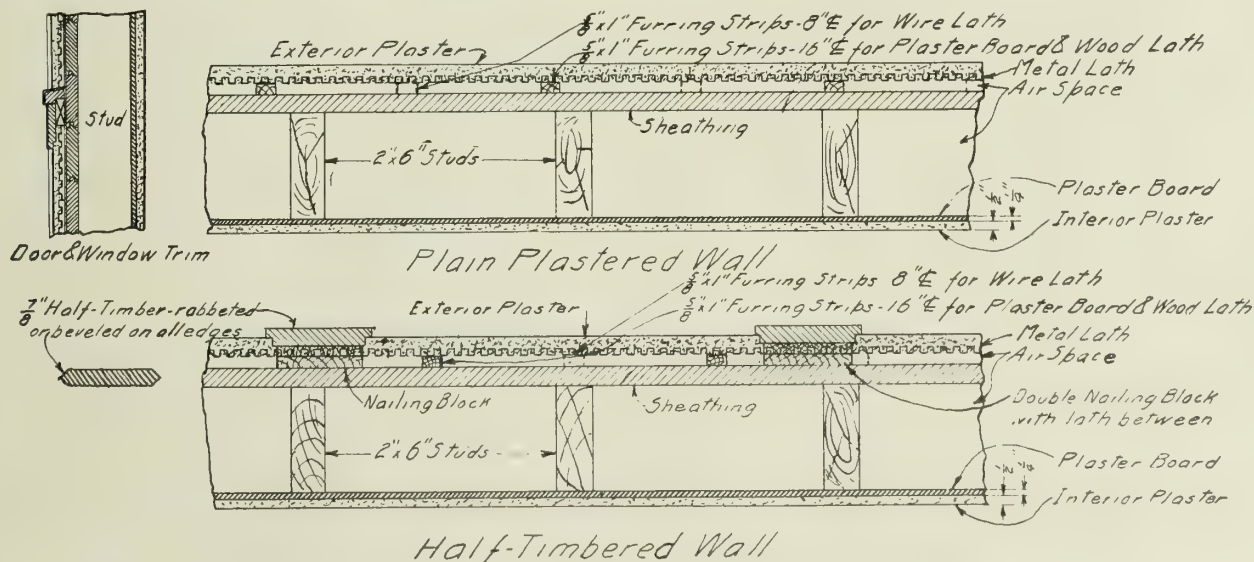
Rough or Fine Cinder-Cast Finish: Mix with the finish coat of plaster clean soft-coal cinders, free from ash, of the size desired, in the proportion of five parts of plaster to one part of cinders, by volume. Apply this mixture either with a trowel or by dashing it on with a wooden paddle about six inches wide.

Stippled Finish: In mixing the finish coat of plaster for this finish mix it rather thin. Apply a few hawks full at a time, and stipple immediately by using the stub end of a broom, stub of plasterer's brush or rough carpet float to pull out the plaster to extent desired.

Colors—If it is desired to have colors other than the natural color of the plaster, we recommend the use of a Waterproof Stain, of which there are several good brands on the market.

Protection of Edges of Plaster—It is highly important to protect the edges of plaster on outside work against water running in or seeping in behind the plaster, or from collecting on projecting woodwork adjoining the plastered surface. To accomplish this, all woodwork adjoining the plastered surface should project one quarter or one half inch beyond the face of the plaster and have beveled or rounded edges, so as to allow the water to run off, or to prevent its lodging.

Half-Timber Work—All half-timber to be ¾ inch thick, and to be applied to double nailing blocks, with metal lath between. (See drawing.) All edges of half-timber adjoining plaster to be beveled or rounded on outside face (beveled preferred), so that water will run off. All edges of under or inside face to be rabbeted or beveled (beveled preferred), so that the plaster can be forced underneath, giving it an additional hold and protection from absorption of moisture. Top of door and window trim to be beveled from face of plaster to edge, so that water will run off.



SHOWING APPLICATION OF "ADAMANT" EXTERIOR PLASTER NO. 2C

CHARLES WARNER COMPANY

Manufacturers and Distributers of Builders' Supplies

WILMINGTON, DEL.

Land Title Building
PHILADELPHIA, PA.

1 Madison Avenue
NEW YORK, N. Y.

161 Devonshire Street
BOSTON, MASS.

PRODUCTS.

"NAZARETH" PORTLAND CEMENT; LIME for Building, Plastering and general purposes; "LIMOID" (scientifically hydrated lime); UNION WALL PLASTER; UNION WHITE FINISH; WASHED and SCREENED BAR SAND; WHITE FINISHING SAND; GRAVEL; PEBBLES for Ornamental Purposes; "MINWAX" preparations for all kinds of waterproofing work for protection of structural steel and all exposed ironwork, from moisture; "MINWAX" VAULT LIGHT CEMENT.

"NAZARETH" PORTLAND CEMENT.

"Nazareth" Portland Cement is of one brand and quality, uniform in analysis and color, and with large sand-carrying capacity. It will pass any standard test and is suitable for all classes of work requiring Portland Cement.

"LIMOID."

"Limoid," a high-grade hydrated lime, scientifically manufactured from pure lump lime. Can be kept indefinitely without waste. Used in connection with Portland Cement it offers many advantages. Especially good results have been secured from its use as a waterproofing mixture in cement concrete.

SPECIFICA- TIONS FOR VARIOUS MORTARS.

Straight Lime Mortars Using Cedar Hollow Lime—Prepare a ring of sand of sufficient size to accommodate the amount of lime one man can slack. Spread out the lump lime evenly in this ring and add sufficient water to cover one fourth of the lime. Allow the lime to slack quietly, only hoeing to break up any dry lumps. Do not drown this lime. After the lime has become thoroly slacked, add sufficient water to give the desired consistency when mixt with sand.

To prepare a 1 to 4 mixture use 400 pounds of sand to 100 pounds of lime paste. One bushel of Cedar Hollow Lime (75 pounds) gives 180 pounds of lime paste.

In cold weather pile the lump lime closely, placing the sand around it. Add about four inches of water and cover the lime with cloth or sacks in order to retain the heat. After the lime has started to slack add sufficient water to prevent burning. Warm water should be used to start the slacking in extremely cold weather.

Straight Lime Mortars Using High Calcium Limes—This class of limes is quick and hot slacking, requiring double the amount of water and constant hoeing to prevent burning during the process of slacking.

Mortars Using Limoid (Hydrated Lime)—Limoid can be used in place of lump lime in the preparation of all mortars, thereby saving the labor cost of slacking. Two methods may be used in preparing mortar from Limoid. First: Soak the Limoid with water so as to produce a thick paste, and allow to stand over night; then add the desired amount of sand and sufficient water to give the required consistency to the mortar. Second: Mix the Limoid and sand dry, the same as with cement mortars, and then add water to produce the required consistency. Mix thoroly.

Pressed or Ornamental Brick Mortars—100 pounds Limoid to 300 pounds sand. If white sand is used, mix the Limoid to a thin putty, then add the sand.

Lime Mortars Cement-Gauged—It is often desirable for specific work to add a greater or less amount of Portland Cement to Limoid mortars in order to increase their strength and the quickness of setting.

Prepare the lime mortar in the same manner as given above, thoroly mixing the required amount of cement with the mortar. Care should be taken to mix no more of the mortar at one time than can be used within an hour, or before the Portland Cement has begun to set. One bag of cement to 1000 pounds of mortar represents the minimum amount of cement it is desirable to use.

Limoid can be used in place of lump lime in preparing this class of mortar, thus doing away with the labor of slacking.

Cement Mortars Lime-Gauged—The addition of a small amount of hydrated lime to cement mortar greatly improves its plasticity or spreading qualities, enabling the brick-layers to do more work and to lay the bricks with smaller joints, without materially injuring the strength of the cement mortar. (See table of tests below.) This mortar is furthermore impervious to water, thus giving a dryer wall. In all mortars containing cement we recommend the use of Limoid in the proportions given below:

Three-to-One Mixture—4 bags Portland Cement, 1 bag Limoid, 1500 pounds of sand.

Four-to-One Mixture—3 bags Portland Cement, 1 bag Limoid, 1600 pounds of sand.

Five-to-One Mixture—2 bags Portland Cement, 1 bag Limoid, 1500 pounds of sand. Mix dry, thoroly, before adding water.

Stainless Cement Mortar—300 pounds Blanc or La Farge Cement, 100 pounds Limoid, 1200 pounds sand. Mix the Limoid and sand, then gauge with cement.

Cement Mortar for Fireproof Partitions—400 pounds cement, 100 pounds Limoid, 1500 pounds sand. Mix dry, thoroly, before adding water.

Plastering Mortars for Interior Work—First Coat: 300 pounds Limoid, 1500 pounds sand, 1 bushel hair.

Mix Limoid to a thin paste in a box or ring, add well-soaked and beaten hair, hoe thoroly and add the sand. For metal or wire lath a gauging of Portland Cement may be used if desired.

Second Coat—300 pounds Limoid, from 1800 to 2100 pounds sand, one half bushel hair.

Mix Limoid to a thin paste in box or ring, add well-soaked and beaten hair, mix thoroly and add sand.

In case it is preferred to use lump lime, slack in a box in the same manner as given for brick mortar. When thoroly slacked, add sufficient water to make a thin paste, stir thoroly and run the paste thru a sieve onto a mortar bed. Add hair, mix thoroly with the lime paste, and allow to stand for two weeks before using. If any excess water appears on the top of the paste, this should be drained off. The paste is now ready for mixing with the sand as occasion demands.

The thoro stirring of the lime paste in the box is essential in order to assure complete hydration or slacking of the lime. Incomplete hydration is the cause of popping or pitting on the wall.

White Coat—Fill the box nearly full of water, and sprinkle Union White Finish slowly into the water, allowing the material to become thoroly saturated, using a sufficient quantity to absorb all the water. Do not disturb or agitate the putty. Allow to settle at least six hours, preferably over night. Place putty on the board, sprinkle sand or marble dust on ring, add about one half the quantity of calcine plaster usually added to ordinary putty, mix and apply.

Plastering Mortars for Exterior Work, Stucco, etc., Lime Mortar Cement-Gauged—Slack the lime and run off in the same manner as given under directions for interior plaster. For plastering of brick, terra cotta, concrete or masonry, omit the hair. Before applying the mortar the wall should be wet down in order that the mortar may form a good bond. In plastering masonry of any kind, more sand should be used than in mortars for lath work.

For the first coat add to 1000 pounds of mortar, 100 pounds of cement and incorporate the same thoroly. If a stronger mortar is required, use more cement. When the first coat is sufficiently hard but not dried out, apply the second coat, and in the same manner the finish coat. The second coat should be poorer than the first coat. The finish coat should contain the same proportions as the first coat together with whatever coloring material is used to obtain the desired results.

In plastering on metal lath prepare the mortar in the same manner as for interior plastering, using the same amount of cement as indicated above. The first coat should be scratched and allowed to harden. Second and finishing coats should be applied one following the other.

In all these mortars Limoid can be used in place of lump lime with a saving in labor.

Cement Mortars Lime-Gauged—Directions are sometimes given requiring cement mortar to be used for exterior work. In practice this will be found short and difficult to apply. Thus it is advantageous to add a small amount of hydrated lime. The hydrated lime increases the plasticity or ease of spreading in proportion to the amount of lime used; it also greatly increases the impermeability of the mortar to water and moisture. A warmer tone and more pleasing color are given to the mortar by the hydrated lime. The following proportions are recommended:

First Coat—3 bags Portland Cement, one half bag Limoid, 2½ barrels of sand. Hair as deemed necessary according to the lath used.

Second Coat—3 bags Portland Cement, one half bag Limoid, 3 barrels of sand.

Sand, cement and Limoid to be thrown down in layers, turned over dry, and thoroly mixt before adding water. The finish coat to be kept moist with clean water for at least one week.

TESTS.

The following is a copy of Report submitted by the Henry S. Spackman Engineering Co., Philadelphia, Pa.:

1-3 TESTS. ONE YEAR. AIR EXPOSURE.

	1 P. C. 3 Sand	.95 P. C. .05 L. 3 Sand	.90 P. C. .10 L. 3 Sand	.85 P. C. .15 L. 3 Sand	.80 P. C. .20 L. 3 Sand	.75 P. C. .25 L. 3 Sand	.70 P. C. .30 L. 3 Sand	1 L. 3 Sand
12 months	630	456	573	642	553	444	327	168

1-5 TESTS. ONE YEAR. AIR EXPOSURE.

	1 P. C. 5 Sand	.95 P. C. .05 L. 5 Sand	.90 P. C. .10 L. 5 Sand	.85 P. C. .15 L. 5 Sand	.80 P. C. .20 L. 5 Sand	.75 P. C. .25 L. 5 Sand	.70 P. C. .30 L. 5 Sand	.65 P. C. .35 L. 5 Sand	.60 P. C. .40 L. 5 Sand	1 L. 5 Sand
12 months	311	238	334	331	389	348	346	349	295	151

P. C.—Portland Cement } Proportion by Weight.
L.—Limoid }

THE WHITEHALL PORTLAND CEMENT COMPANY

MAIN OFFICE

1719-24 Land Title Building
PHILADELPHIA, PA.

HOWARD B. GREEN, MANAGER OF SALES

BRANCH OFFICES: NEW YORK AND BOSTON

FACTORY

CEMENTON, LEHIGH CO., PA.

PRODUCTS.

"WHITEHALL" PORTLAND CEMENT.

"WHITEHALL" WATERPROOFING COMPOUND.

INDIVIDUAL FEATURES.

"Whitehall" is honestly, generously, and thoroughly made, with individual features assuring perfect uniformity, which has earned for it the name of "The Quality Cement."

Thousands of barrels have been tested by the City of Philadelphia during the last seven years. The comparison of the results given below is worthy of careful consideration by those who are determined to have a cement of a uniform quality.



REGISTERED
TRADE-MARK

TABLE OF SETTING TIME AND TENSILE STRENGTH

	SETTING		SPECIFIC GRAVITY	ULTIMATE TENSILE STRENGTH IN POUNDS PER SQUARE INCH				
	Time in Minutes			Neat	1 to 3 Standard Quartz Sand			
	Initial	Hard			24 Hours	7 Days	28 Days	7 Days	28 Days
Year of 1901	82.4	326.5	3.148	524	713	765	232	313
Year of 1902	66.6	326.0	3.137	444	660	731	201	304
Year of 1903	64.0	322.0	3.140	457	749	797	236	311
Year of 1904	64.0	346.0	3.157	450	716	759	246	336
Year of 1905	56.0	313.0	3.150	446	697	744	252	335
Year of 1906	55.0	341.0	3.166	392	705	759	262	354
Year of 1907	55.3	313.7	3.172	420	650	731	252	348
Our Average for the Seven Years.....			3.153	447	686	755	240	329
Exceeds Standard Requirements.....			.053	297	236	205	90	129

PUBLICATION.

"Cementology," our monthly publication, interesting to all users of cement, will be mailed on application.

GUARANTEE.

Our Registered Trade-Mark is a guarantee of Perfect Portland Cement.

THE BROWN HOISTING MACHINERY COMPANY

MANUFACTURERS OF

"Ferroidclave," Sanitary Water-Closet Shields, and All-Steel Window Sash

CLEVELAND, OHIO

BRANCH OFFICES

NEW YORK, N. Y., Hudson Terminal Building

PITTSBURG, PA., Frick Building

PRODUCTS.

"FERROIDCLAVE" BROWN SANITARY WATER-CLOSET SHIELDS;
BROWN ALL-STEEL WINDOW SASH.



TRADE-MARK

FERRO- INCLAVE.

We are the only manufacturers of "Ferroidclave," which is a sheet steel with dovetail corrugations, and is patented. The corrugations are inversely tapered, thus permitting the ends of the corrugations of one sheet to fit or "shingle" over and into the ends of the corrugations of another sheet, forming a tight joint without destroying the dovetail of the corrugations and making practically one continuous sheet. It is used as a reinforcement for concrete; laid easier and quicker than any other; self-centering; makes lightest and strongest concrete steel construction on the market; a permanent construction that is attractive in appearance and moderate in cost. Makes an ideal construction for roofs, floors (flat and arched), sidewalls, partitions, coal bins, stairs, highway bridges, culverts, tanks, silos, etc. "Ferroidclave" sheets are made in different gauges, ten feet or less in length and lay twenty inches wide.

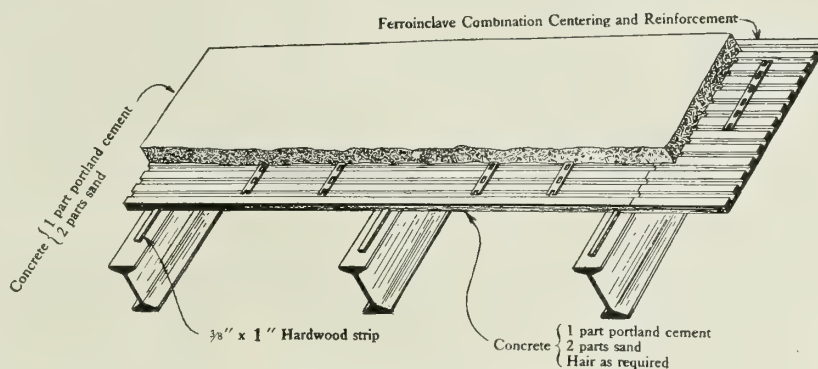


FIG. 1. "FERROIDCLAVE" FLAT FLOORS

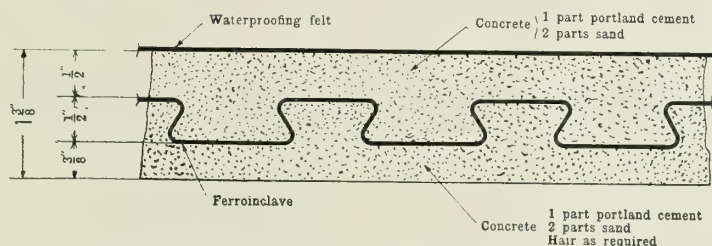


FIG. 2. CROSS-SECTION OF "FERROIDCLAVE" ROOF

With Standard Purlin Spacings of 4'-10 1/2". Weight per sq. foot, 16 pounds

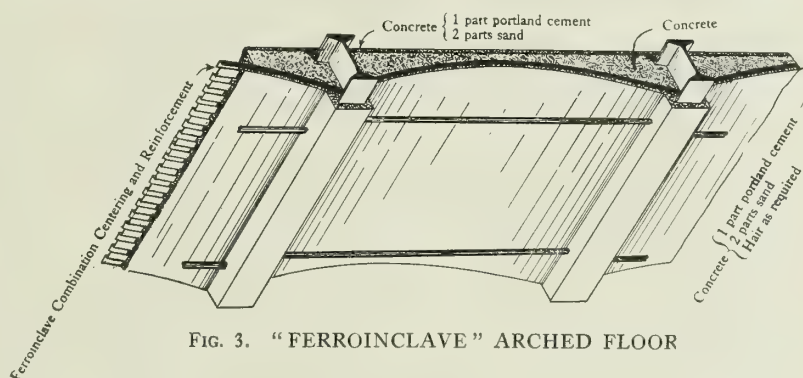


FIG. 3. "FERROIDCLAVE" ARCHED FLOOR

SHIELD.

The Brown Sanitary Water-Closet Shield is an ideal appliance for manufacturing plants and similar buildings. It is a great money and space saver and can be located at any convenient place in the shop.

SASH.

The Brown All-Steel Window Sash is constructed of light structural shapes, simple and attractive in design and inexpensive.

Prices and further information given on application.

AMERICAN STEEL & WIRE CO.

MANUFACTURERS OF

Concrete Reinforcement

CHICAGO, ILL.

NEW YORK, N. Y.

DENVER, COLO.

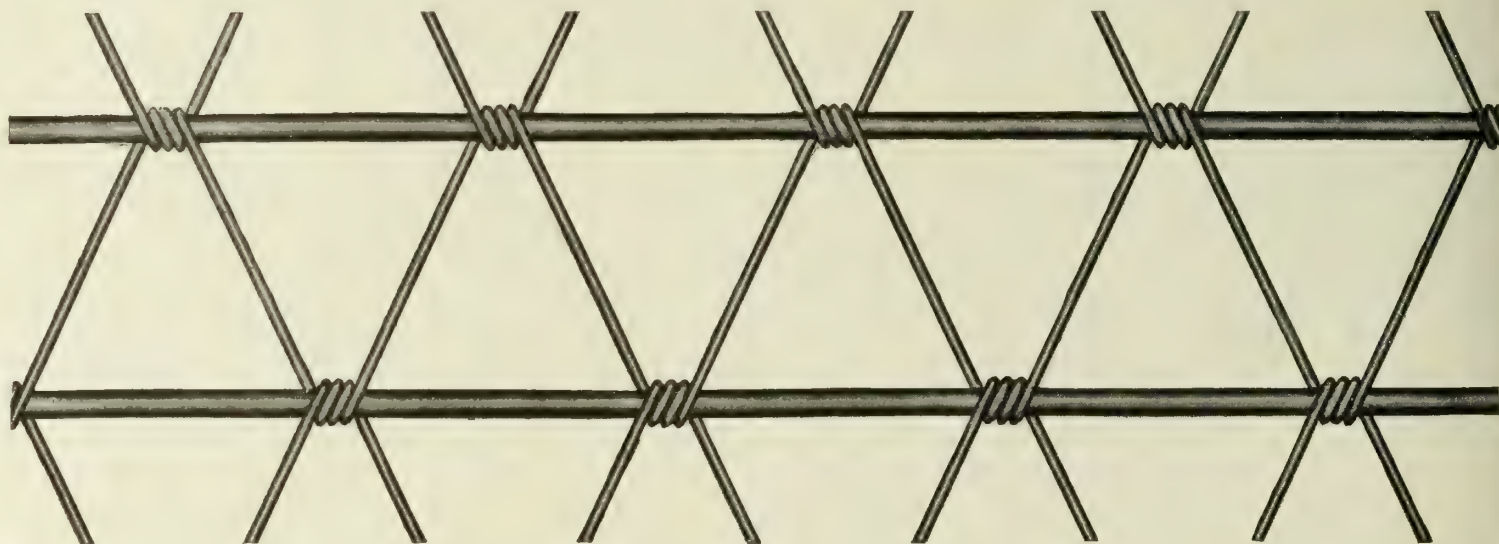
SAN FRANCISCO, CAL.

PRODUCT.

TRIANGLE MESH STEEL WIRE REINFORCEMENT.

DESCRIPTION.

Our Triangle Mesh Steel Woven Wire Reinforcement is made with both single and stranded longitudinal or tension members. That with the single wire longitudinal is made with one wire varying in size from a No. 12 gauge up to and including a $\frac{1}{2}$ -inch diameter, and that with the stranded longitudinal is composed of two or three wires varying from No. 12 gauge up to and including three No. 4 wires stranded or twisted together with a long lay. These longitudinals, either solid or stranded, are invariably spaced 4-inch centers, the sizes being varied in order to obtain the desired cross sectional area of steel per foot of width.



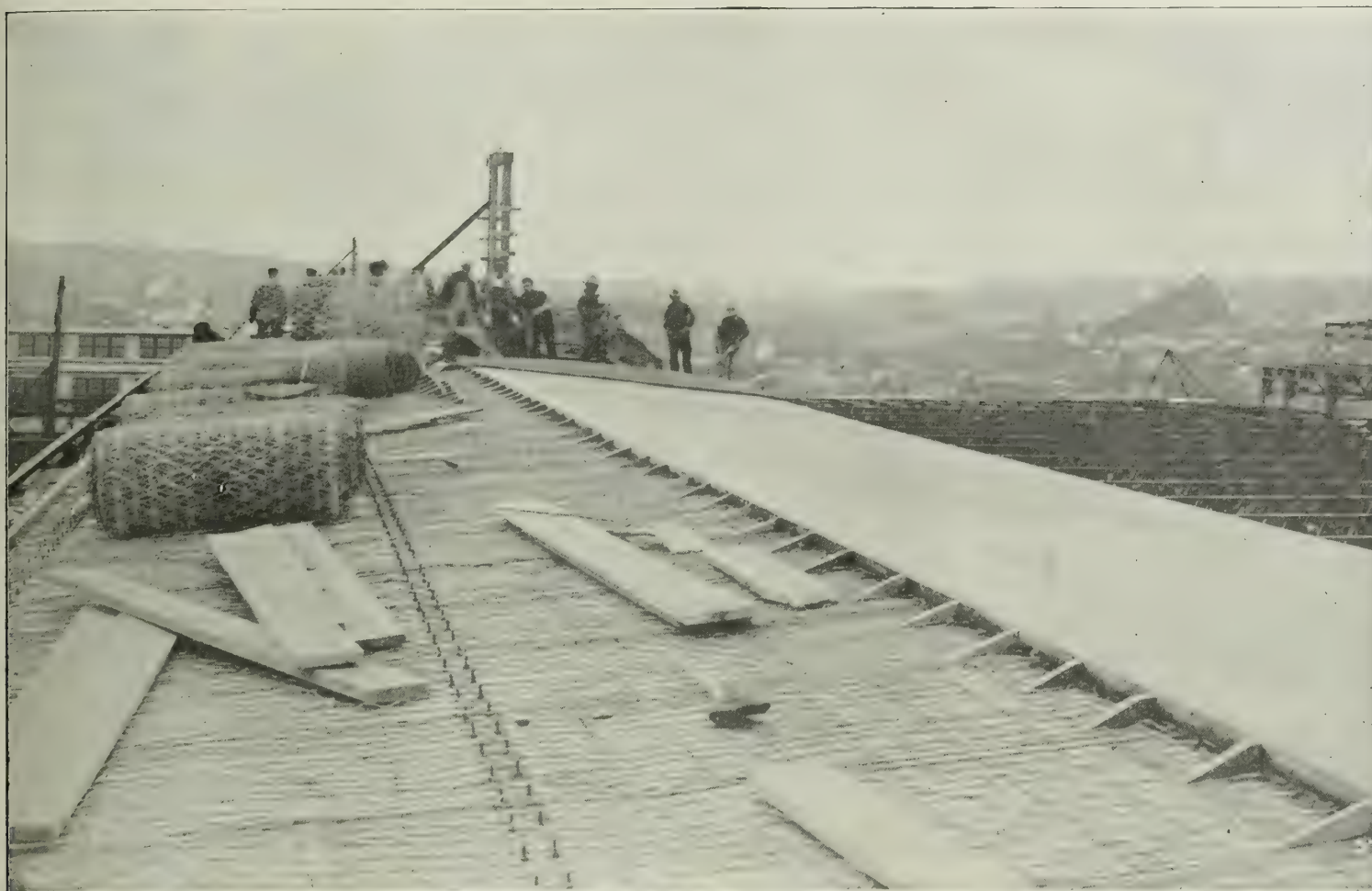
TRIANGLE MESH STEEL WIRE REINFORCEMENT
Solid Longitudinals

The transverse or diagonal cross wires are so woven between the longitudinals that perfect triangles are formed by their arrangement, thereby not only lending additional carrying strength to the longitudinal or tension members, but positively spacing them and providing a most perfect distribution of the steel. These diagonal cross or transverse wires are woven either two or four inches apart and are either 12 $\frac{1}{2}$ or 14 gauge, as is desired. Triangle Mesh Fabric is the most perfect reinforcement for concentrated loads, distributing the stress imposed by the load throughout the floor slab. A hinge joint is provided on each longitudinal, which enables this reinforcement to be folded longitudinally in any desired shape, and makes it adaptable to all kinds of concrete construction. Its design provides a most perfect mechanical bond between the steel and the concrete, and from the fact that it is not galvanized (unless specifically ordered) the maximum adhesive bond is developed.

A sufficient area of steel is provided in the cross wires of Triangle Mesh Reinforcement to prevent temperature cracks, thereby eliminating the necessity of laying additional reinforcement at right angles to the longitudinal or tension members.

SIZES.

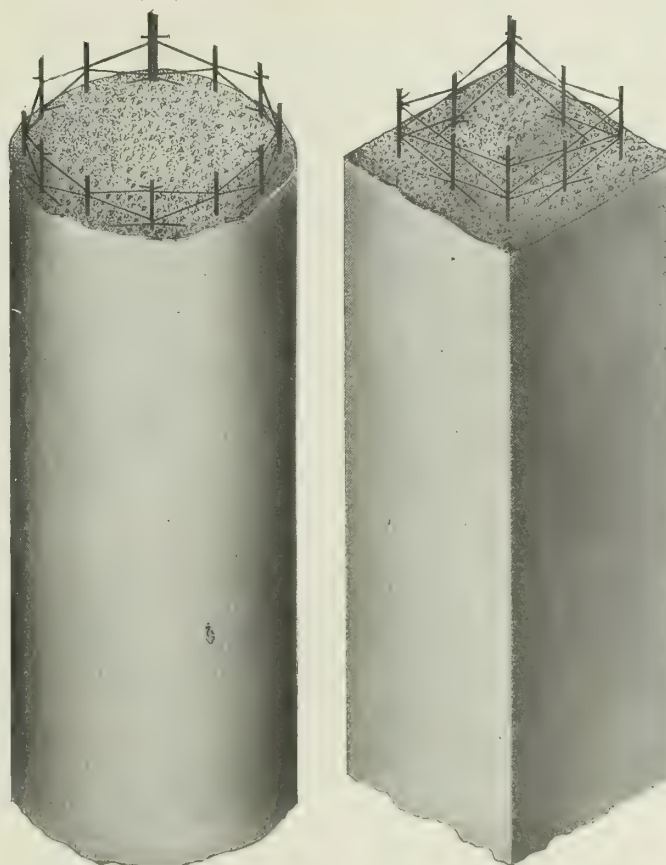
Triangle Mesh Reinforcement is made in standard length rolls of 150, 300 or 600 feet, and in widths of 18, 22, 26, 30, 34, 38, 42, 46, 50, 54 and 58 inches.



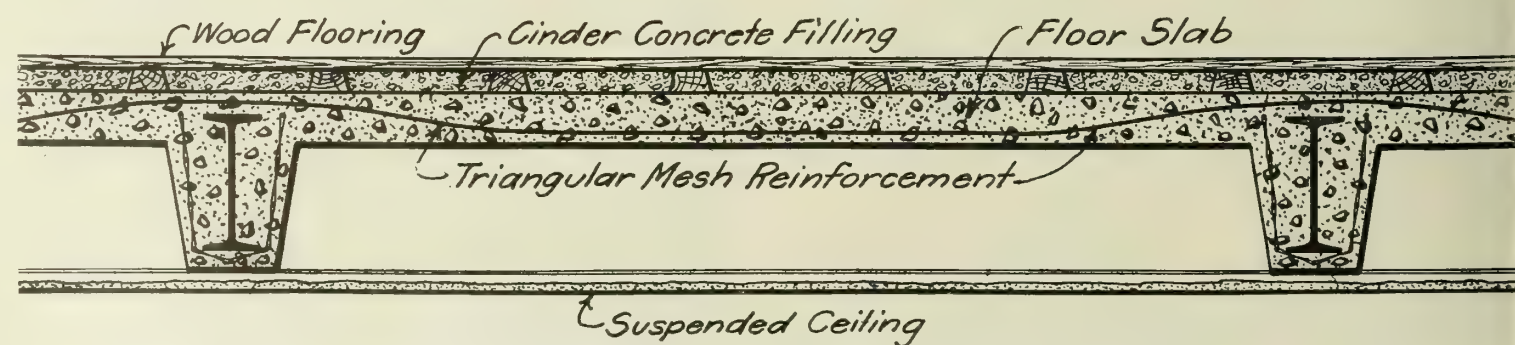
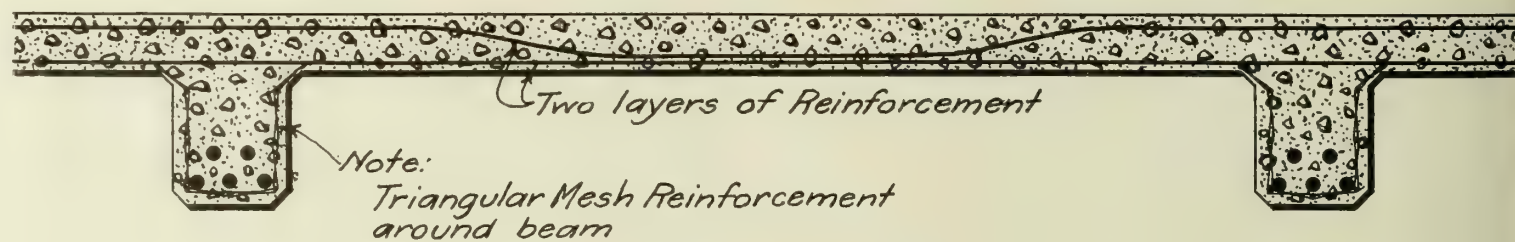
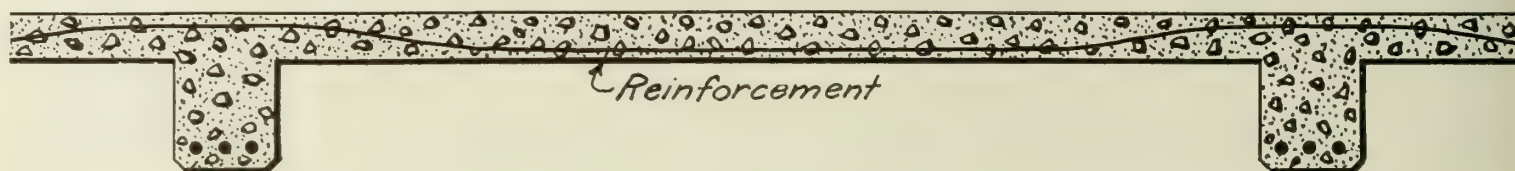
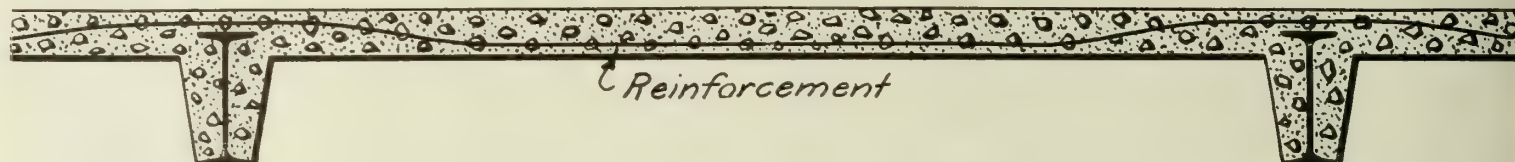
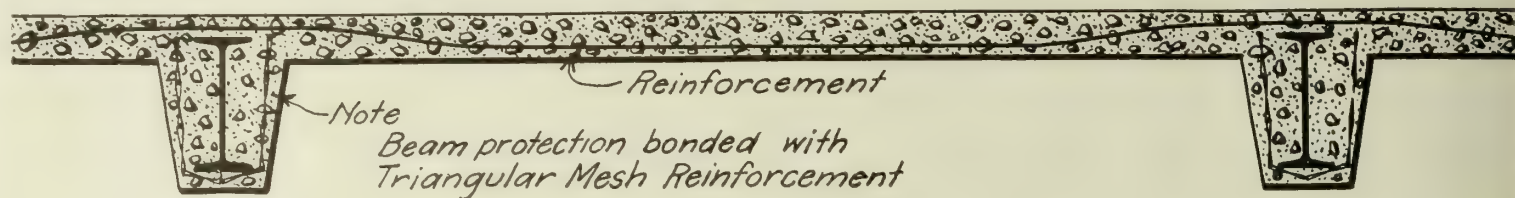
ROOFS OF CAR REPAIR SHOPS OF D. L. & W. RAILROAD, SCRANTON, PA.
Reinforced with Triangle Mesh Reinforcement, Style 25

APPLICATIONS.

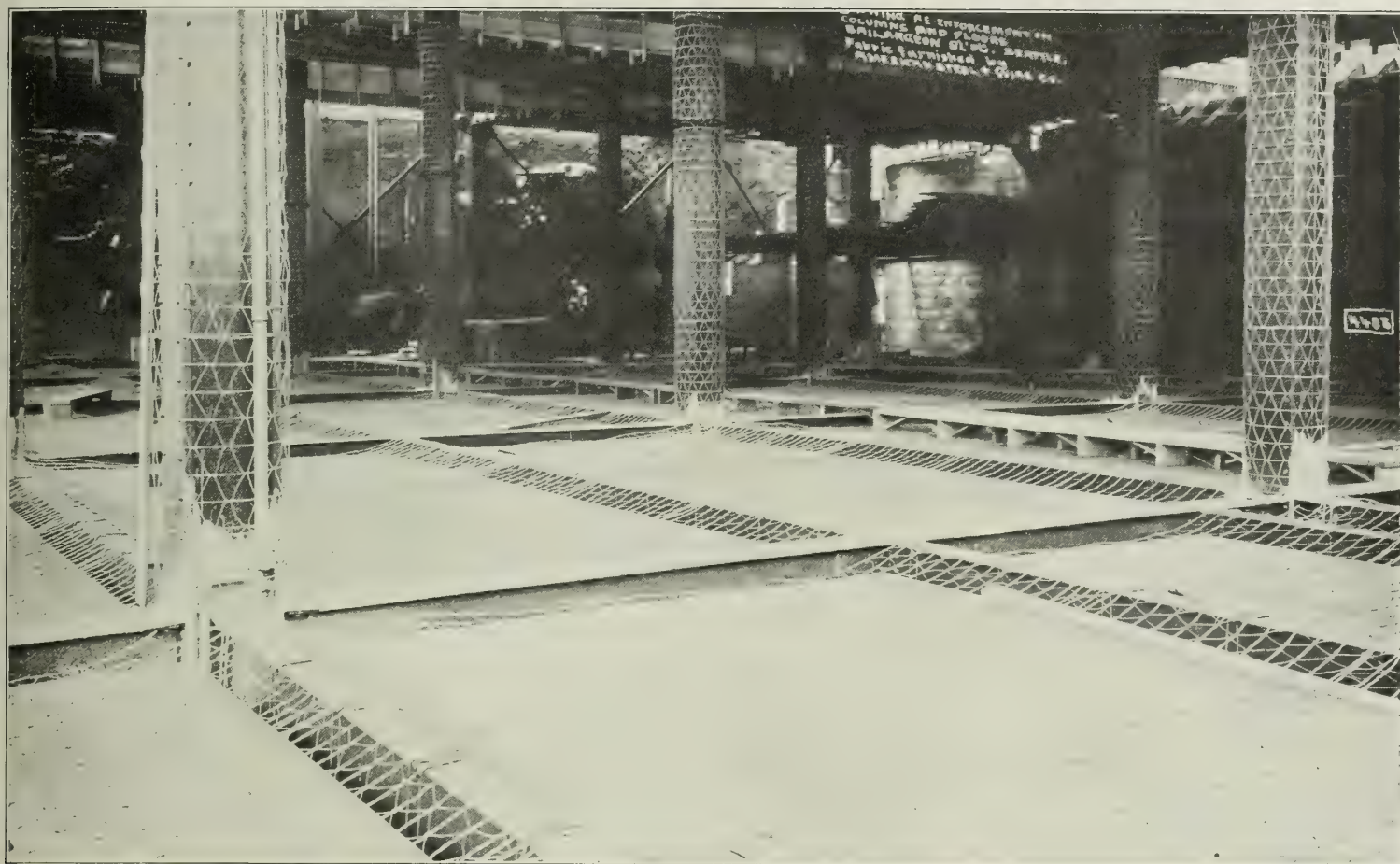
Triangle Mesh Reinforcement is most applicable to columns, due to the hinge joint provided on each longitudinal member, as it is readily folded without the bending of the wires for a hoop reinforcement, for either round or square columns of variable diameters, due to the number of different widths in which Triangle Mesh Reinforcement is made. The accompanying illustrations demonstrate its adaptability for column work. Additional bars may be included for vertical reinforcement if so desired.



TRIANGLE MESH REINFORCEMENT APPLIED TO COLUMNS

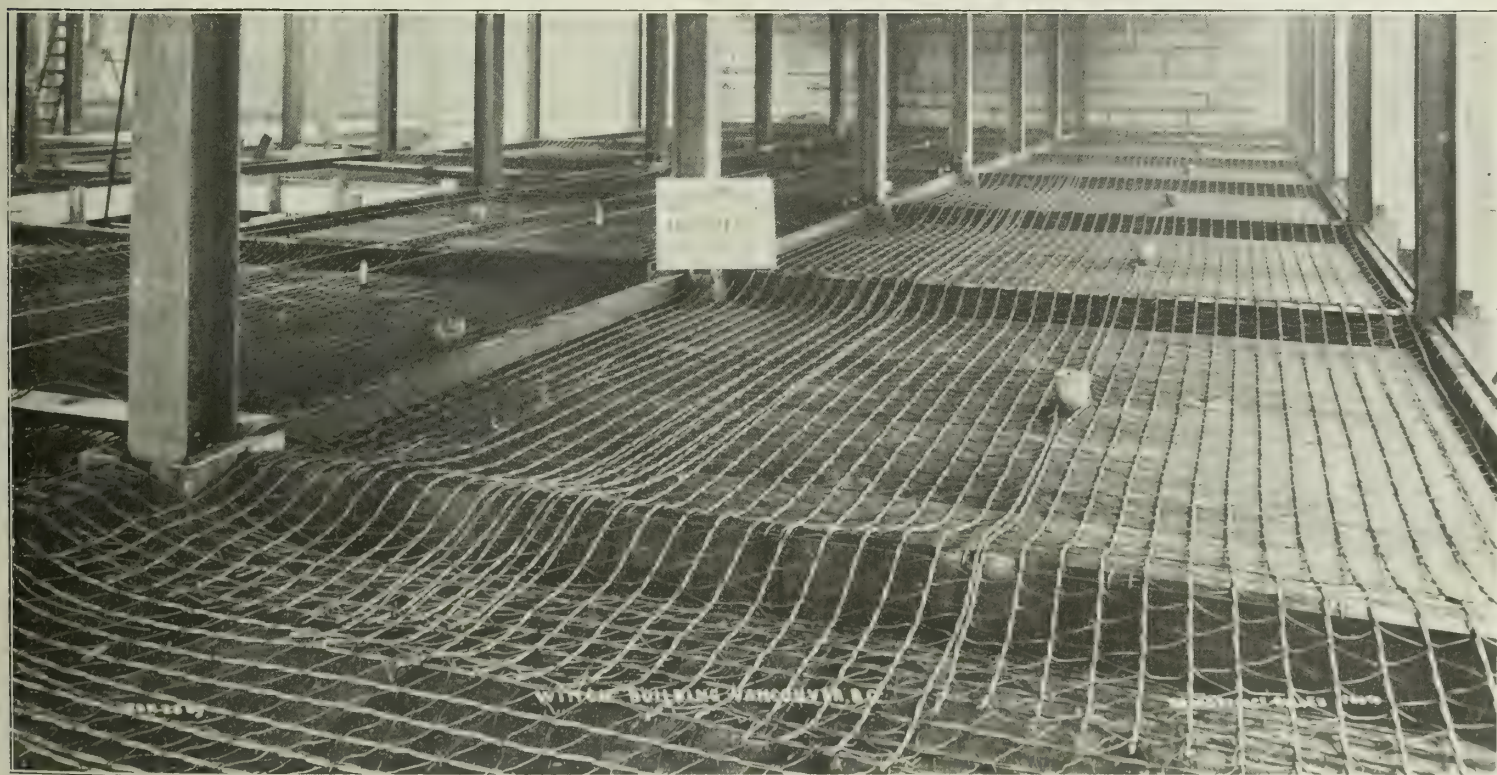


FLOOR CONSTRUCTION WITH TRIANGLE MESH REINFORCEMENT



BAILARGEON BUILDING, SEATTLE, WASH.

Triangle Mesh Reinforcement used in Floor Slabs and for Concrete Fireproofing around Columns
Style 42 Fabric in Floors



THE WINCH BUILDING, VANCOUVER, B. C.

Triangle Mesh Reinforcement in Floor Slabs. Style 31 Fabric

THE BOSTWICK STEEL LATH COMPANY

NILES, OHIO

CABLE ADDRESS: "BOSTLATHCO"

CODES: WESTERN UNION, A. B. C. and LIEBERS

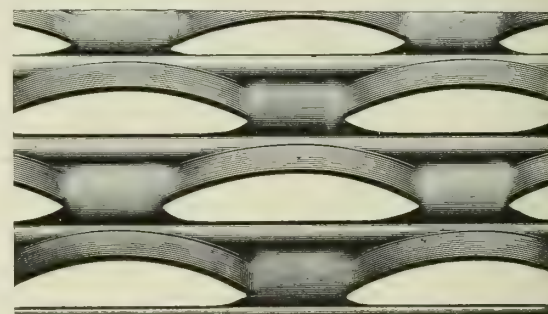
PRODUCTS.

"OLD STYLE BOSTWICK" LATH, "TRUSS-LOOP" LATH, "BOSTWICK" METAL CORNER BEAD, "BOSTWICK" METAL WALL TIES, "DIAMOND-A" EXPANDED METAL LATH. All made of either Unpainted, Painted, or Galvanized Steel.

"OLD STYLE
BOSTWICK"
LATH.

The staple "Old Style Bostwick" is so well known that detailed description of its make and merits is almost unnecessary. As shown by the adjoining cut the structure of the lath is obtained by slitting the sheet and forming expanded loops and linear corrugations, alternately disposed.

The loops being staggered and the corrugations running the entire length of the sheets, a rigidity is produced not possessed by other forms of lath.



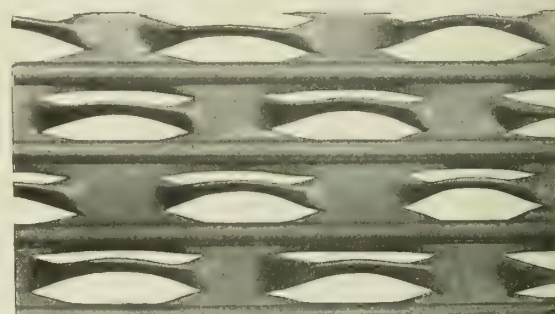
"OLD STYLE BOSTWICK" LATH

STRENGTH
WITH
ECONOMY.

To obtain good results in plastering it is necessary that the plastic material be reinforced by a lath which is sufficiently rigid and has in it enough openings to insure a good clinch without unnecessary waste of material. "Bostwick" Lath possesses these points and will require but one trial to demonstrate the fact.

"TRUSS-
LOOP"
LATH.

In this lath are combined the merits of "Old Style Bostwick" with the novel feature of the Trussed Loops which greatly increase the stiffness of the sheets. The strength possessed by "Truss-Loop" is such that the fabric can be used on 16-inch centering with absolutely no uncertainty. On account of this stiffness the plasterer can work on this lath with greater speed and cover more surface in a given time than on any other kind. It is not necessary for him to "push" hard to secure a good clinch, and hence there is no waste of mortar. For exterior concrete or stucco work "Truss-Loop" Lath is the favorite with mechanics. Where the work runs in separate panels a furring of $\frac{3}{8}$ " wood lath, with the "loops" placed against it, is sufficient for clinch and air insulation. For entire concrete or stucco surfaces we recommend the regular $\frac{7}{8}$ " furring strips. Or, if desired in either case, the furring strips may be entirely eliminated by placing the "loop-side" directly against the sheathing.



"TRUSS-LOOP" LATH

FIREPROOF
QUALITIES.

It is scarcely necessary to point out that a stiff sheet-metal lath, having more metal and resistance than the slighter wire and expanded metal fabrics, and also possessing, from the details of its make, a firm hold on the mortar, must be superior to them in general fireproof qualities. "Old Style Bostwick" and "Truss-Loop" Lath have proved their excellence in this respect in numerous fire tests.

FORM OF
SPECIFICA-
TION.

For Interior Walls and Ceilings use "Truss-Loop" Lath, painted, on centering up to 16 inches. Use 3d wire nails driven every 4 inches, lapping the sheets and arranging them to be bent around corners and angles to prevent cracks in the plastering. On iron frame work use No. 18 gauge wire for lacing.

For Exterior Concrete or Stucco apply "Truss-Loop" Lath painted, using 3d wire nails, or staples. On iron construction use No. 18 wire for lacing. For panel work of medium size $\frac{3}{8}$ " wood lath may be used for furring, set up to 16" on centers. For entire concrete or stucco surfaces use regular $\frac{7}{8}$ " furring, set up to 16" on centers.

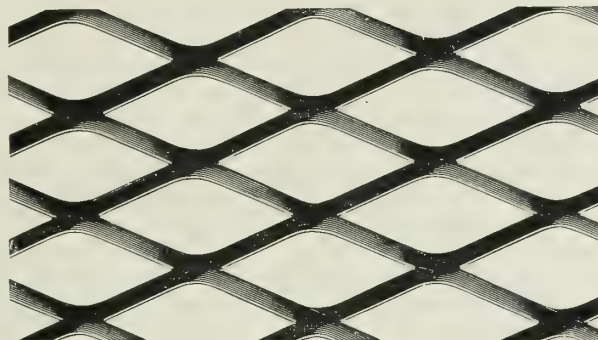
For panel work of medium size or for entire concrete or stucco surfaces place the "Truss-Loop" Lath on $\frac{3}{8}$ " furring, or eliminating the furring, this lath may be placed "loop-side" against the sheathing.

"BOSTWICK" AND "TRUSS-LOOP" LATH DATA

Width	Sizes	Length	For Centers	Sheet Bdl.	Yards Bdl.	Weight Bdl.
13 1/2"		96"	16" and 12"	10	10	46 lbs.
16 1/4"		80"	16"	10	10	46 lbs.
24"		96"	16" and 12"	10	17 1/2	81 lbs.

"DIAMOND-A"
EXPANDED
METAL
LATH.

We have, in order to meet the demands of many architects and to fully cover the field of metallic lathing, put on the market our "Diamond-A" Expanded Metal Lath as a superior product of that type. It has a diamond or rhomboidal mesh with an honest amount of metal in it, which takes it out of the "cobweb" class of goods. By reason of its extra weight it secures results not attained by the usual light types. The angle at which the "diamonds" are formed, about 60 degrees, adds great stiffness to the sheets, making them the most rigid on the market.



"DIAMOND-A" EXPANDED LATH

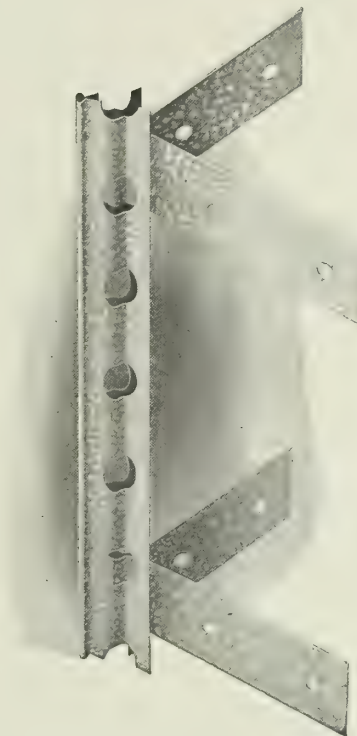
ADAPTABIL-
ITY.

"Diamond-A" meets the demand for a "good quality" expanded metal lath and is suitable for all usual purposes of interior and exterior plastering. Wherever used it gives unqualified satisfaction, as attested by our increasing sales.

"DIAMOND-A" EXPANDED METAL LATH DATA

Plain Steel Lath

Gauge	Width	Sizes	Length	Sheets Bdl.	Yards Bdl.	Weight Bdl.
No. 24	14"		96"	20	20	88 lbs.
25	14"		96"	20	20	77 lbs.
26	14"		96"	20	20	66 lbs.
27	14"		96"	20	20	60 lbs.



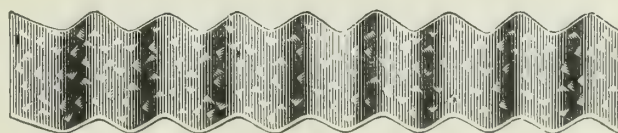
"BOSTWICK" METAL CORNER
BEAD

"BOSTWICK"
METAL
CORNER
BEAD.

This device is designed for reinforcing exterior corners in plastering, and it accomplishes this purpose in the highest degree, preventing cracks and chipping. The Bead is easily and quickly applied and is adapted to any thickness of plastering. Being imbedded in the mass it greatly strengthens the corner, and having a straight edge of correct size it produces a neat, finished appearance. It is very largely employed for the plaster corners of window and door openings in office buildings, hospitals, churches, etc., where wood jambs and trim are omitted.

"BOSTWICK"
WALL TIES.

These corrugated sheet steel ties are finding large application in brick, stone, and concrete construction on account of the excellent mechanical bond they form in the work and their adaptability to all conditions. They are the best on the market and are inexpensive.



"BOSTWICK" WALL TIE

FACILITIES
AND PRICES.

Our facilities are equal to all demands. Price-list and samples are promptly sent upon inquiry.

BUFFALO STEEL COMPANY

Manufacturers of High Elastic-Limit Steel Bars

MAIN OFFICE AND WORKS

TONAWANDA, N. Y.

SALES OFFICE: NEW YORK, N. Y., 1 Madison Avenue

PRODUCTS.

ROUND, SQUARE and TWISTED HIGH ELASTIC-LIMIT STEEL BARS, for use in Reinforced-Concrete Construction; also, CHANNELS for Fireproofing. FLAT BARS, TEES, ANGLES, etc., furnished if required.

DESCRIPTION OF PRODUCTS.

The elastic limit or yield point of steel is its real reinforcing strength; our High Elastic-Limit Steel Bars have an elastic limit of over 50,000 pounds to the square inch, and are made round, square and twisted, in all sizes and lengths, to meet every possible condition.



TWISTED HIGH ELASTIC-LIMIT BAR



SPIRAL HIGH ELASTIC-LIMIT BAR

ADVANTAGES.

The advantage of High Elastic-Limit Steel Bars for reinforced concrete work is the greater reinforcing strength which a smaller quantity of bars will give, compared with mild or medium steel, which has an elastic limit of but 30,000 to 35,000 pounds to the square inch.

High Elastic-Limit Steel costs no more than mild or medium steel, and because of its higher elastic limit has a greater constructional value.

When made into the Twisted and Spiral Bars it works to its best advantage; and even though the finished product is a little more expensive on account of the labor in twisting, these bars are to be preferred for reinforcing concrete.

ORDERS, SIZES, WEIGHTS, ETC.

High Elastic-Limit Steel Bars are not carried in stock, but we can fill an order in a reasonable time and cut the bars to the exact lengths wanted, thus saving all unnecessary waste of materials by purchasing stock bars of various lengths and having to cut them to required lengths.

PHYSICAL TESTS OF STEEL BARS.

Date	Ordered for	Kind of Bar	Dimension of Test Piece in Inches		Areas in Square Inches		Elastic Limit in Pounds		Breaking Load in Pounds		Elongation in Per Cent.
			Width	Thickness	Original	Reduced	Actual	Per Sq. In.	Actual	Per Sq. In.	
1-14-09	N. Y. City	Spiral	1.000	1.000	1.0000	.7097	52620	52620	85460	85460	18.7%
7-7-08	N. Y. State	Spiral	1.000	1.000	1.0000	.8648	56630	56630	93820	93820	17.1%
7-7-08	N. Y. State	Spiral	1.000	1.000	1.0000	.9062	58550	58550	101710	101710	15.1%
7-9-08	N. Y. State	Spiral	1.000	1.000	1.0000	.8587	57680	57680	94290	94290	15.0%
2-4-09	D. L. & W. Ry	Spiral	1.000	1.000	1.0000	.9262	26840	56840	9300	93000	12.5%
2-4-09	D. L. & W. Ry	Spiral	1.000	1.000	1.0000	.6888	53890	53890	92760	92760	18.7%
9-11-09	N. Y. City	Spiral	.875	.875	.7656	.5814	44310	57800	74230	96900	17.1%
9-11-09	N. Y. State	Spiral	.875	.875	.7656	.6440	46000	60000	78820	102900	16.3%
11-21-09	N. Y. City	Spiral	.750	.750	.5625	.3906	35940	53800	61330	109000	15.6%
8-13-08	N. Y. State	Spiral	.750	.750	.5625	.3937	34610	61500	53580	95200	18.6%
7-7-08	N. Y. State	Spiral	.750	.750	.5625	.4225	37600	66800	57390	102100	17.7%
7-7-08	N. Y. State	Spiral	.750	.750	.5625	.4726	35750	63500	57100	101500	15.5%
2-4-09	D. L. & W. Ry	Spiral	.750	.750	.5625	.3937	31160	55300	52470	93200	18.7%
2-4-09	D. L. & W. Ry	Spiral	.750	.750	.5625	.3781	32550	57800	52280	92900	21.0%
11-18-08	N. Y. City	Spiral	.625	.625	.3906	.3191	22180	56700	32000	81900	17.1%

NOTE—The weights of spiral and twisted squares are same as plain squares.

NOTE TO PURCHASERS.

Our business is that of a rolling mill. No designing, fabricating, contracting or engineering is done by us. There are architects, designers and engineers not wedded to patented bars or vending them. Their business is legitimate and, as a rule, their charges fair. If contemplating the erection of a reinforced-concrete building, consult them. When you learn the kind, size, length and number of bars required, buy them—of us.

PRICES.

Prices will be quoted upon receipt of particulars of requirements.

SPECIFICATIONS.

Architects or engineers wishing to secure the very best material for reinforcing concrete construction work, should insert the following clause in their specifications:

"High Elastic-Limit Steel Bars, of the sizes indicated, made by the BUFFALO STEEL COMPANY, of Tonawanda, N. Y., are to be used exclusively for the reinforcing of the concrete for this work."

BUILDING IMPROVEMENT CO.

1 Madison Avenue
NEW YORK, N. Y.

PRODUCT.

The "BURCHARTZ AMERICAN LONG-SPAN SYSTEM" of CROSSWISE REINFORCED FIRE-PROOF FLOORS.

SERVICES.

INTRODUCTION of and CONTRACTING for AMERICAN and EUROPEAN IMPROVEMENTS and SPECIALTIES in BUILDING and ENGINEERING CONSTRUCTION. Estimates and plans free.

"BURCHARTZ AMERICAN LONG-SPAN FLOOR SYSTEM."

The "Burchartz American Long-Span Floor System" is a Combination Hollow-Tile and Reinforced-Concrete Slab Construction, with Blocks either of Terra Cotta or Cement and of suitable sizes.

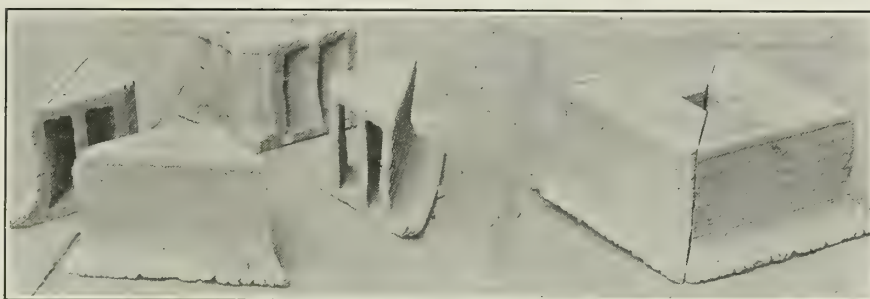


FIG. 1. "BURCHARTZ" BLOCKS

Fig. 1 shows typical "Burchartz"

Blocks. Four wedge-shaped pieces are assembled to form a block, closed all around. Blocks are laid out dry on a centering, steel rods placed in joints both ways, and wet concrete grouted in. Blocks may be manufactured of terra cotta as readily as of concrete. They are cut at an angle of 45 degrees, of any desired cross-section. Flanges at bottom of blocks serve to insure accurate spacing and afford a thoroughly even ceiling.

ADVANTAGES.

Economic, absolutely fire-, sound-, and crack-proof.

Saving in structural steel, 15 to 40 per cent. Slabs are light and stiff. Great carrying capacity in regard to heavy concentrated loads because the crosswise reinforcement carries stresses all over the slab. Considerable saving in head-room and height of buildings. Speed of erection, as concrete between hollow tile sets much more quickly and attains a greater degree of hardness than it does in solid concrete construction; therefore, centering may be struck earlier. The cost of laying is 50 per cent cheaper than that of other tile arches.

REFERENCES.

"Burchartz American Long-Span Floor System" is recommended as the standard American Long-Span Floor Slab.



FIG. 2. SHOWING UNPLASTERED "BURCHARTZ" BLOCK CEILING. SPAN 30 x 30 FEET



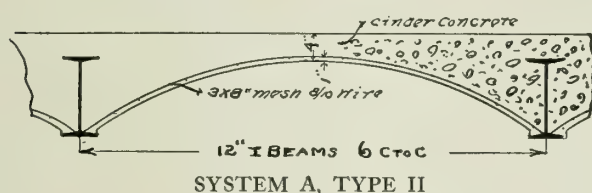
FIG. 3. BLOCKS AND REINFORCING RODS LAID OUT READY FOR CONCRETING

wood floor used instead of granolithic finish. Flat ceiling suspended from hangers embedded in the concrete.

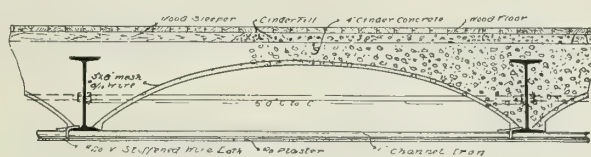
Weight per square foot of slab	27 lbs.
Weight per square foot of sleepers and fill	11 lbs.
Weight per square foot of wood flooring	4 lbs.
Weight per square foot of under flooring, if used	2 lbs.

SYSTEM C,
TYPE IV.

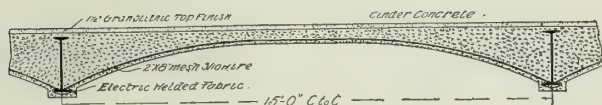
Stone concrete for wide spans and for use in hotels, offices, banks, depots, theaters, schools and public buildings. The steel reinforcing of this type is No. 3-8 wire, 2" x 8" or 2" x 12" mesh, the idea being to place a wire every 2", the tensile strength of which is 3,000 lbs. The tests made for the Bureau of Buildings of the several boroughs of Greater New York demonstrated the great value of this reinforcing, and secured its approval by the Commissioners of Buildings for spans up to 15' and loads of 150 lbs. When it is estimated that the factor of safety demanded is a factor of 10, the splendid qualities possessed by this arch are readily apparent. Weight per square foot of slab, 72 lbs.



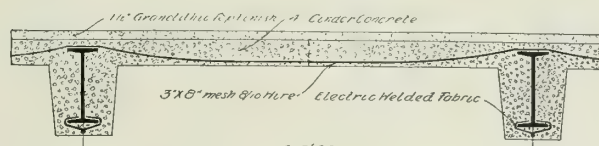
SYSTEM A, TYPE II



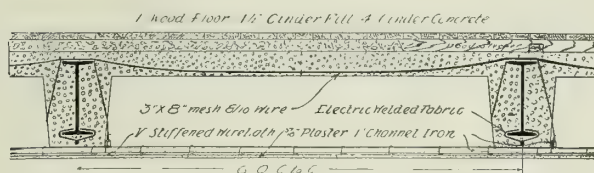
SYSTEM A, TYPE III



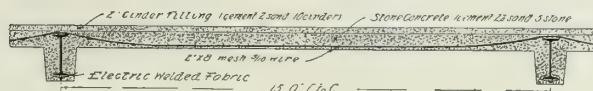
SYSTEM B, TYPE I



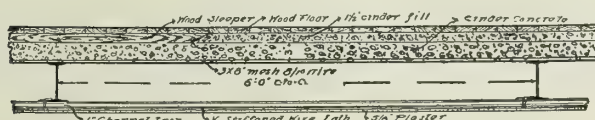
SYSTEM C, TYPE I



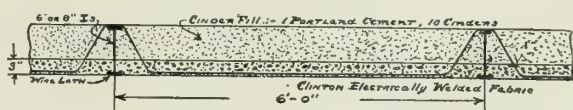
SYSTEM C, TYPE II



SYSTEM C, TYPE IV



SYSTEM D, TYPE I



CINDER CONCRETE: 1 Portland Cement, 2 Sand, 5 Cinders
SYSTEM E, TYPE I

SYSTEM D,
TYPE I.

Construction adapted for use in apartment houses, residences, offices and bank buildings, forming a continuous slab, placed over tops of beams and having ceiling clipped by usual method to lower flanges of beams. Cinder fill used to embed wood sleepers.

Weight per square foot of slab	20 lbs.
Weight per square foot of fill	10 lbs.
Weight per square foot of wood floor	4 lbs.

SYSTEM E,
TYPE I.

For use in residences, tenements and general light construction. In this construction the steel framing is necessarily light, and the floor system, forming both ceiling and the floor slab, makes the system one of the best that can be installed at a minimum of cost. This system can be erected to occupy, for wood or granolithic floor, cinder fill, fireproof slab and plastering, a space of 7½". In the many buildings where a similar system has been used it has given entire satisfaction.

Recommended for loads of 60 lbs. per square foot. Factor of safety of 10.

Weight per square foot of slab	20 lbs.
Weight per square foot of fill	13 lbs.
Weight per square foot of wood floor	4 lbs.

COLUMBIAN CONCRETE STEEL BAR COMPANY

MANUFACTURERS OF

"Columbian" Ribbed-Steel Bars and Unit Girder Frames

Room 224, 103 Park Avenue
NEW YORK, N. Y.501 Union Bank Building
PITTSBURG, PA.

PRODUCTS.

We control the manufacture and sale of "COLUMBIAN" SYSTEM of CONCRETE REINFORCEMENT, consisting of "COLUMBIAN" RIBBED-STEEL BARS and "COLUMBIAN" UNIT GIRDER FRAMES.

We furnish "COLUMBIAN" BARS cut to any required length, or when desired, bent and fabricated ready to place in the forms.

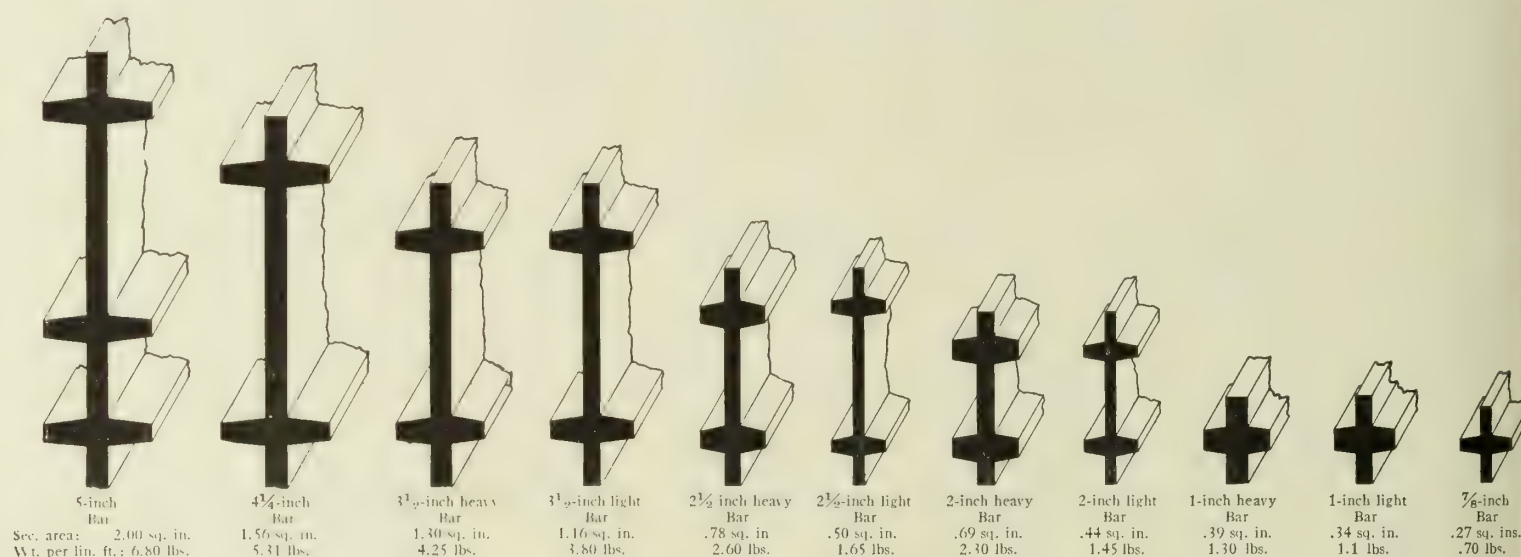


FIG. 1. SECTIONS OF "COLUMBIAN" RIBBED-STEEL REINFORCING BARS

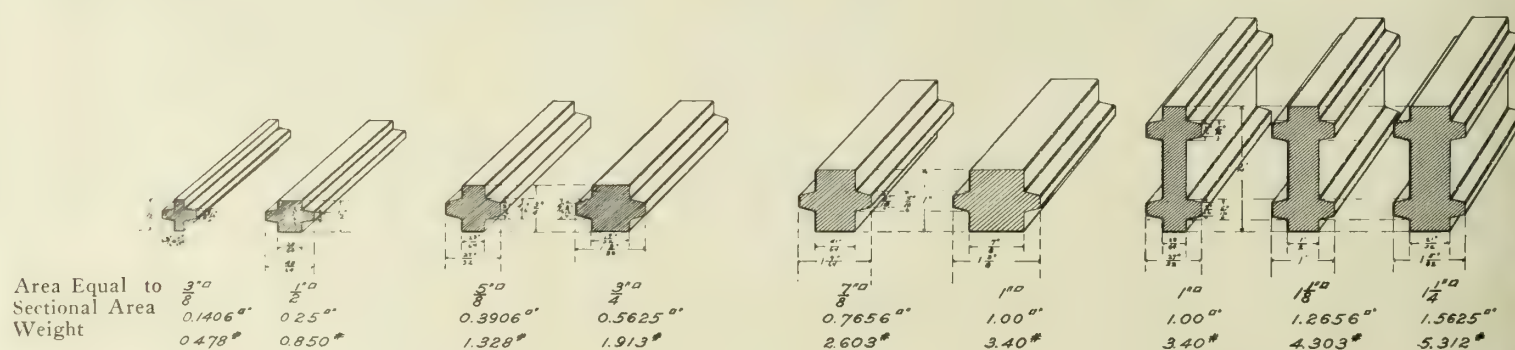


FIG. 2. "COLUMBIAN" STEEL BARS

"COLUMBIAN" BARS.

The various sections of "Columbian" Bars are shown by the accompanying cuts, and consist of the section shown in Fig. 1, used in the Standard "Columbian" System of floor slabs; and sections shown in Fig. 2, showing "Columbian" sections rolled in sizes equal to standard squares for use in reinforced-concrete beams, girders, and columns, floor slabs, retaining walls, bridges, etc. The sections shown in Fig. 2 are furnished either in plain bars as shown, or twisted where desired.

ADVANTAGES
OF "COLUM-
BIAN" BARS.

The bars used in the Standard "Columbian" System of floors permit of the use of a thinner floor slab than any other type of reinforcement, thereby reducing the cost of the floor and the dead-weight thrown upon the beams, girders, and columns.

"Columbian" Bars rolled in sizes of standard squares have a greater surface area than any other bar of equal sectional area, therefore greater bond to the concrete. There is no waste metal for the purpose of bond as in other types of deformed bars. These bars when twisted give a greater mechanical bond than any other type of bar.

QUALITY OF
STEEL.

"Columbian" Bars are furnished either in high carbon, or medium steel, rolled from new billets, as required by the specifications.

ESTIMATES.

We furnish estimates for the complete reinforcement for any structure; and our Engineering Department will, upon request, furnish information and designs upon any work, and co-operate with Architects and Engineers designing reinforced-concrete structures.

DELIVERIES.

We carry a large stock of "Columbian" Bars and are prepared to make prompt deliveries.

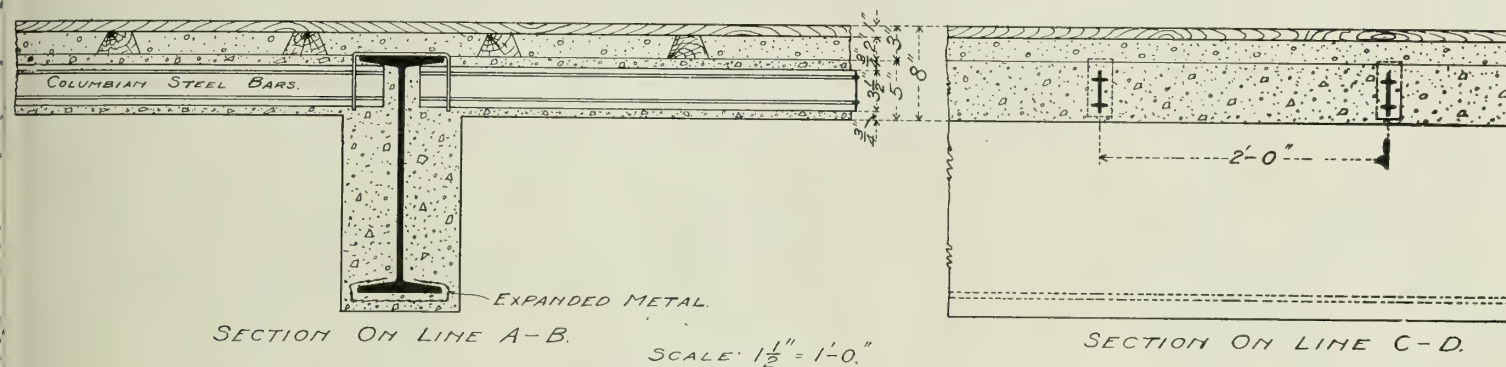


FIG. 3. STANDARD "COLUMBIAN" SYSTEM OF FLOOR SLABS AS APPLIED TO STEEL FRAME BUILDINGS

Note the reinforcing bars supported from Steel Girders by means of Steel Stirrups. Impossible for reinforcement to become misplaced. A minimum number of reinforcing bars to place, therefore economy in erection.

When desired the Columbian Bars may rest upon top flange of supporting I-Beams, or on top of reinforced-concrete beams, and run continuous over two or more panels, thereby securing continuity of slab construction.

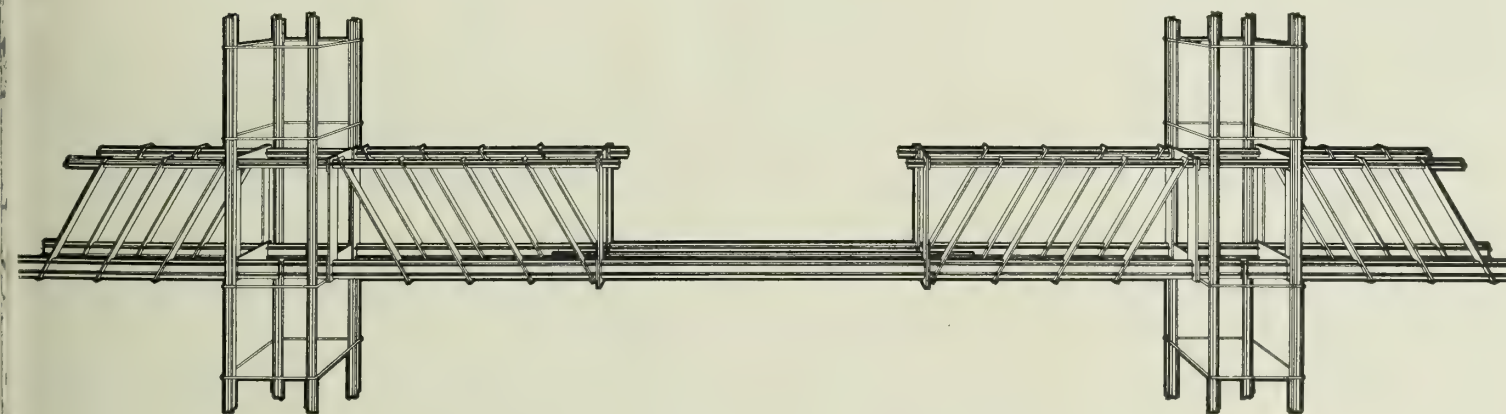


FIG. 4. "COLUMBIAN" UNIT GIRDER FRAME

UNIT
GIRDER
FRAMES.

Shipped completely built up and ready to place in the forms. The advantage of built-up reinforcement for girders is generally admitted, but heretofore the cost has been prohibitive. The "Columbian" Girder Frame can be furnished at a small increased cost over loose rod systems.

CLIMAX COMPANY

Climax Patent Hollow Beams of Reinforced Concrete

131 La Salle Street
CHICAGO, ILL.

PRODUCTS.

"CLIMAX" HOLLOW REINFORCED-CONCRETE FLOOR BEAMS.

DESCRIPTION.

"Climax" Hollow Concrete Beams have interlocking joints, are cast in moulds, and reinforced properly to provide for all stresses. They are built with wire fabric entirely around each beam, have tension bars in the lower cord, and the beams are cured, dried, and tested before being placed in buildings.

EXCLUSIVE RIGHTS.

We own the patents protecting this method and sell exclusive rights for any territory not yet sold. We will license contractors to use this system, or manufacturers who would make the beams for sale.

ADVANTAGES.

Maximum of strength with minimum of dead load, voids in place of useless material, thin sections of concrete giving better crystallization and assisting in proper ventilation, thus preventing damage from moisture to fine cabinet work and decorations. Sloppy conditions are avoided and false work is not required.

SIZES AND ADAPTABILITY.

The beams are 14 inches wide to center of joint.
No. 1 Beam, $5\frac{1}{4}$ inches deep, used for spans up to 16 feet.
No. 2 Beam, $9\frac{1}{2}$ inches deep, used for spans of 20 feet.
No. 3 Beam, $13\frac{1}{4}$ inches deep, used for spans of 25 feet.
No. 4 Beam, 18 inches deep, used for spans of 30 feet.

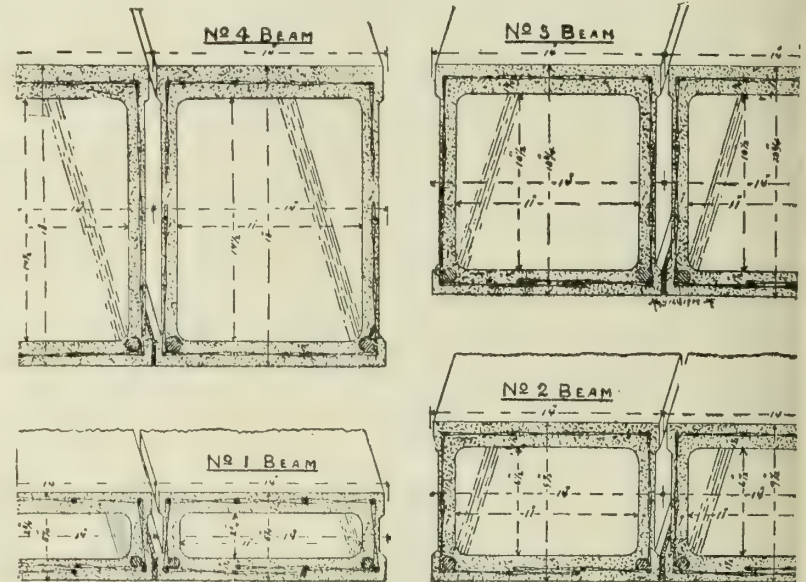
The ends of beams may rest on walls or girders of either steel or concrete.

ECONOMY OF METHOD.

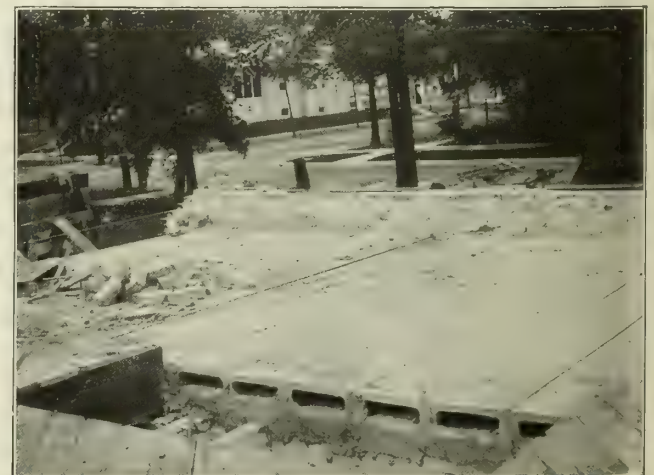
The economy of the "Climax" Hollow Concrete Beam method, is shown by the illustrations. The saving in the excavation and masonry sometimes equals the increased cost of making the floors fireproof, sound-proof and vermin-proof.

ORDERING.

Delay will be avoided if the order for the "Climax" Beams is placed at the time work of building is started. The beams may then be stored in piles at the site, or will be delivered as wanted in the same manner as bricks, and they will only be benefited by exposure.



SECTIONS OF "CLIMAX" PATENT REINFORCED-CONCRETE HOLLOW FLOOR BEAMS



FIREPROOF FLOOR
Showing "Climax" Hollow Concrete Beams in Place

THE FERRO-CONCRETE CONSTRUCTION CO.

Reinforced-Concrete Construction

Richmond and Harriet Streets

CINCINNATI, OHIO

BRANCH OFFICES

CHICAGO, ILL., 814 Stock Exchange Building

MONTREAL, CANADA, 221 Coristine Building

SEATTLE, WASH., 1067 Empire Building

SERVICES.

ENGINEERS and CONTRACTORS for the construction of all classes of buildings in REINFORCED CONCRETE, from our own or architects' designs, also FINANCING the same.

OUR METHOD.

The business of THE FERRO-CONCRETE CONSTRUCTION CO. is essentially contracting, and having no interest in any particular system of reinforcing they are prepared to adopt any system of concrete construction that may be selected by the architect, or to employ the system which in their judgment is the best adapted for the particular work.

CO-OPERATIVE SERVICE.

We shall be pleased to furnish to the architect all desired information in regard to design and construction, and to render any aid in the preparation of plans and specifications. This service is performed gratis and without obligating the architect or engineer in any way, the co-operation being considered as a part of the fixed expense of the Company.

FINANCING.

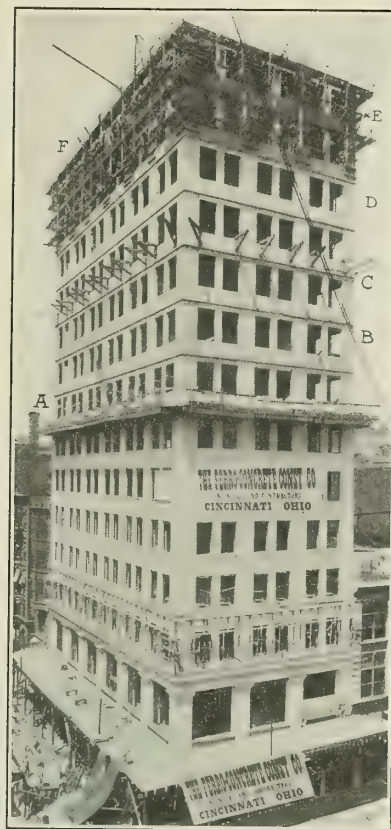
THE FERRO-CONCRETE CONSTRUCTION CO. is prepared to finance, in part, the construction. As commonly happens, a prospective builder can not proceed with the construction of the work for the reason that he is depending on a mortgage to provide the necessary funds, and this mortgage can not be secured until the building is completed.

Again, a manufacturing company contemplating the construction of a new plant may wish to realize a part of the cost by the sale of the old plant; but as they can not give up the old plant until they can move into the new, the sale is delayed and possibly the erection of the new plant prevented.

In either case THE FERRO-CONCRETE CONSTRUCTION CO. will finance the proposition to the extent that the building may be started immediately and can proceed to speedy completion without delays and with no inconvenience to the owner.

ALTERNATE DESIGNS.

On buildings which have been planned for a structural steel design we request the privilege of preparing an alternate design and submitting bids for reinforced concrete, meeting all the same conditions as specified by the architect. We can usually effect a saving of from ten to twenty per cent in cost in comparison with the structural steel design.



INGALLS BUILDING, CINCINNATI, OHIO
Reinforced Concrete, 16 stories, 33-foot span

Method of construction:

- A, The Swinging Scaffold
- B, Forms, Wrecked
- C, Shelf for carrying enamel brick Facing
- D, Beam Sides, Floor and Wall Panels Removed, Shoring in Place
- E, Forms filled with Concrete, Wall Forms partly removed
- F, Forms in place, Derrick Raising Steel

We also invite architects who have prepared plans for mill constructed buildings to allow us to submit an alternate proposition, when the owner will not object to the slight increase in cost, and we will construct a building that will be safer, more durable and more fireproof than the mill-constructed type.

In some instances THE FERRO-CONCRETE CONSTRUCTION CO. have erected reinforced concrete buildings at the same cost as mill-constructed buildings, and they can generally construct a reinforced concrete building at a cost not exceeding five or six per cent over what the mill-constructed building would cost.

ADVANTAGES.

When both the designing and erection of reinforced concrete structures is placed in our hands by architects, we assume responsibility for the entire work, and are thus enabled to do it more economically than would be possible when the responsibility is divided between the designer and the builder, or where a less experienced contractor is employed.

When the designing and the construction are given into different hands, the designer, not knowing in advance what experience the contractor who will secure the contract may have had, must necessarily design much heavier than if he were both the erector and designer.

By reason of full-size tests which we are constantly making on the more important members, both in our laboratories and on actual work in course of construction, and because of the extensive information and data which we have secured in reference to the cost of the many items entering into the construction of a reinforced concrete building, and also in view of the further advantage that we are not limited to the use of any one system of reinforcement, we are in a position to design and erect with the utmost economy.

The principal item of cost in a reinforced concrete building is the actual labor required in erection. The ability to erect properly a reinforced concrete building is acquired only by long experience in this work, together with a thorough technical training and knowledge of the fundamental principles of reinforced concrete construction. It is the vast experience of THE FERRO-CONCRETE CONSTRUCTION CO. that makes it possible for them to build concrete structures to-day for from 10 to 20 per cent less than when they started eight years ago.

As an owner or architect of a building, you can not afford to allow an inexperienced contractor to experiment at your expense, and it is a fact that all of the accidents on reinforced concrete buildings have been due not so much to the faulty design or poor materials as to the fact that inexperienced contractors have been employed to do the work.



WAREHOUSE OF LOUISVILLE AND NASHVILLE R. R., ATLANTA, GA.

A Reinforced Concrete Building, five stories high, and 837 feet long, built by THE FERRO-CONCRETE CONSTRUCTION CO.

INSTRUCTIONS FOR PREPARING PLANS AND SPECIFICATIONS.

DRAWINGS—It is not necessary for architects, when preparing plans on which to secure bids for reinforced concrete work, to show all details, reinforcement, width of beams, etc. It is preferable to simply show column spacing and general dimensions, and to give the desired superimposed floor and roof loads, and also the bearing capacity of the soil.

COLUMN SPACING—It is important to locate all columns with a view to meeting the particular uses for which the building is being designed and providing for an economical arrangement of girders and beams. While we recommend that columns be spaced from 16 to 24 feet on centers for economy, in a reinforced concrete building any spacing of columns can be used, however. We have erected a seven-story building used for a tannery, having 50-foot spans. Column spacing should be uniform.

BEAMS—The arrangement of beams depends somewhat on the spacing of the columns. It is most economical to frame the beams directly into the columns with two intermediate beams framing into the girder beams, which should also frame into the columns. Ordinarily the beams should be spaced from six to eight feet on centers, although other spacing can be used with good results. The depth of the beams below the bottom of the floor slab is usually about 1/12 of the span. That is, the depth in inches will be about equal to the clear span in feet. The girder beams should always be at least as deep as the beams which frame into them, and preferably one inch or more deeper. The width of beams need not be given on the architect's plan, as they will vary according to the different systems of reinforcement, but may be indicated in the ratio of one third to one half of the depth.

FLOOR SLABS—The thickness of the floor slabs need not be figured on architect's plan, but will generally be from three to five inches thick.

FLOOR PLANS—All framing should be as regular as possible and the same plan used on all floors and the roof, so that the same forms used on the lower stories can be used without change on the upper stories after they have been removed below.

IMPORTANT REQUIREMENTS—The following are important requirements of reinforced concrete construction: All steel reinforcement must be properly placed and secured. The forms must be strong and securely fastened together. The concrete must be properly mixed and in the right proportion and sufficiently tamped after being laid in place.

Every specification for reinforced concrete construction should include the following clause:

"The contractor for the reinforced concrete work must have been a specialist in this class of work for at least three years prior to the letting of this contract, and must have erected at last three reinforced concrete buildings of equal magnitude."

THE FERRO-CONCRETE CONSTRUCTION CO. has prepared a pamphlet giving full information regarding specifications and the preparation of plans on which to receive bids for reinforced concrete work, and a copy will be sent on application.

REFERENCES.

A few of the buildings where we have erected the Reinforced Concrete work:

BUILDING	LOCATION
Finch Building, 5 stories	Aberdeen, Wash.
Champion Fiber Co., 72 Leaching Tanks	Canton, N. C.
American Snuff Co., 5-story Factory	Clarksville, Tenn.
Coppin Building, 7 stories	Covington, Ky.
National Cash Register Co., 10-story Office Building	Dayton, Ohio
Gloyd Bros., 12 stories	Kansas City, Mo.
Belknap Hardware Co., 6 stories	Louisville, Ky.
American Snuff Co., 4-story Factory	Memphis, Tenn.
Lyman Sons & Co., 6-story Warehouse	Montreal, Can.
Casa Grand Apartments, 4 stories	New Orleans, La.
United States Printing Co., 4 stories	Norwood, Ohio
Chancellor Hotel	Parkersburg, W. Va.
German American Button Co.	Rochester, N. Y.
Empire Bank Building, 12 stories	Seattle, Wash.
Stewart Laundry, 3 stories	Vancouver, B. C.

GABRIEL CONCRETE REINFORCEMENT COMPANY

820 Penobscot Building

DETROIT, MICH.

PRODUCTS.

THE "GABRIEL" COMPLETE TRUSSED BAR, THE "OVOID" DEFORMED BAR, and the "GABRIEL" HOOPED COLUMN.

DESCRIPTION AND AD- VANTAGES.

The "Gabriel" Complete Trussed Bar is a type of reinforcement that is designed to provide for all stresses that may occur in beams, girders, slabs, or any concrete structural member. There is no reinforcement on the market to-day that provides so thoroughly for all stresses that may occur in a structural member, nor is there one that does it so economically.

The bars are rolled from billets of a special melt, high-grade, high or low carbon steel as desired, the work always being under our immediate supervision. The trussed bar is fabricated complete in our shops and therefore the architect or engineer is assured of a proper amount of steel to take care of various stresses and is also assured of the correct placing of shear members.



WEB MEMBERS FOR REINFORCED-CONCRETE CONSTRUCTION

Both tension and web members are without square corners, thus preventing the formation of planes of cleavage and the consequent cracks that result where reinforcement with sharp edges is used. The formation of the web members, as shown by the cut, is such that the concrete is bonded with the steel to an extent unequaled in any other system, and therefore the maximum homogeneity of the entire member is attained.

INSTALLA- TION.

The "Gabriel" Complete Trussed Bar is shipped assembled and cut to length and ready to drop into the forms. All bent bars are bent in our shop. All columns are completely assembled and there is no work to be done on them other than removing them from the crates and dropping them into the forms. These facts eliminate a constant source of bother to the superintendent and reduce the cost of handling to the contractor to a minimum.

“ OVOID ”
DEFORMED
BAR.

This bar is designed to meet all conditions where a deformed bar is necessary in reinforced-concrete work. We are able to furnish it in any grade of steel desired. In all cases, however, it will be rolled from original billet, open-hearth stock. By the use of this bar a perfect bond is obtained and maximum economy is assured. This bar is used as the tension member of the “ Gabriel ” Complete Trussed Bar.



“ OVOID ” DEFORMED BAR FOR REINFORCED-CONCRETE CONSTRUCTION

Size	$\frac{3}{8}$ "	$\frac{1}{2}$ "	$\frac{5}{8}$ "	$\frac{11}{16}$ "	$\frac{3}{4}$ "	$\frac{13}{16}$ "	$\frac{7}{8}$ "	$\frac{15}{16}$ "	1"	1 $\frac{1}{8}$ "	1 $\frac{1}{4}$ "
Area	.1243	.2209	.3452	.4177	.4971	.5834	.6766	.7767	.8836	1.118	1.381
Weight per Foot	.4226	.7509	1.174	1.480	1.690	1.983	2.300	2.641	3.004	3.802	4.695

SERVICES. We are prepared to design reinforced-concrete structures of all kinds, such as buildings, bridges, dams, retaining walls, viaducts, culverts, reservoirs, concrete mine timbering, and elevators. Our corps of engineers is always available to those who desire estimates and preliminary designs where reinforced-concrete work is involved. Our working drawings are always complete in every detail, and when a shipment of steel is made all bars are tagged to correspond to notations on the drawings, thus reducing the contractor's work to a minimum and assuring proper and complete placing of the steel.

SPECIFICATIONS. To insure the highest class of reinforced-concrete work, specify “ the ‘ Gabriel ’ System, or its equal.”

THE GARRY IRON AND STEEL CO.

MANUFACTURERS OF

Expanded Metal Lath and Roofing Materials

CLEVELAND, OHIO

EASTERN OFFICE
NEW YORK, N. Y., 1123 Broadway
TELEPHONE, 4271 MADISON SQUARE

PRODUCTS.

"CLEVELAND" EXPANDED METAL LATH, "ECONOMY" EXPANDED METAL LATH, "GARRY" BRANDS of MORTAR COLORS, "GARRY" BRANDS of CHARCOAL IRON TIN-PLATE, "GARRY" BRANDS of STEEL TERNE-PLATE, EAVES-TROUGH and CONDUCTOR PIPE.

"CLEVELAND" EXPANDED METAL LATH.

"Cleveland" Expanded Metal Lath (Fig. 1) is a corrugated lath which, unlike other forms of expanded metal lath, is made from unpickled steel and covered with an anti-rust preparation which further protects it from corrosion and disintegration.

It is *reversible*—identical on the two sides—and can not be applied wrong side out, obviously a distinct advantage over any other form of metal lath.

Being corrugated, it is self-furring, and therefore especially desirable for exterior stucco work. By lapping the lath merely one corrugation a continuous bond is presented and the corrugations provide for either contraction or expansion, thus precluding the danger of the plaster cracking.

Whether on a ceiling or a wall the ingenious formation of the "Cleveland" insures a quick and secure key, the envelopment being complete.

Every sheet has a smooth selvage on each edge; it is easy to handle and to either staple or tie on.

"Cleveland" is the heaviest and most substantial form of expanded metal lath extant, giving it character and durability.

The weights per square yard are as follows:

"A" 27-gauge, plain, $3\frac{1}{8}$ lbs.

"A" 24-gauge, plain, 4 lbs.

"B" 27-gauge, plain, $2\frac{5}{8}$ lbs.

"B" 24-gauge, plain, $3\frac{3}{8}$ lbs.

The galvanized lath weighs $\frac{1}{8}$ pound per yard more.

The "A" lath is in sheets $16\frac{1}{2}$ " x 96", put up 18 sheets, or 22 square yards, in a bundle; the "B" lath in sheets 18" x 96", put up 15 sheets, or 20 square yards, in a bundle.

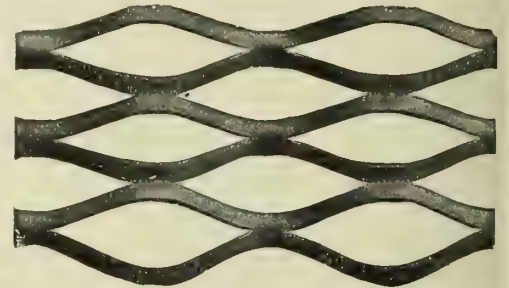


FIG. 1. "CLEVELAND" EXPANDED METAL LATH

"ECONOMY" EXPANDED METAL LATH.

"Economy" Expanded Metal Lath (Fig. 2) is suitable for solid partitions and is particularly adapted to irregular surfaces such as beams, brackets, cornices, etc. It is light, but strong and tough, and is sure to be thoroughly embedded in the mortar, but little of which is required to cover it. It is in sheets 18" x 96", put up 9 sheets, or 12 square yards, in a bundle, and weighs per square yard as follows:

27-gauge, $2\frac{1}{4}$ lbs.

25-gauge, 3 lbs.

26-gauge, $2\frac{1}{2}$ lbs.

24-gauge, $3\frac{3}{8}$ lbs.

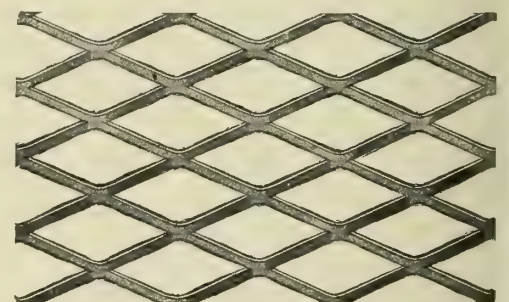


FIG. 2. "ECONOMY" EXPANDED METAL LATH

DATA AND SAMPLES.

We will cheerfully furnish architects any special data desired, together with samples of lath, either plain, painted or galvanized.

AGENCIES.

We have jobbing agencies all over the country, carrying a stock of our lath, thus enabling us to make prompt deliveries anywhere in the United States.

THE GENERAL FIREPROOFING COMPANY

YOUNGSTOWN, OHIO

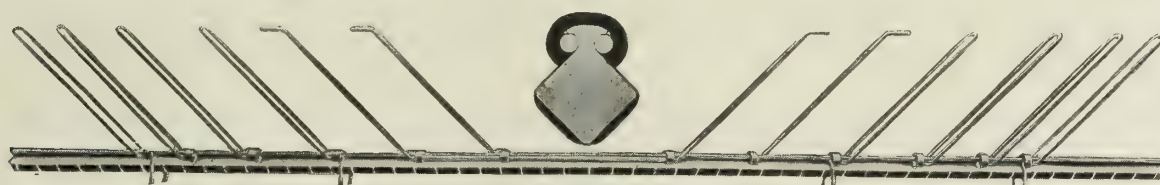
AGENCIES IN ALL PRINCIPAL CITIES

PRODUCTS.

Manufacturers of "HERRINGBONE" EXPANDED STEEL LATH, "KEY DIAMOND MESH" EXPANDED METAL LATH, SHEET-STEEL LATH, STEEL CORNER BEAD, METAL FURRING, COMPLETE REINFORCEMENT of CONCRETE CONSTRUCTION, "HERRINGBONE" BARS, SQUARE LUG BARS and TWISTED SQUARE LUG BARS; EXPANDED METAL WIRE FABRIC REINFORCEMENT, "TRUSSIT" SELF-CENTERING REINFORCEMENT for Concrete Roofs, and for Solid Partitions and Curtain Walls without permanent Studding.

For ALL-STEEL FURNITURE, see General Index.

"HERRINGBONE" BAR.

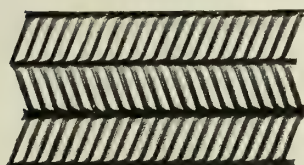


"HERRINGBONE" BAR

The ideal reinforcement for concrete beams. Furnished in either high carbon or medium steel. Rolled in sizes corresponding to square bars from $\frac{5}{8}$ to $1\frac{1}{2}$ inches.

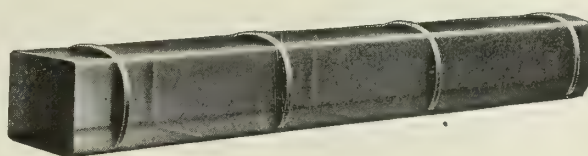
TO ARCHITECTS AND ENGINEERS—With "Herringbone" Bars, stirrups can be as long and spaced as close as your specifications call for. Girder frames can be made by the insertion of a bent square lug bar within the stirrup loops. The weight of the "Herringbone" Bar complete, including stirrups, is practically the same as corresponding nominal size of square bar.

SQUARE LUG BAR.



"HERRINGBONE" EXPANDED STEEL LATH

SQUARE LUG BAR—Furnished in either high carbon or medium steel. Rolled in sizes from $\frac{1}{4}$ to $1\frac{1}{4}$ inches, varying by eighths.



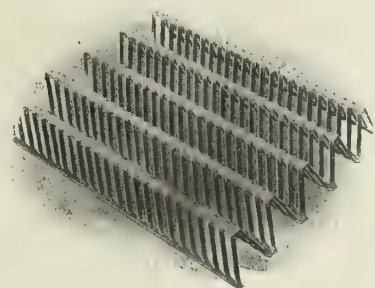
SQUARE LUG BAR

"HERRINGBONE" EXPANDED STEEL LATH.

The standard lath for cement siding construction, fire-proof partitions and ceiling work. The stiffest lath made; forms a rigid and unyielding surface to receive the plaster. Made in three different styles and four different gauges. Furnished uncoated, painted or galvanized.

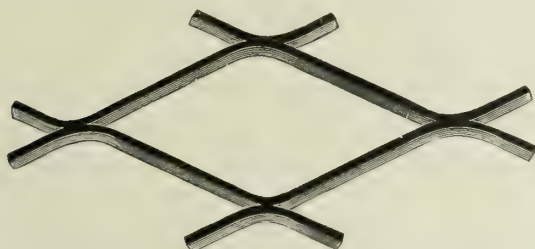
"TRUSSIT."

"Trussit" Metal is an ideal self-centering reinforcement for concrete roofs, partitions and concrete curtain walls. Erected on roof work on 3' 11" spans and concreted without forms; on partitions and curtain walls, without permanent studding. Furnished in four gauges. Makes strongest yet lightest fireproof roof.

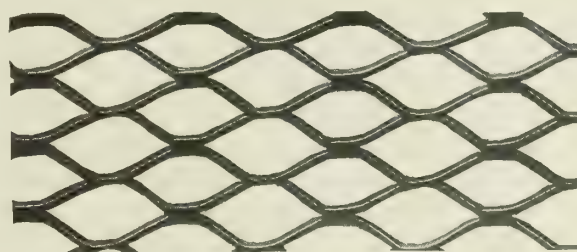


"TRUSSIT" METAL

EXPANDED METAL. KEY LATH.



EXPANDED METAL



EXPANDED METAL KEY LATH

The recognized standard concrete reinforcement, made in $\frac{3}{4}$ to 3-inch mesh and Nos. 16 to 10 gauges. Thoroughly tested in the process of manufacture. Furnishes strongest possible mechanical bond.

A diamond mesh lath recommended for lathing domes, cove work, and wrapping columns, wherever a lath must bend uniformly. Furnished in four gauges and plain painted or galvanized.

HENNEBIQUE CONSTRUCTION CO.

Contractors and Consulting Engineers for Armored Concrete Construction

1170 Broadway
NEW YORK, N. Y.

BRANCHES

BALTIMORE, MD., American Building
CHICAGO, ILL., The Rookery
NEW ORLEANS, LA., Hennen Building

PHILADELPHIA, PA., Witherspoon Building
PITTSBURG, PA., Wabash Building
BOSTON, MASS., 46 Cornhill

LICENSED CONTRACTORS IN ALL PRINCIPAL CITIES

SERVICES.

Contractors and Consulting Engineers for the patented "HENNEBIQUE" SYSTEM of ARMORED CONCRETE CONSTRUCTION for Girders, Beams, Floors, Columns, Footings and Stairs, Concrete Piles, and Sheet Piling. Unexcelled for the construction of Bridges, Factories, and Mill Buildings, Chimneys, Grain Elevators, Coal Bunkers, Reservoirs, Water Towers, Stand-Pipes, Stables and Garages, Sewers, Penstocks, Aqueducts, Canals, Jetties, Coaling Piers and Trolley Posts.

Also Representatives for the United States for the "COMPRESSOL" SYSTEM of FOUNDATIONS.

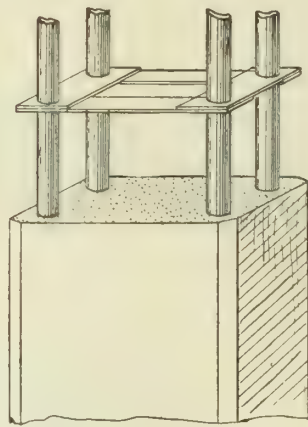


FIG. 2. COLUMN

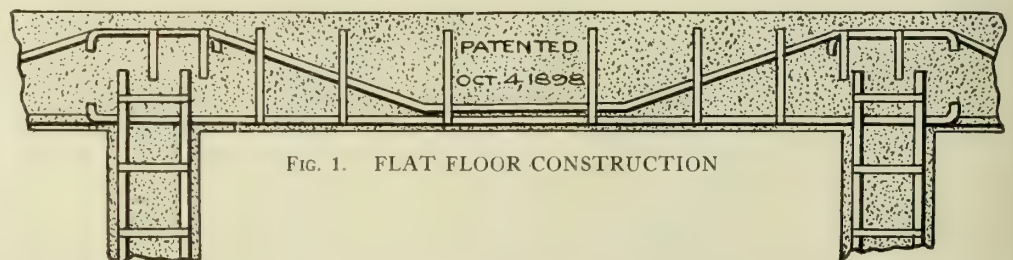


FIG. 1. FLAT FLOOR CONSTRUCTION

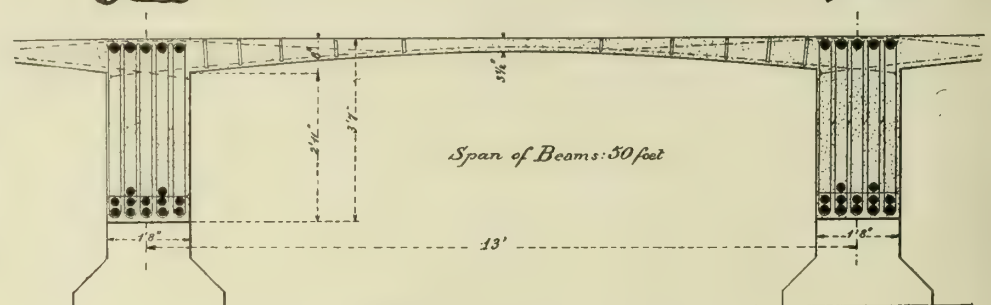


FIG. 3. ARCHED FLOOR CONSTRUCTION

Span of beams 50 feet. From center to center of beams, 13 feet

QUALITIES OF ARMORED CONCRETE.

The designing of all "Hennebique" structures is governed by the following assumptions: (1) Tensile stress in concrete is not to be considered. (2) Concrete and steel have practically the same co-efficient of expansion. (3) The adhesion between steel and concrete is greater than, and therefore determined by, the shearing value of concrete.

In the "Hennebique" System rods are always selected of such diameter that they will fail by tension rather than by shearing of the concrete.

Among the principal advantages of the "Hennebique" System of Armored Concrete may be mentioned the following: Ability to resist fire; indestructibility; simplicity of construction; hygiene and cleanliness; decorative qualities; economy; adaptability.

"COMPRESSOL" SYSTEM OF BUILDING FOUNDATIONS.

The "Compressol" System saves a great expenditure of time and money and permits the construction of excellent foundations of great strength and depth in practically all kinds of soils.

It consists in mechanically perforating the ground while compressing it vertically and laterally, then filling the hole obtained with concrete. This concrete is thoroughly

tamped, thus obtaining a strong pillar of dimensions proportioned to the load which has to be supported and to the soil through which it penetrates.

APPARATUS.

The pillars are constructed mechanically and in a very simple way with the following apparatus: (1) A machine similar to a pile-driver which lifts the rammer to the required height. (2) An automatic fastener to which the rammers are suspended and by which they are hoisted to the required height. The rammer in use is lifted up and when the fastener reaches the ring (A) it automatically releases its grip. The rammer falling freely, perforates the soil. The fastener is then lowered and again grasps the rammer, to repeat the operation until the entire soil is perforated to the good bearing strata. (3) Three different rammers as follows: A, a perforating rammer which acts as a wedge in falling and compresses the soil laterally (Fig. 5) to the solid strata, when the filling is quickly done by B, a tamping rammer. The hole being filled, the pillar can be tested by means of the testing rammer C.

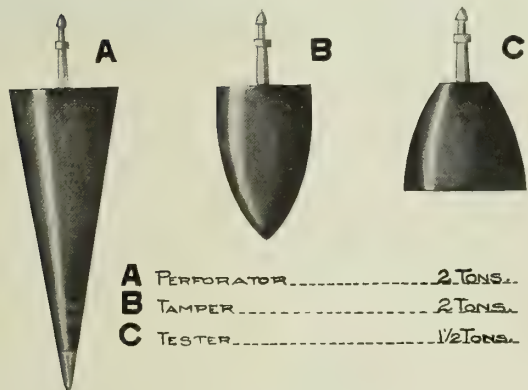


FIG. 4. APPARATUS

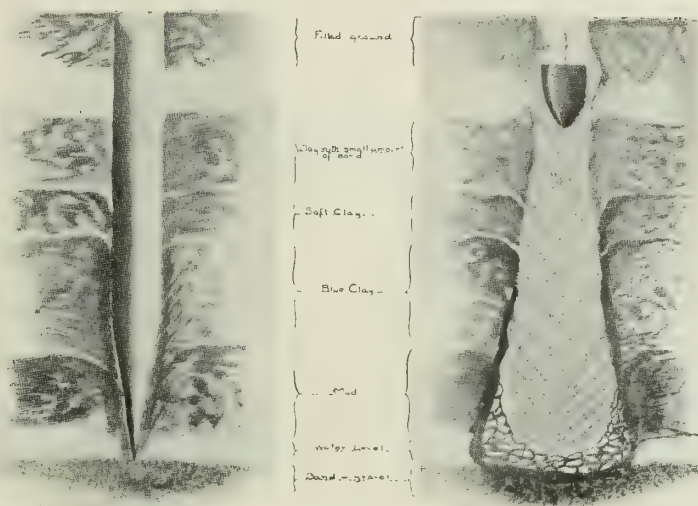


FIG. 5. TAMPING AND FILLING

FACILITIES.

This Company has the exclusive rights to handle the "Hennebique" patents in the United States. Whenever a contractor desires to use our system he can obtain a license by applying to one of our offices.

SPECIFICATIONS.

Preliminary plans and specifications will be cheerfully furnished, and upon being retained as consulting engineers we will make detail drawings and specifications.

REFERENCES.

Over 22,000 buildings have been erected under our supervision according to the "Hennebique" System, amounting to more than one hundred million dollars worth of armored concrete. The following are a few typical constructions:

BUILDING	LOCATION	ARCHITECT
Leonori Storage Warehouse	St. Louis, Mo.	Barnett, Haynes & Barnett
United States Naval Academy, Marine Engineering Building	Annapolis, Md.	Ernest Flagg
Wm. McKinley School	St. Louis, Mo.	Wm. B. Ittner, Com. of School Buildings
Brooklyn Institute Approach	Brooklyn, N. Y.	McKim, Mead & White
Westchester County Court House	White Plains, N. Y.	Lord & Hewlett
Carnegie Library	Bronx, N. Y.	Carrère & Hastings
Allegheny Station, Pennsylvania Railroad	Allegheny, Pa.	Price & McLanahan
McKinley Memorial Monument	Canton, Ohio	H. Van Buren Magonigle
Residence Wm. K. Vanderbilt	Oakdale, L. I.	Warren & Wetmore
Greenpoint Carnegie Library	Brooklyn, N. Y.	R. L. Daus
Southam Limited Printing Establishment	Montreal, Can.	D. Brown & H. Vallance
Lehn & Fink Laboratory	Brooklyn, N. Y.	Maynicke & Franke
Van Antwerp Building	Mobile, Ala.	Geo. B. Rodgers
Thomson Meter Co. Building	Brooklyn, N. Y.	L. E. Jallade

INLAND STEEL COMPANY

MANUFACTURERS OF

Concrete Reinforcing Bars

First National Bank Building

CHICAGO, ILL.

SALES OFFICES

ST. PAUL, MINN., Pioneer Press Building
ST. LOUIS, MO., Chemical Building

WORKS

INDIANA HARBOR, IND.
CHICAGO HEIGHTS, ILL.

PRODUCTS.

ROUND, SQUARE, FLAT and TWISTED STEEL BARS of all sizes and grades, for use in Reinforced Concrete construction.

DESCRIPTION.

The plain bars can be supplied in soft, medium, or high-carbon open-hearth steel, and also in high elastic-limit Bessemer steel. The twisted bars in soft or medium cold-twisted open-hearth steel and in hot-twisted high elastic-limit Bessemer steel.



TWISTED BAR

ADVANTAGES.

We can furnish a greater variety of concrete reinforcing bars than any other mill, and make the steel of the proper analysis to conform to any reasonable specifications and tests.

FACILITIES.

We have a daily capacity of five hundred tons, and have at our works testing machines and a chemical laboratory for the use of inspectors.

ORDERS, SIZES, WEIGHTS, ETC.

We carry no stock but are usually in a position to fill orders very promptly. We cut the bars to exact lengths wanted, thus saving all unnecessary waste of material as compared with purchasing stock bars of various lengths and having them cut the required lengths, subject to the waste incurred in doing so.

Round, Square and Twisted Steel Bars are made in the following sizes and weights:

Size	Round, Weight per foot	Square, Weight per foot	Twisted Size	Twisted Weight per foot
$\frac{3}{16}$ inch	.375 lbs.	.478 lbs.	$\frac{3}{16}$ inch	.478 lbs.
$\frac{7}{16}$ "	.511 "	.651 "	$\frac{7}{16}$ "	.851 "
$\frac{1}{2}$ "	.668 "	.851 "	$\frac{1}{2}$ "	1.329 "
$\frac{9}{16}$ "	.845 "	1.076 "	$\frac{9}{16}$ "	1.914 "
$\frac{5}{8}$ "	1.044 "	1.329 "	$\frac{5}{8}$ "	2.605 "
$\frac{3}{4}$ "	1.503 "	1.914 "	1 "	3.402 "
$\frac{7}{8}$ "	2.046 "	2.605 "	$1\frac{1}{8}$ "	5.316 "
1 "	2.672 "	3.402 "	$1\frac{1}{4}$ "	6.432 "
$1\frac{1}{8}$ "	3.382 "	4.306 "	$1\frac{1}{2}$ "	7.655 "
$1\frac{1}{4}$ "	4.175 "	5.316 "		
$1\frac{3}{8}$ "	5.052 "	6.432 "		
$1\frac{1}{2}$ "	6.012 "	7.655 "		

PRICES.

Prices will be quoted upon receipt of particulars of requirements.

SPECIFICA- TION.

Architects or engineers wishing to secure the very best material for reinforcing concrete construction work should insert the following clause in their specifications:

"Concrete Reinforcing Bars of the sizes indicated, made by the INLAND STEEL COMPANY, of Chicago, Ill., are to be used exclusively for the reinforcing of the concrete for this work."

ONEIDA COMMUNITY, LTD.

Steel Wire Chains for Reinforcing Concrete and Masonry

NEW YORK OFFICE
395 BROADWAY

ONEIDA, N. Y.

CHICAGO OFFICE
131 WABASH AVENUE

PRODUCTS. Manufacturers of STEEL WIRE CHAINS for REINFORCING CONCRETE and MASONRY. For our other Products, see pages in General Index.

DESCRIPTION. Steel Wire Chains are ideal for use in reinforcing concrete, or as bonds in masonry structures. We assemble our chains at the factory, or on the site, into fabrics for floor and wall slabs. We make special chains for wrapping about structural steel to tie concrete to it—giving the best and surest bond.

ADVANTAGES. Because our products are articulate and flexible they may be placed in position for less cost than others. They have the maximum bond in concrete and high-yield point in tension. Thinner slabs can be figured on, and from 15 to 20 per cent of concrete saved, because by our combined spacing stays and chains we fix the reinforcement absolutely in the designed position.

ADAPTABILITY. The Steel Wire Chains are used in floors, roofs, columns, walls, culverts, flumes, domes, ditches and revetments.

ECONOMY. Structures reinforced with our products have been completed at less cost than possible with other reinforcing materials. Economy with equal strength is our motto.

"NIAGARA" REINFORCING CHAINS

Safe Tension in Concrete

No. 110	1700 lbs.
No. 100	2100 lbs.
No. 90	2400 lbs.
No. 80	2900 lbs.
No. 70	4000 lbs.
No. 50	5000 lbs.

"EUREKA" AND "NIAGARA" BONDING CHAINS

Sizes: 2, 3, 4.

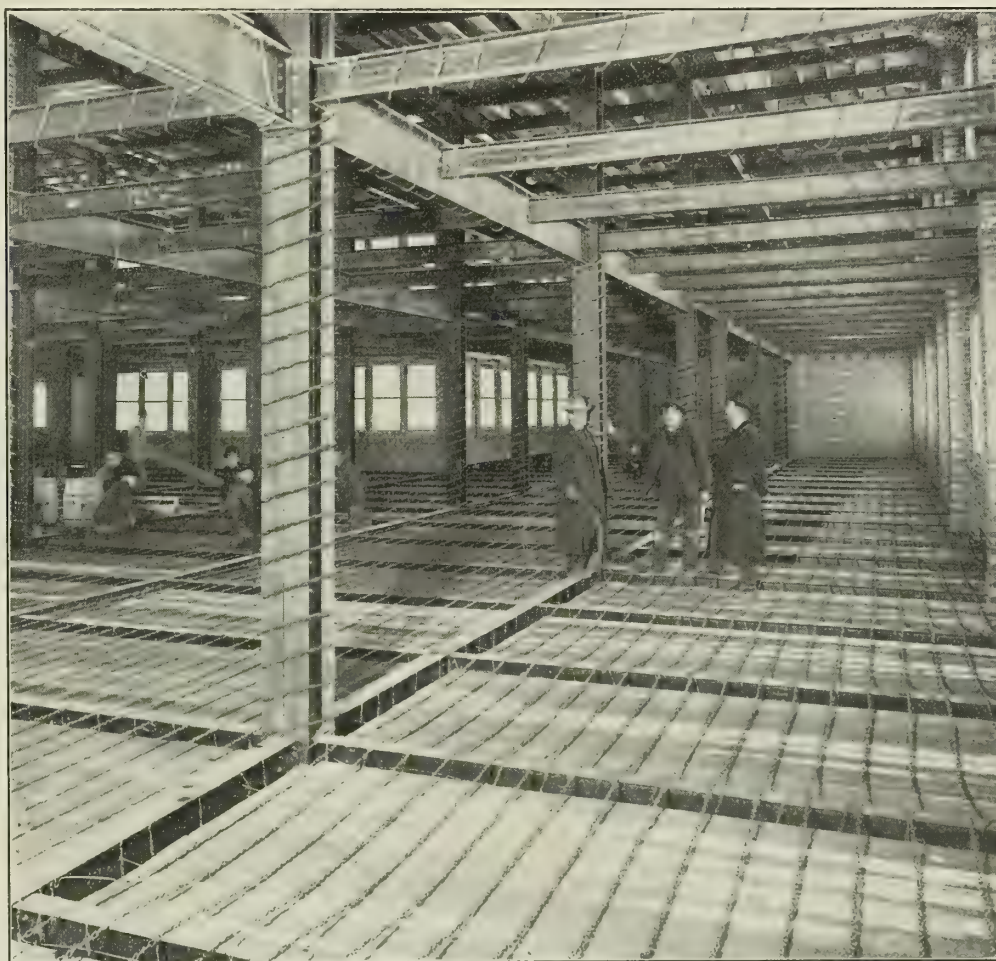
STAY LOOPS

of 8 and 9 gauge wire made for spacing from 2" to 12" c. to c. of chains.

CHAIN FABRIC

Made in fifteen sizes, for loads from 100 lbs. to 1000 lbs. per sq ft.

Stays are looped at both ends and for any spacing.



UNION BUILDING, SYRACUSE, N. Y., REINFORCED THROUGHOUT WITH STEEL WIRE CHAINS

CO-OPERATIVE SERVICE.

Beams, Girders, Columns, and other special reinforcements designed to fit conditions by our engineers. All-Chain reinforced structures may be rapidly and economically assembled. We will co-operate with any constructing engineer and assist in the design of structures using our products.

PATENTS.

We are the owners of basic patents covering the use of chain in masonry structures, and also of design patents covering the entire field.

MONOLITH STEEL COMPANY, Inc.

Manufacturers of Concrete Reinforcement

WASHINGTON, D. C.

WESTERN OFFICE

CHICAGO, ILL., First National Bank Building

WORKS

PITTSBURG, PA.

PRODUCTS.

We are the sole manufacturers of MONOLITH WEBBED BARS; MONOLITH FABRIC; MONOLITH STAPLED COLUMN BARS and MONOLITH SOCKET COLUMN BARS for all classes of CONCRETE REINFORCEMENT. We are also licensees under the Golding Expanded Metal Patents for all grades of REINFORCING MESHES and LATHING.

MONOLITH WEBBED BARS.

The Monolith Webbed Bars are the most efficient and economical for all classes of concrete work wherein shearing stresses must be cared for. The web members are rigidly attached at our works, as shown by Figs. 2 and 3, and shipped with the webs lying down on the main bar (Fig. 4). They are easily raised to the required angle on the job by hand or by means of a special tool (Fig. 5). By United States Official Test the connection between the web member and main bar is absolutely secure and is not affected by an ultimate strain of over 60,000 pounds to the inch, which breaks the web member. The web members may be spaced as desired and may also be made of any required length. As all web members are looped they form an absolute means of interlocking with the concrete, not depending on frictional engagement.

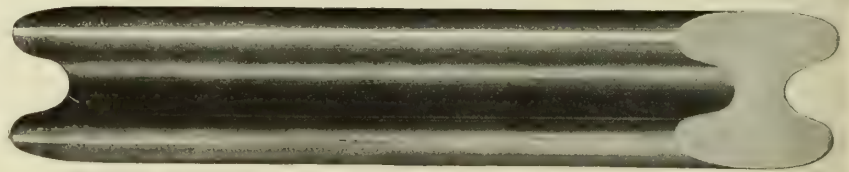


FIG. 1. SECTION OF MONOLITH BAR SHOWING SHAPE

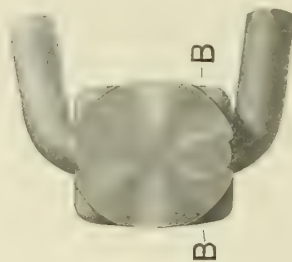


FIG. 2. SECTION ON LINE
A-A (FIG. 3)

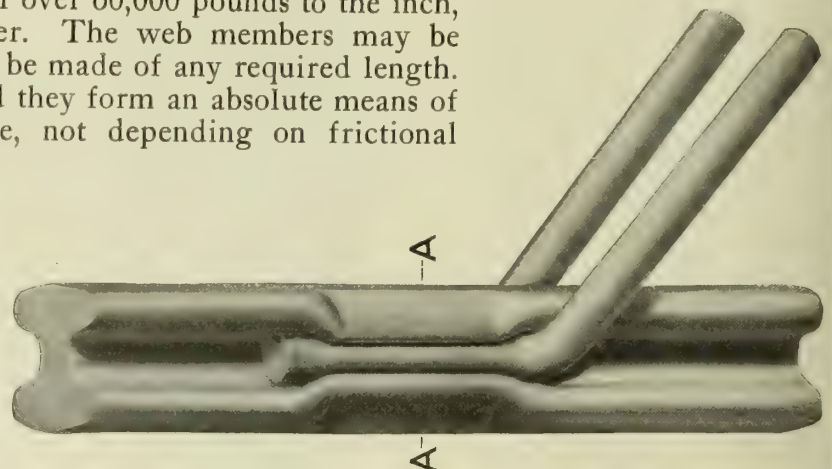


FIG. 3. SHOWING METHOD OF ATTACHING WEB MEMBERS

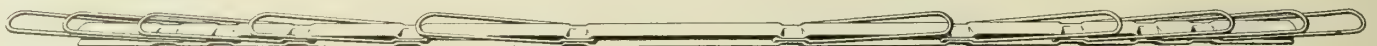


FIG. 4. MONOLITH BAR WITH WEB MEMBERS ATTACHED READY FOR TRANSPORTATION



FIG. 5. MONOLITH BAR WITH WEB MEMBERS RAISED READY FOR USE

RIGIDLY ATTACHED WEB MEMBERS.

Rigidly Attached Web Members, scientifically placed, provide the only means by which stresses can be effectively transmitted from the concrete to the main tension bar and vice versa. The strength of beams is increased fully twenty per cent as compared with plain bars with loose web members, and in case of overloading, the Rigidly Attached Web Members insure a gradual failure instead of the sudden collapse which occurs when loose

web members are used. In case the concrete beneath Monolith Webbed Bars becomes injured by fire or other cause, the strength of the beams is not impaired. The saving in handling our Webbed Bars on the job over that of any system with loose web members is considerable, and there is in addition the certainty that all steel will be in its proper place in the concrete.

SIZES.

Monolith Bars are supplied in sizes equivalent in cross-section and weights to the following squares: $\frac{3}{8}$ inch, $\frac{1}{2}$ inch, $\frac{5}{8}$ inch, $\frac{3}{4}$ inch, 1 inch, $1\frac{1}{4}$ inch and $1\frac{1}{2}$ inch.

MONOLITH FABRIC.

Monolith Fabric (Fig. 6) is undoubtedly the acme of perfection for reinforcement of concrete slabs. It consists of a series of straight monolith bars connected by continuous diagonal wires pressed into the Monolith Bars by the same method by which the web members are attached to our beam bars. It can be made of any size Monolith Bars at any desired centers, and is provided with fixed supports which insure its correct position in the concrete.

MONOLITH STAPLED COLUMN BARS.

Monolith Stapled Bars for Columns (Fig. 7) are provided with projecting staples pressed into the grooves of the bars ready to receive either special or horizontal banding, over which the staples are closed. This may be done either at our works or at the building.

MONOLITH SOCKET COLUMN BARS.

Monolith Bars of this type (Fig. 8) are pressed at intervals, forming sockets along their grooved sides for receiving headed spacing straps, which provides for a driving fit, and they are quick and easy to assemble by hand for either square or round columns.

SERVICES.

We are prepared at all times to co-operate with the profession in the designing of all classes of reinforced-concrete structures.

Catalogues, prices, etc., furnished on request.

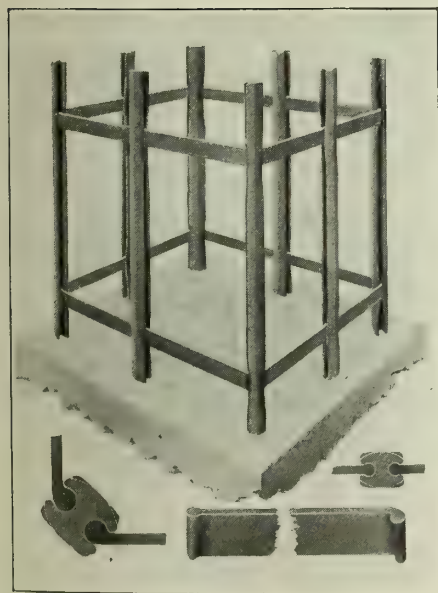


FIG. 8. MONOLITH SOCKET COLUMN BARS

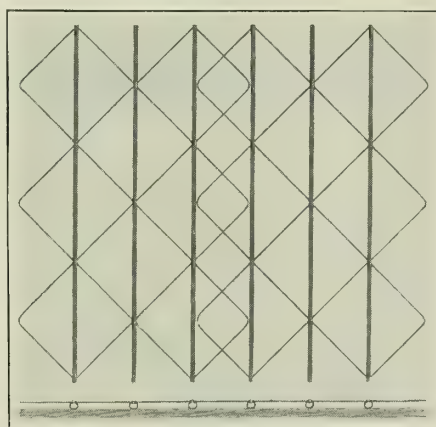


FIG. 6. MONOLITH FABRIC

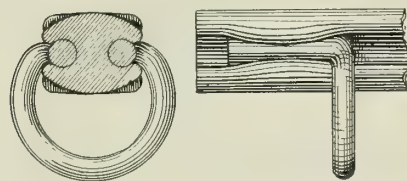


FIG. 9. DETAIL SHOWING HOW MONOLITH FABRIC IS SUPPORTED ON FORMS

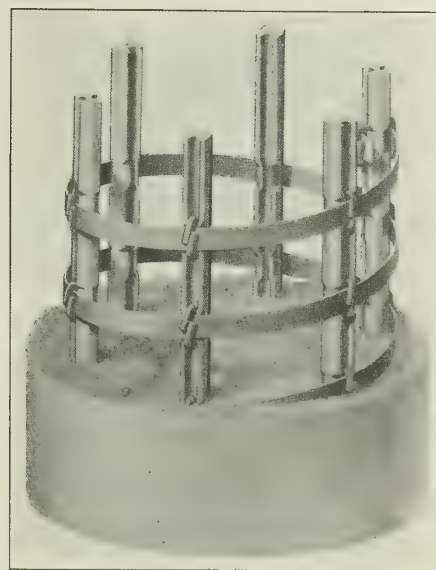


FIG. 7. MONOLITH STAPLED COLUMN BARS

THE NATIONAL WIRE CLOTH CO.

MANUFACTURERS OF

The "National" Spacing Chair

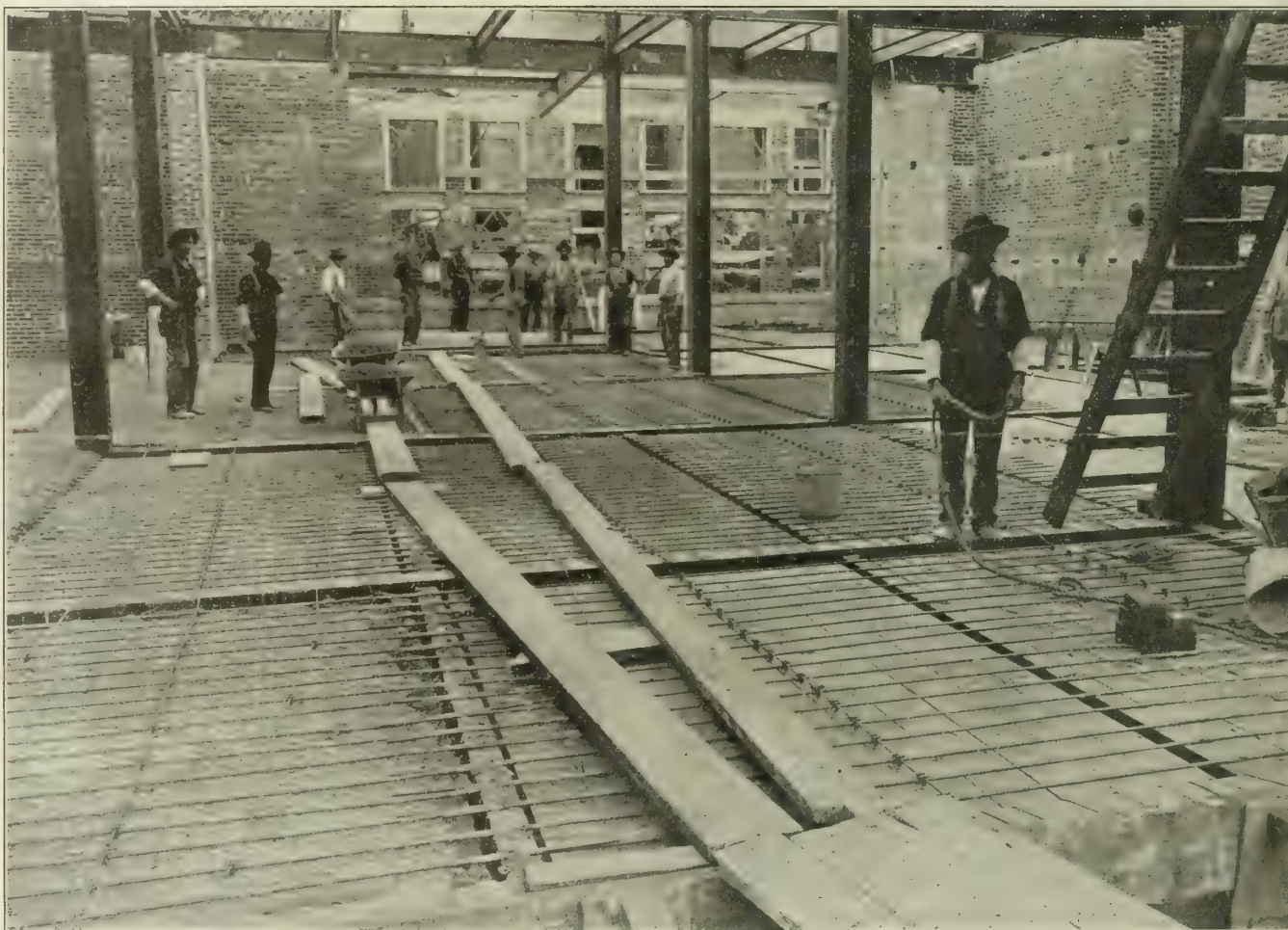
SANDUSKY, OHIO

PRODUCT.

The "NATIONAL" SPACING CHAIR for locking the bars in reinforced-concrete construction.

DESCRIPTION.

A device used for locking together the heavier wires or bars used in concrete construction, keeping the wires or bars a suitable height from the forms. The chair is made for any method of reinforced-concrete construction, including spirals. It is made in heights from one half inch to four inches, with or without feet, and in graduated sizes to accommodate rods from one quarter inch to two inches in diameter with a graduation of one eighth inch for the main rods.



METHOD OF LAYING CONCRETE FLOOR

UTILITY.

It is becoming more and more important in concrete construction that order and system be observed in placing reinforcing material if builders expect to achieve the most satisfactory results. It is necessary that this reinforcement should be evenly spaced and perfectly locked. This makes the strength of the concrete uniform. The "National" Spacing Chair spaces evenly; it possesses a maximum of strength in a minimum of size. This chair has solved the problems which have heretofore beset the constructor, and it is done at a minimum of expense.

PLACING THE CHAIRS.

No expert workmen are necessary. Cheap labor can be employed and can set the chairs with perfect accuracy. They can be placed only one way and mistakes are impossible.

COLUMN
CON-
STRUCTION.

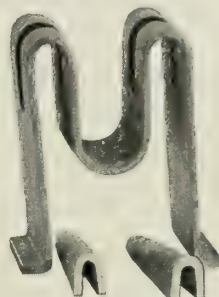
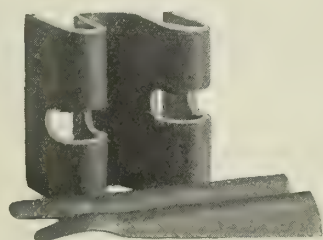
CO-OPERATIVE
SERVICE.

These chairs can be quite as successfully used for column and spiral construction as for girders and beams. It will be found in practice that a column or spiral can be made with them far easier and more firmly than with many of the high-priced patented spirals now in use.

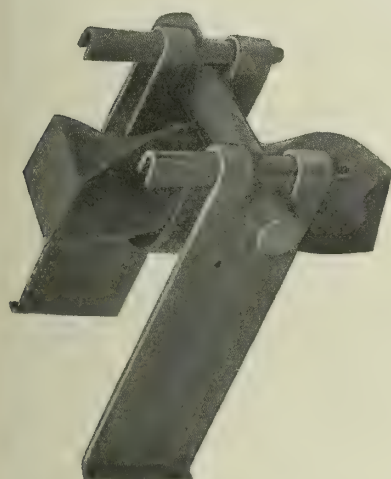
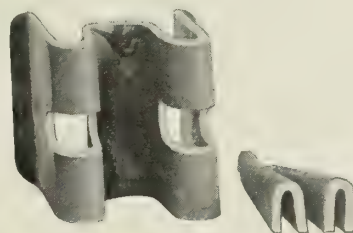
This Company will be glad to furnish suggestions, detailed information and samples to prospective purchasers and architects.



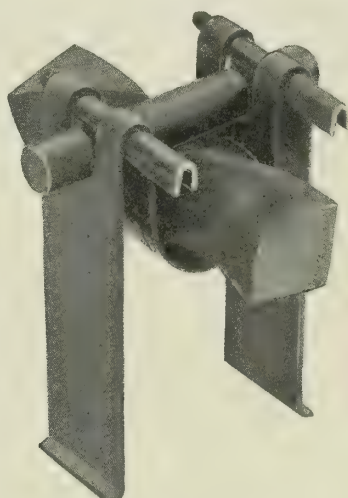
Spiral Chair



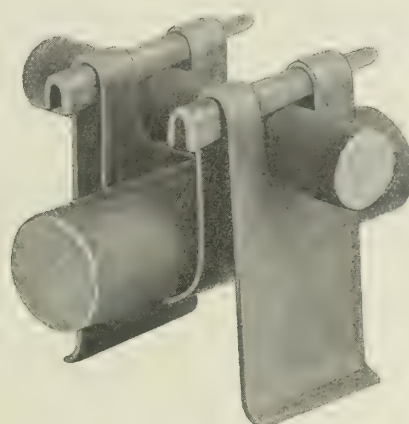
No. 14 L. $\frac{1}{4}$ inch by $\frac{1}{4}$ inch



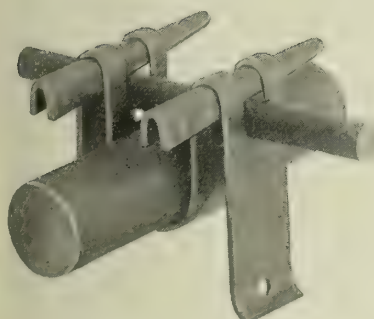
No. 3438 T O L



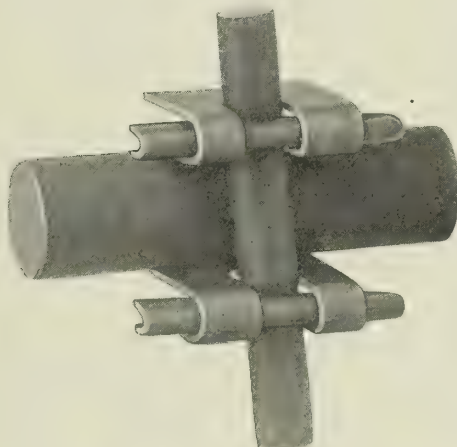
No. 3438 T O L



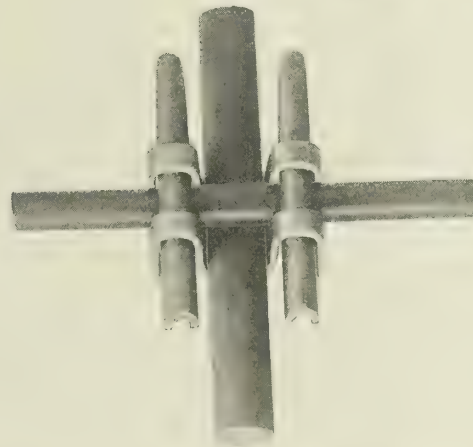
No. 3412 L



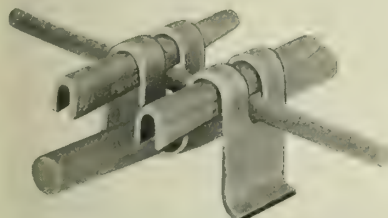
No. 12 L. $\frac{1}{2}$ inch by $\frac{1}{4}$ inch



No. 3438. Spiral



No. 38. $\frac{3}{8}$ inch by $\frac{1}{4}$ inch



No. 149 L. $\frac{1}{4}$ inch by No. 9 Wire



Rods fastened together by "National" Chair

Observe that no part of rods touch the form, allowing concrete to embed them thoroughly

SEVERAL STYLES AND SIZES OF THE "NATIONAL" SPACING CHAIR

NORTHWESTERN EXPANDED METAL CO.

930-950 Old Colony Building
CHICAGO, ILL.

TELEPHONE, HARRISON 799

FACTORIES
CHICAGO, ILL. JEANNETTE, PA.

PRODUCTS.

EXPANDED METAL FABRIC, EXPANDED METAL PLASTERING LATH, and the NORTHWESTERN EXPANDED STEEL SYSTEM for CONCRETE REINFORCEMENT—a Unit System.

UTILITY.

Northwestern Expanded Metal is used wherever wire netting may be used and is better than woven or welded fabrics.

ESTIMATES
AND
CO-OPERATIVE
SERVICE.

We do not contract for construction work and are not connected with any construction company, but sell Fabric and Unit Reinforcement. Let us estimate your requirements.

The NORTHWESTERN EXPANDED METAL CO. offers the services of the Engineering Department to architects, engineers, and concrete workers, and wishes to co-operate with them as fully as possible.

“KNO-
BURN”
EXPANDED
METAL LATH.

When specifying lath be sure to mention gauge and weight per square yard. We recommend 24 gauge with minimum weight of 3.4 lbs. per square yard. Do not omit mention of weight in specifications. Send for our “Kno-Burn” Lath Booklet giving specifications, mortar mixtures, etc.



TRADE-MARK

“KNO-BURN” D. D. LATH

Size of Sheet 18 in. Wide 96 in. long	Weight per bundle	Yards per bundle	Sheets per bundle	Weight per yard	Yards in 100 lbs.
No. 27 Gauge..	27 1/2 lbs.	12	9	2 1/3 lbs.	43
No. 26 Gauge..	30 lbs.	12	9	2 1/2 lbs.	40
No. 25 Gauge..	35 lbs.	12	9	2.9 lbs.	34 1/4
No. 24 Gauge..	40 1/2 lbs.	12	9	3.4 lbs.	29 1/2

“KNO-BURN” DIAMOND MESH LATH

Mesh	No	Gauge	Width	Length	Sheets in bundle	Weight of bundle	Yards in bundle
Diamond	DM	24	21 in.	96 in.	9	45 lbs.	14
Diamond	DM Brd Strand	24	24 in.	96 in.	9	56 lbs.	16

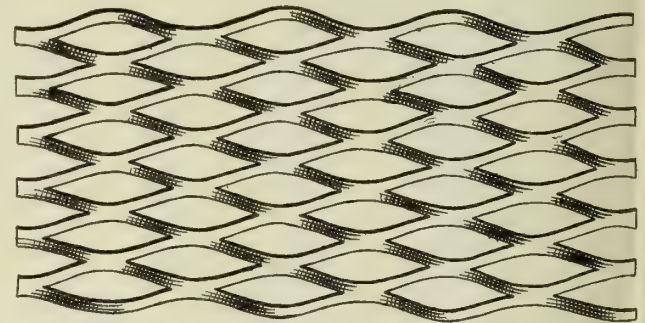


FIG. 1. “KNO-BURN” EXPANDED METAL LATH

SUSPENDED
CEILINGS.

Our Beam Clip and Suspension Bar (Fig. 2) afford the easiest method of suspending ceilings from solid rolled beams or concrete slabs.

The suspension bar is made in lengths varying from 4 to 12 inches.

For suspended reinforced ceilings we advise the use of our 2 1/4" No. 16 or No. 16 plus 50 expanded metal.

PARTITIONS.

Some forms of partition construction are shown in Figs. 3, 4 and 5.

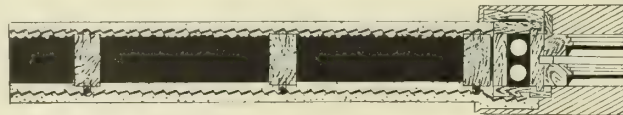


FIG. 3

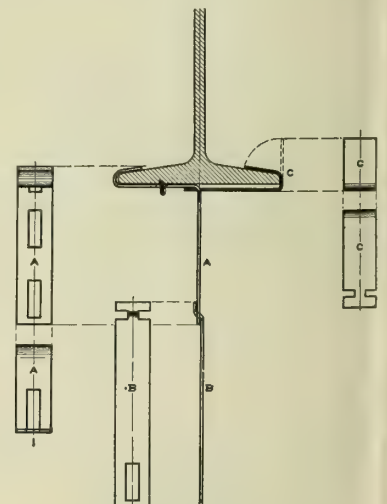


FIG. 2. BEAM CLIP AND SUSPENSION BAR

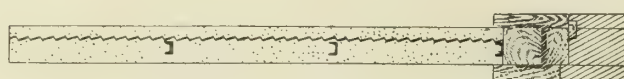


FIG. 4



FIG. 5

FORMS OF PARTITION CONSTRUCTION

STAPLES AND
FURRING
FOR METAL
LATH.

STAPLES PER 100 SQUARE YARDS				
Wood Staples	No. 14-gauge wire	1" long	10 lbs.	
Wood Staples	No. 14-gauge wire	1½" long	12½ lbs.	
Wood Staples	No. 14-gauge wire	1¾" long	15 lbs.	
Wood Staples	No. 14-gauge wire	2" long	20 lbs.	
Brick Staples	No. 9-gauge wire	2" long	40 lbs.	
Brick Staples	No. 8-gauge wire	2½" long	50 lbs.	
Brick Staples	No. 6-gauge wire	2½" long	60 lbs.	

OVERCOATED
HOUSES.

A great deal of work is now done in the covering of old wooden and brick houses with stucco on metal lath. Send for our booklet entitled "Overcoated Houses."

REINFORCE-
MENT.

The NORTHWESTERN EXPANDED METAL CO. offers a Unit Reinforcing System which experience shows to be better than any other form of reinforcement. City Building Ordinances are giving preference to Unit Systems.

UNIFORM
STANDARDS
EXPANDED
METAL.

SIZE OF MESH, WIDTH						Area sq. in. per 12" width	Weight Pounds per sq. ft.	Elastic Limit Pounds per 12" width
½"	¾"	1½"	2¼"	3"	6"			
EXPANDED METAL NUMBERS								
10 ½	10 ¾	101 ½	052 ¼	053		.05	.17	3,600
15 ½	15 ¾	151 ½	102 ¼	103		.10	.34	6,000
20 ½	20 ¾	201 ½	152 ¼	153		.15	.51	9,000
	25 ¾	251 ½	202 ¼	203		.20	.68	12,000
	30 ¾	301 ½	252 ¼	253	256	.25	.849	15,000
		351 ½	302 ¼	303	306	.30	1.02	18,000
			352 ¼	353	356	.35	1.185	21,000
			402 ¼	403	406	.40	1.36	24,000
REGULAR LENGTHS, FEET						STOCK WIDTHS, FEET		
8	8	8	8	8	8	2, 4, 6, 8,		
			12	10' 6"	12	2, 3, 4, 5, 6, 7, 8		
						2, 3, 4, 5, 6, 7, 8 *		

*The 6" mesh can be furnished in 5 ft. width only.
Waste and cutting charged for lengths or widths not shown in table.
First two figures in number give area in square inches per 12" width.
Other figures give width of mesh.
Weight per sq. ft. = 3.4 X area per 12" width.

SIZE OF
MESH.

Only the 3" and 6" mesh should be used for reinforcement and preference should be given the 3" mesh. The smaller meshes are used for screens, etc. If customer wants some special gauge:

- The ½" mesh can be cut from 26, 24, 22 and 18 gauges.
- The ¾" mesh can be cut from 16 and 12 gauges.
- The 1½" mesh can be cut from 16 and 12 gauges.
- The 2¼" mesh can be cut from 16, 12 and 10 gauges.

DESIGNATION
OF FABRIC.

Attention is called to the above Uniform Standards. Heretofore every company making expanded metal has had standards differing slightly from those of other companies. The designation had to be by width of mesh and gauge of metal used. As different areas and weights could be cut from the same gauge it was necessary also to specify the area per twelve inches width or the weight per square foot.

It was puzzling to new users. Our new Uniform Standards can be cut by any company and makes it easy to specify expanded metal. Note in the above table that the first two figures indicate the reinforcing area per 12 inches width and the remaining figures give the width of mesh. The gauge is nothing that should concern the user so long as he secures the correct reinforcing area or weight.

FORMULAS.

The NORTHWESTERN EXPANDED METAL CO. uses the standard formulas for reinforced concrete design. All the area of steel in cross-section is available for reinforcement. No additional steel is required for binding or cross bearing.

GOLDING
PATENTS.

We are the only licensees under the Golding Patents who can sell expanded metal in the States west of Ohio.

CRIMPED STEEL FURRING		
¼" wide	20-gauge steel	30 lineal feet per pound
½" wide	22-gauge steel	20 lineal feet per pound
¾" wide	22-gauge steel	15 lineal feet per pound
1" wide	22-gauge steel	10 lineal feet per pound

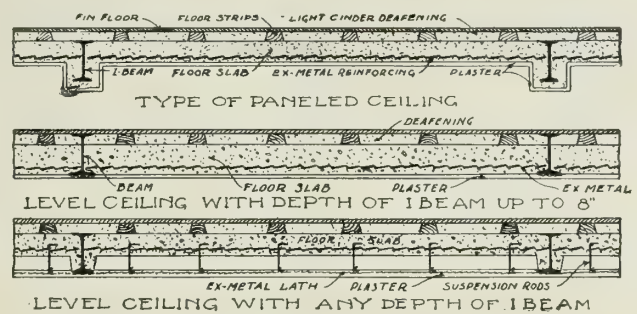


FIG. 6. TYPICAL FLOOR AND CEILING CONSTRUCTION, REINFORCED CONCRETE

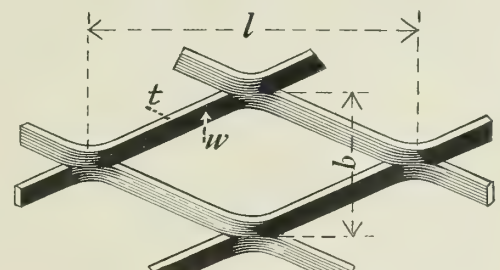


FIG. 7. DETAIL OF FABRIC
l—length; w—width; b—breadth;
t—thickness

TRUSSED CONCRETE STEEL CO.

Kahn System of Reinforced Concrete
Manufacturers of Steel Reinforcement for Concrete and Fireproofing

DETROIT, MICH.

WORKS

CABLE ADDRESS: "KAHNCRETE, DETROIT"

YOUNGSTOWN, OHIO
WALKERVILLE, ONTARIO
WELLINGTON, ENGLAND

AGENCIES IN ALL PRINCIPAL CITIES OF THE UNITED STATES AND ABROAD

PRODUCTS.

STEEL REINFORCEMENT for all types of Concrete Work, including KAHN TRUSSED BARS, RIB METAL, COLUMN HOOPING, CUP BARS, HY-RIB. FIREPROOFING PRODUCTS, including HY-RIB, RIB LATH, RIB STUDS, and HOLLOW TILE; also, BUILDING SPECIALTIES, including "TRUS-CON" JOIST HANGERS, POST CAPS, SHAFT HANGERS, and STAIR TREADS.

SERVICES.

The Kahn System Products have been used in over 3,000 important structures (list on request) in all parts of the world. We maintain a large Engineering Department to give architects and engineers the result of this experience in any work that they are planning. Preliminary designs, estimates, and suggestions furnished gratis. Detail drawings, showing the exact location of each reinforcing bar and size of all concrete work, are prepared without cost on any work in which Kahn System Products are used. We aim to co-operate with architects and engineers in every way possible to insure the best possible construction.

KAHN TRUSSED BAR.

The Kahn Trussed Bar is used for girders, beams, floors, arches, etc., and consists of a main horizontal bar with rigidly connected diagonal shear members. Projecting from opposite sides of the cross-section are two horizontal flanges which are sheared up to form rigidly connected diagonals. Rigid connection of shear members is essential for the following reasons:

(1) **STRENGTH**—The shearing strains must be properly transferred to the main tension member by means of a direct positive connection, not by the adhesion of the concrete. Actual University Tests show that beams reinforced with Kahn Trussed Bars carry from 25 to 35 per cent more load than similar beams reinforced with loose stirrups.

(2) **FIREPROOFNESS**—A severe fire may weaken the adhesion of the concrete, destroying strength of beam designed with loose stirrups.

(3) **SHOCK-PROOFNESS**—Experiments show that adhesion is weakened by repeated loading and unloading, such as occur in factories, bridges, etc.

(4) **INSTALLATION**—Rigid connection insures the correct placing of each reinforcing member and prevents their displacement by pouring of the concrete.

(5) **ECONOMY**—The full sectional area of Kahn Trussed Bars is available at center of span to resist bending moment, while at ends the excess metal forms shear members, doing away with the extra metal ordinarily necessary for stirrups.

RIB METAL.

Rib Metal is used for slabs, walls and conduits, and is a series of straight bars or ribs rigidly connected by cross members made from the same sheet of steel. All tension is resisted by the ribs in straight line action between the supports. The cross members accurately space and thoroughly anchor the ribs, preventing any chance of displacement, and providing perfect reinforcement for temperature and shrinkage strains.



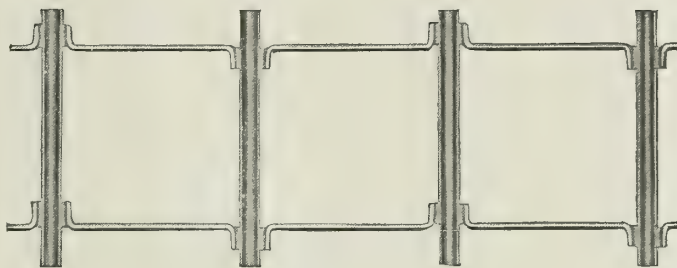
KAHN TRUSSED BAR

Bars up to 60 feet in length are carried in stock. Any desired length of diagonal or type of shearing can be furnished

TABLE OF SIZES, WEIGHTS AND AREAS

Size, inches	Weight per lineal foot, pounds	Area, square inches	Length diagonals, inches
$\frac{1}{2} \times 1\frac{1}{2}$	1.4	0.41	6- 8-12
$\frac{3}{4} \times 2\frac{3}{16}$	2.7	0.79	12- 8-18
$1\frac{1}{2} \times 2\frac{1}{4}$	4.8	1.41	24-18-30-36
$1\frac{3}{4} \times 2\frac{3}{4}$	6.8	2.00	24-18-30-36
$2 \times 3\frac{1}{2}$	10.2	3.00	30-24-36-48

Rib Metal is supplied either straight for slabs and walls, or bent to curve for arches, sewers, and conduits. Furnished in seven sizes of mesh: 2-inch, 3-inch, 4-inch, 5-inch, 6-inch, 7-inch, and 8-inch, and in lengths up to 18 feet.



RIB METAL

TABLE OF SIZES AND DIMENSIONS

Size Number.....	2	3	4	5	6	7	8
Width of Standard Sheet, in inches.....	16	24	32	40	48	56	64
Sectional Area per foot of width in square inches..	.54	.36	.27	.216	.18	.154	.135

COLUMN
HOOPING.

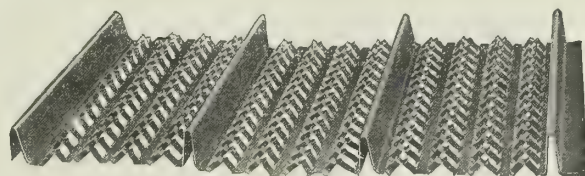
Column Hooping is built up complete in our shops and is shipped ready to be installed on the job, assuring absolute accuracy of placing and doing away with expensive field labor.

CUP BARS.

Cup Bars are used for columns, walls, tanks, etc., and are a special rolled section with a series of cross ribs so designed as to secure maximum grip on the concrete with greatest possible strength. Furnished in all sizes from $\frac{3}{8}$ -inch to $1\frac{1}{4}$ -inch, varying by $\frac{1}{8}$ -inch. Areas are equal to those of square bars of the same designations.

HY-RIB.

Hy-Rib is used for floors, roofs, sidings, walls, partitions, ceilings and furring. It is a perfect steel lath stiffened by rigid high ribs ($\frac{13}{16}$ -inch high and $3\frac{1}{2}$ -inches apart) made from the same sheet of steel. When used as reinforcement for concrete slabs Hy-Rib does away with all centering. In walls and partitions no studs are necessary.

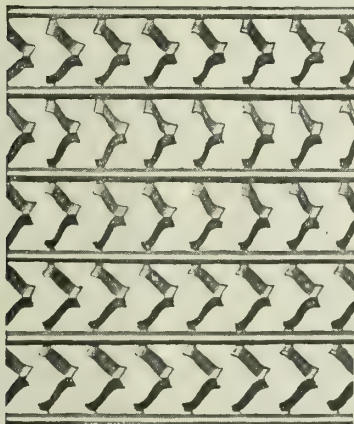


HY-RIB SHEATHING

Hy-Rib Sheets are $10\frac{1}{2}$ inches wide. Standard lengths of sheets are 6 feet, 8 feet, 10 feet, and 12 feet. Other lengths as ordered. Furnished in three thicknesses of metal, U. S. Standard gauges Nos. 28, 26, and 24. Other gauges supplied in reasonable time.

RIB LATH.

Rib Lath is used for plaster and ornamental work and is the stiffest steel lath because of the beaded parallel ribs which span directly between the studs. Provides a perfect clinch for the plaster owing to the improved form of expansion. Requires the least amount of plaster with no dropping of plaster behind the lath. Presents a uniformly flat surface to plaster against, permitting pressure necessary to thoroughly compact the plaster.



STANDARD RIB LATH

STANDARD RIB LATH

Size of sheets $20\frac{1}{2} \times 96$ inches
Weight per square yard

No. 1	2.74 lbs.	No. 3	3.76 lbs.
No. 2	3.42 lbs.	No. 4	4.10 lbs.

Furnished either plain or painted

B RIB LATH

Size of sheets $24\frac{5}{16} \times 96$ inches
Weight per square yard

No. 1B	2.28 lbs.	No. 3B	3.14 lbs.
No. 2B	2.85 lbs.	No. 4B	3.42 lbs.

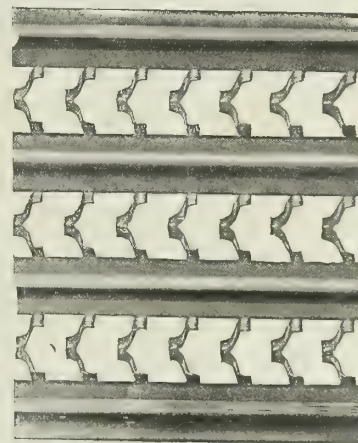
Furnished either plain or painted

A RIB LATH

Size of sheets $15\frac{1}{2} \times 96$ inches
Weight per square yard

No. 1A	3.63 lbs.	No. 3A	5.00 lbs.
No. 2A	4.54 lbs.	No. 4A	5.45 lbs.

Furnished either plain or painted



A RIB LATH

RIB STUDS.

Rib Studs are used for hollow walls and partitions. They are made of the highest grade of steel, are rigid and open for the passage of conduits and pipes. Made in widths from $1\frac{1}{4}$ to $6\frac{1}{4}$ inches, varying by 1 inch, and in lengths up to 18 feet.

CATALOGUES.

"Kahn System Standards" (128 pages). A handbook containing complete tables, discussion and data for designing and estimating reinforced concrete.

"Hand Book of Instruction" (36 pages). Gives directions for installation of work.

"Kahn System Achievements" (84 pages). Outline of Kahn System Service with name, location, etc., of principal work.

Illustrated catalogues describing various types of structures. Catalogues and folders on Kahn Trussed Bars, Rib Metal, Hy-Rib, Rib Lath, Tile, and Building Specialties.

Catalogues, suggestions, estimates and designs are furnished without charge.

C. A. P. TURNER

MEMBER AMERICAN SOC. C. E.

Turner System of Concrete Steel Construction
Consulting Engineering Work, Bridges and Buildings

Suite 816, Phoenix Building
MINNEAPOLIS, MINN.

N. W. TELEPHONE, MAIN 3097
T. S. TELEPHONE, 2847

PRODUCTS AND SERVICES. "TURNER" SYSTEM of CONCRETE STEEL CONSTRUCTION; CONSULTING ENGINEERING WORK.

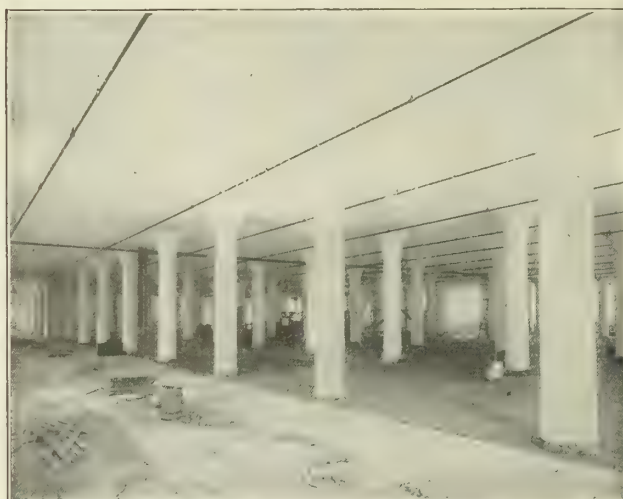
OUR CLAIMS. Safety of construction, economy of centering, rapid erection, simplicity of details. We build without ribs, which catch dust, disfigure the ceilings and interfere with light. Write for our Bulletin 11. See us, and get first-class, up-to-date construction.



View showing Summit Street Front
BOSTWICK-BRAUN CO., CONCRETE BUILDING, TOLEDO, OHIO. MUSHROOM SYSTEM
5,000 to 6,000 square feet of floor erected in a day, for thirty days running, on this building
Floor tested with 1,000 pounds square feet over full panel



View from Water Front



Interior view of Lindeke-Warner Building, St. Paul, Minn.
Mushroom System



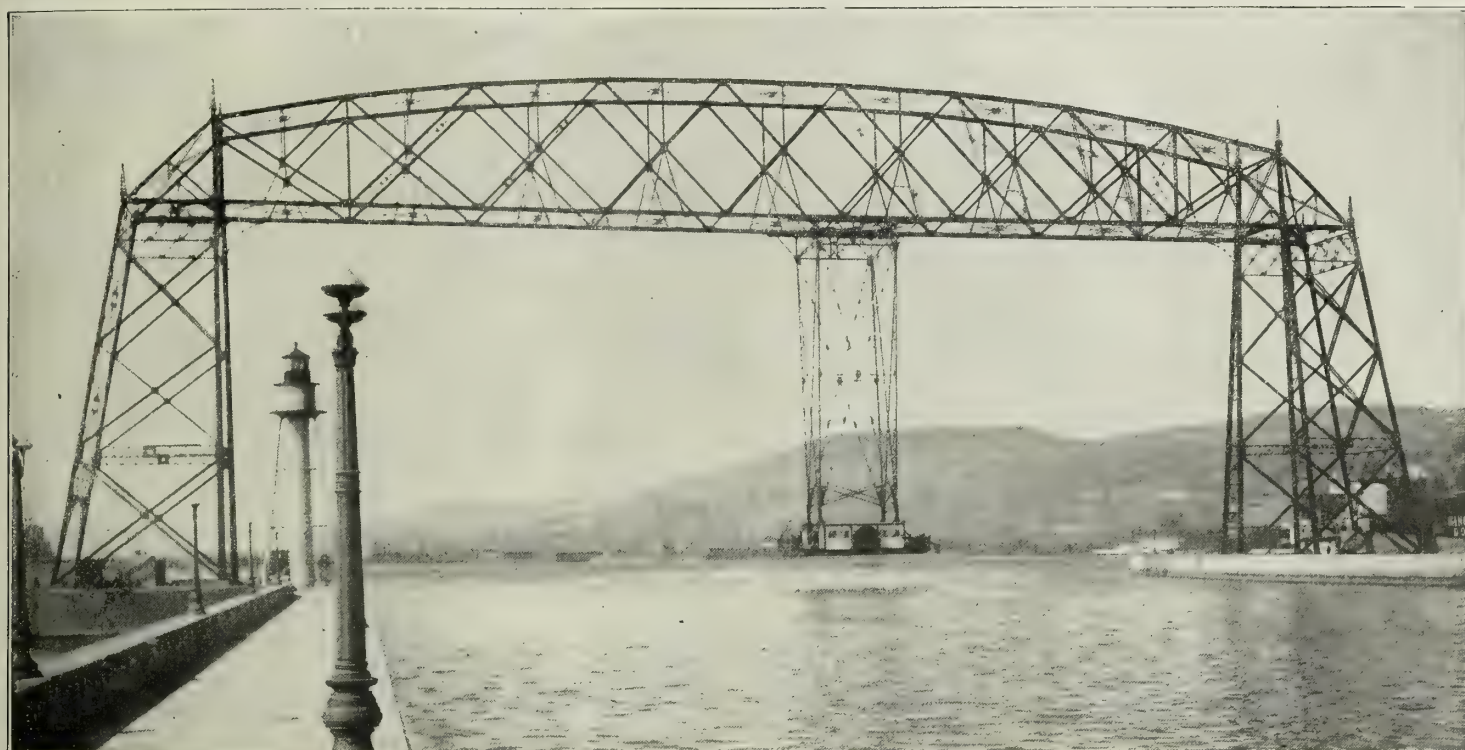
Mushroom System of Reinforcement. No Beams used
Bovey Building, Minneapolis, Minn.

EXAMPLES OF TURNER MUSHROOM SYSTEM

A saving of ten per cent of exterior walls for a given clear-story height

ILLUSTRATIONS.

The accompanying illustrations are photographic reproductions of two prominent bridges designed by C. A. P. TURNER.



FERRY BRIDGE, DULUTH, MINN.

Designed and patented by C. A. P. TURNER, Engineer. Patent No. 719,979. Span 394 feet clear, 130 feet clear above water, 180 feet from top chord to water level, 504 feet out-to-out



SIDE VIEW OF BRIDGE NEAR THE TOWN AND COUNTRY CLUB, MISSISSIPPI BOULEVARD, ST. PAUL, MINN.

Mushroom System Floor and Viaduct Approach Spans. Bridge 250 feet long, 95 feet from the roadway to bottom of ravine. Roadway and walks, 40 feet. Cost, \$19,000

Designed by C. A. P. TURNER. Built by F. J. ROMER CONSTRUCTION CO. FRED NUSSBAUMER, Park Superintendent
L. W. RUNDLETT, City Engineer

TURNER CONSTRUCTION COMPANY

Engineers and Contractors for Reinforced Concrete Construction

11 Broadway
NEW YORK, N. Y.

BRANCHES

BUFFALO, N. Y., Builders Exchange Building

JACKSONVILLE, FLA., P. O. Box 807

PRODUCTS.

REINFORCED CONCRETE CONSTRUCTION of all kinds; REINFORCED CONCRETE STAIRS a specialty; COLD-TWISTED STEEL BARS for REINFORCING.

SCOPE.

BUILDINGS—We make a specialty of building, in Reinforced Concrete, industrial buildings, such as factories, warehouses, cold-storage plants, printing-houses, lofts, garages, stables, mills, etc. The total amount of reinforced concrete self-supporting floors constructed by this company is very nearly one hundred acres.

STAIRS—We build Reinforced Concrete Stairs, and have constructed practically all of the reinforced concrete stairs in the New York City subways.

REINFORCING—We supply Cold-Twisted Steel Bars for Reinforcing, and having in our yard a sufficient tonnage to meet all rush orders, we can quote on both mill and stock shipments.

SERVICES.

ENGINEERING—We design, in detail, the structural members of buildings which we erect, and also prepare show drawings for presentation to owners. We act as consulting engineers on reinforced concrete designs of all kinds.

CO-OPERATION—We are pleased at all times to co-operate with architects in furnishing approximate estimates for reinforced concrete work in competition with steel construction or mill buildings, with the idea of showing the economy which is to be obtained with reinforced concrete construction.

METHODS OF CONTRACT.

We contract for reinforced concrete work on either the "lump-sum," "percentage," or "cost-plus-a-fixed sum" plans.

ORGANIZATION.

Our organization is divided into the following departments: Contracting, Estimating, Engineering, Purchasing, Construction, and Accounting, and each job is put through the successive departments, each of which is under the charge of a technically educated and experienced engineer who has been tried out in our service before being given responsible charge.

The individual superintendents on construction are placed in charge of work only after they have had two or three years



FIG. 1. MYRICK BUILDING, SPRINGFIELD, MASS.
285 x 105 feet, eight stories, basement and sub-basement
F. S. HINDS, Architect

service in our employ, and the majority of our mechanics and laborers have also been in our service for several years.

RESULTS.

With this organization we have executed over 270 contracts in reinforced concrete work exclusively, covering every type of building and concrete structure, and it is by means of this careful organization and our wide experience that we are enabled to attain satisfactory speed in the erection of concrete buildings. We have erected a ten-story reinforced concrete factory in forty-seven working days.

ILLUSTRATIONS.

The buildings illustrated are typical of work executed by this company:

FIG. 1. This building is a copy of the Royal Palace at Stockholm, and is of reinforced concrete throughout. Note the ornamental treatment and maximum light obtained with this type of construction.

FIG. 2. This warehouse was awarded first prize by the committee on Art of the National Association of Cement Users for the year 1908, as representing the highest development in design and execution of reinforced concrete industrial building.

FIG. 3. These buildings being constructed for rental purposes, the probable requirements of unknown prospective tenants had to be considered. There is no more severe criterion of the uniform satisfaction given by reinforced concrete than its being adopted for these buildings.

The roof was put on Factory No. 3 in sixty-three working days.

GUARANTEES.

Prospective builders are requested to compare the buildings erected by this company with the work of any other company engaged in reinforced concrete construction, and as a guarantee for our work we refer to the many architects and owners for whom we have constructed buildings.

We have had twenty-three contracts from one firm in Staten Island, N. Y., in six years, ten from each of three different firms in New York and New Jersey, in four years, and five and six contracts from each of a number of other firms.



FIG. 2. GREAT ATLANTIC & PACIFIC TEA COMPANY WAREHOUSE, JERSEY CITY, N. J.
185 x 125 feet, nine stories high. 300 pounds live load
HOWARD CHAPMAN, Architect



FIG. 3. BUSH TERMINAL COMPANY FACTORIES, SOUTH BROOKLYN, N. Y.
Each building 600 feet long, 75 feet wide, six stories and basement; Reinforced Concrete throughout
WILLIAM HIGGINSON, Architect

THE YOUNGSTOWN IRON & STEEL ROOFING CO.

YOUNGSTOWN, OHIO

BELL TELEPHONE, 421

AGENCIES

NEW TELEPHONE, 1277

BALTIMORE, MD., MARYLAND LIME & CEMENT Co.
 BOSTON AND HOLYOKE, MASS., J. RUSSELL & Co., New
 England Agents
 BUFFALO, N. Y., M. A. REEB, 599 Michigan Street
 CHICAGO, ILL., CHICAGO BUILDERS SPECIALTIES Co., Cham-
 ber of Commerce Building
 CLEVELAND, OHIO, CLEVELAND BUILDERS SUPPLY Co.,
 Garfield Building
 DENVER, COLO., FRANCIS J. FISHER
 LOS ANGELES, CAL., UNION LIME COMPANY
 MINNEAPOLIS, MINN., LANDERS, MORRISON, CHRISTENSON
 Co., 503 Lumber Exchange Building
 HAVANA, CUBA, JAMES B. CLOW & SONS

PHILADELPHIA, PA., W. H. THOMSON & Co., Land Title
 Building
 PITTSBURG, PA., L. E. ABER, 1503 Machesney Building
 ROCHESTER, N. Y., JOS. J. MANDERY
 SALT LAKE CITY, UTAH, UTAH LUMBER COMPANY
 SAN FRANCISCO, CAL., ATLANTIC FIREPROOFING Co., 787
 Market Street, Room 110
 SCRANTON, PA., PARAGON PLASTER & SUPPLY Co.
 SYRACUSE, N. Y., PARAGON PLASTER Co.
 SEATTLE, WASH., METAL LATH & PARTITION Co.
 NEW ORLEANS, LA., FRITZ JAHNCKE
 WASHINGTON, D. C., NATIONAL MORTAR Co.

PRODUCTS.

Manufacturers of BLACK and GALVANIZED SHEETS, FLAT and CORRUGATED; CORRUGATED ARCHES for Floors; EXPANDED METAL for Concrete Reinforcement, Metal Lockers, etc.; EXPANDED METAL LATH; SHEET LATH; "BUCKEYE" TROUGH FLOORING for Fireproof Buildings and Highway Bridges; STEEL CORNER BEAD; METAL STUDDING, and FURRING STRIPS.

CORRUGATED ARCHES.

We make, on order, Corrugated Arches (Fig. 1) of 16-gauge or lighter, curved to any arch or span.

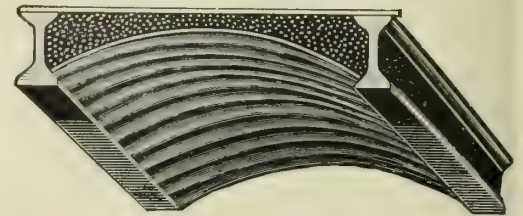


FIG. 1. SECTION OF CORRUGATED ARCH

METAL LATH.

Our "Youngstown" Corrugated Expanded Metal Lath (Fig. 2) is manufactured from the best grade of O. H. Steel sheets, pickled and thoroughly coated with linseed oil. The transverse corrugations, together with the wide strand, make this lath at least 50 per cent more rigid than any other lath made.

Size of sheets, 28" x 48"; 10 sheets to each bundle. We charge only for 27" x 48".

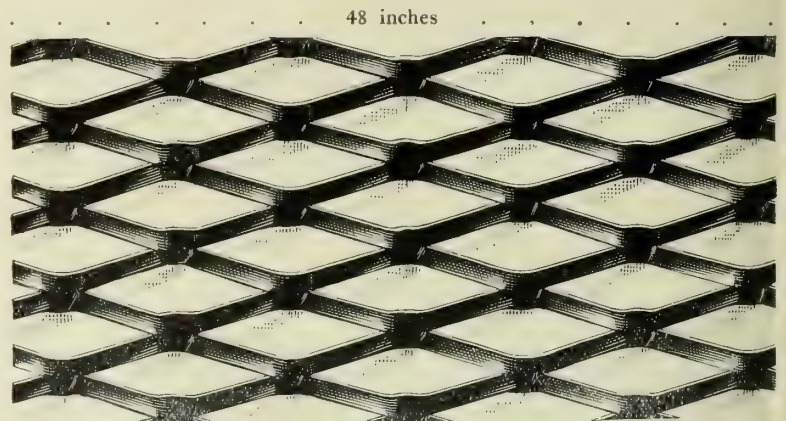


FIG. 2. "YOUNGSTOWN" CORRUGATED EXPANDED METAL LATH

"MAHONING" CORRUGATED EXPANDED METAL LATH.

Our "Mahoning" Corrugated Expanded Metal Lath (Fig. 3) is excelled only by our Youngstown Expanded Metal Lath (Fig. 2). Made in sheets 21" x 96" and 28" x 48".

"YOUNGSTOWN" STUD.

Our "Youngstown" Stud (Fig. 4) in connection with our Metal Lath, meets a long-felt want in metal construction of fireproof buildings. Made from 18- and 20-gauge steel sheets, it is lighter and stronger than structural iron. The perfect uniformity in weight and strength is attained by use of

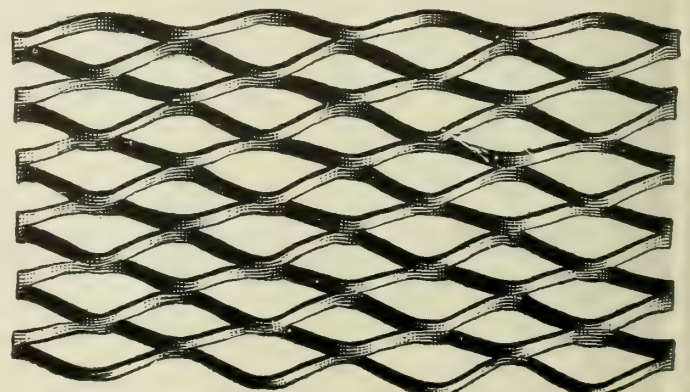


FIG. 3. "MAHONING" CORRUGATED EXPANDED METAL LATH

special machinery. The prongs, stamped from the flanges, make the application of metal lath a quick and simple matter, besides fastening the lath more securely than by the old method of wiring. Cross bracing is avoided and perfect rigidity secured by using special brackets for top and bottom as shown in the illustration.

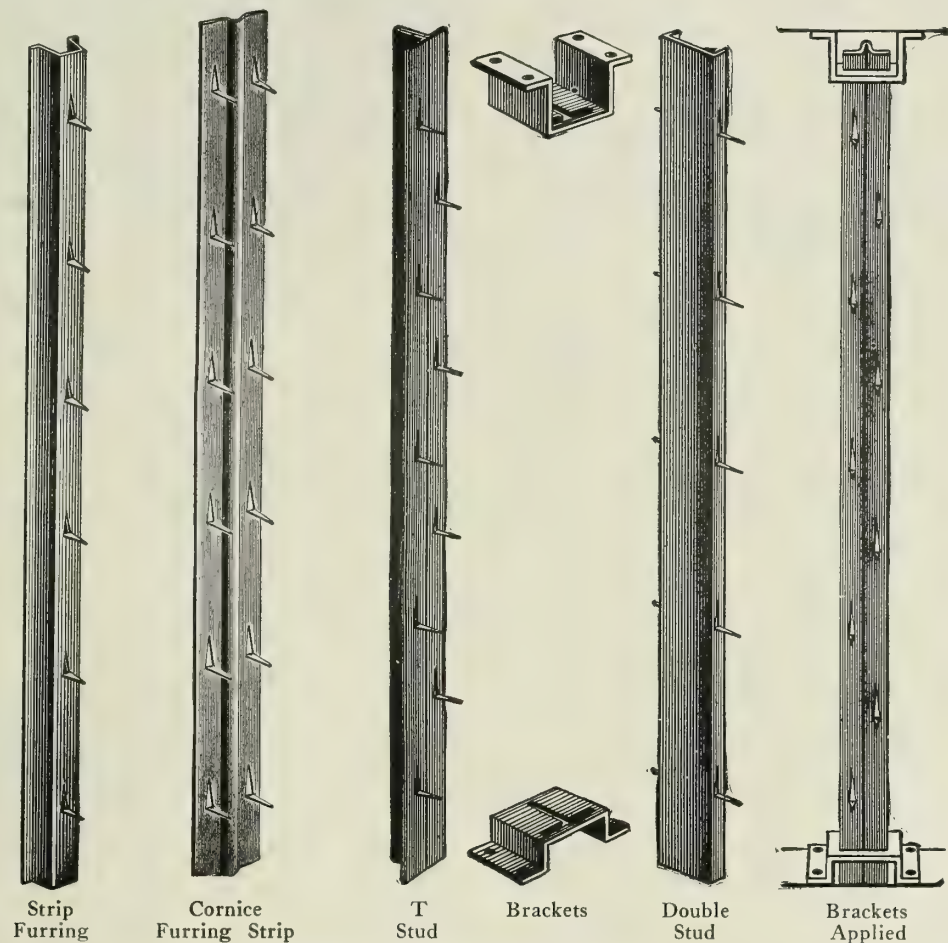


FIG. 4. "YOUNGSTOWN" STUD



FIG. 5. "MAHONING" STEEL CORNER BEAD

"MAHONING"
STEEL
CORNER
BEAD

Every architect, builder and plasterer in America has been wanting and suggesting a corner bead of this design to take the place of the old-fashioned beads now in use. The "Mahoning" Corner Bead (Fig. 5) is adapted to all classes of work and construction, interior and exterior, wood, tile, and concrete, and costs no more than old-style inferior grades. Made in $\frac{3}{8}$ " and $\frac{5}{8}$ " grounds. There is no chance for mortar to peel off.

"T. & C."
SHEET
METAL LATH.

Our improved "T. & C." Sheet-Metal Lath has a firm, strong corrugated bridge or outward bulge making a key or clinch for plaster that can not be equaled.

It is made in 96-inch lengths by 24 inches wide, a sheet containing $1\frac{7}{9}$ square yards, and is put up in bundles of 9 sheets, each containing 16 square yards. It nests in shipping, and weighs about $5\frac{1}{2}$ pounds per square yard.

Lathers can work this size of sheet lath more economically and faster than other widths.

One coat of pure linseed oil is applied at factory and it needs no further coating, as oxidation ceases when lath is embedded in plaster.

“BUCKEYE”
TROUGH
FLOORING.

“Buckeye” Flooring (Figs. 7 and 8) is properly shaped for strength, as it is of sufficient depth, and has the necessary support sideways. Each face has a heavy longitudinal corrugation, adding strength and stiffness to the floor, and acting as a key to the concrete. It is made from the best O. H. Galvanized Steel Sheet.

We give below a table of safe loads, with factor of safety 4 to 1.

SAFE LOADS FOR “BUCKEYE” FLOORS

Span	No. 16 Gauge	No. 18 Gauge
4 ft. 0 in.	1480 lbs.	1140 lbs.
4 ft. 6 in.	1160 lbs.	920 lbs.
5 ft. 0 in.	920 lbs.	730 lbs.
5 ft. 6 in.	750 lbs.	590 lbs.
6 ft. 0 in.	620 lbs.	480 lbs.
6 ft. 6 in.	500 lbs.	400 lbs.
7 ft. 0 in.	420 lbs.	340 lbs.
7 ft. 6 in.	360 lbs.	290 lbs.
8 ft. 0 in.	300 lbs.	250 lbs.
8 ft. 6 in.	260 lbs.	210 lbs.
9 ft. 0 in.	230 lbs.	180 lbs.
9 ft. 6 in.	200 lbs.	160 lbs.
10 ft. 0 in.	170 lbs.	130 lbs.

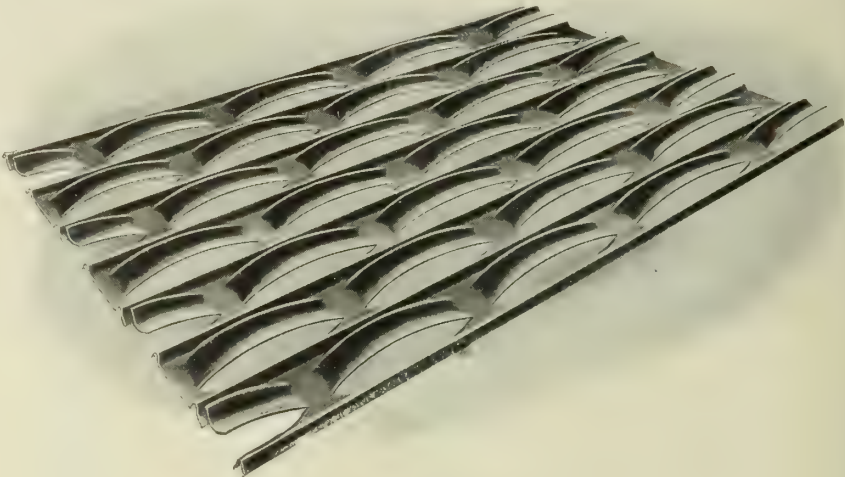


FIG. 6. “T. & C.” SHEET-METAL LATH

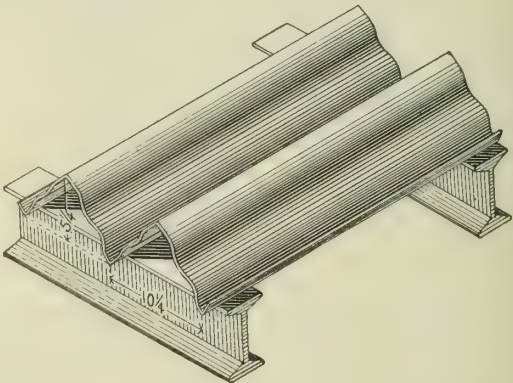


FIG. 7. “BUCKEYE” TROUGH LAID ON I-BEAMS

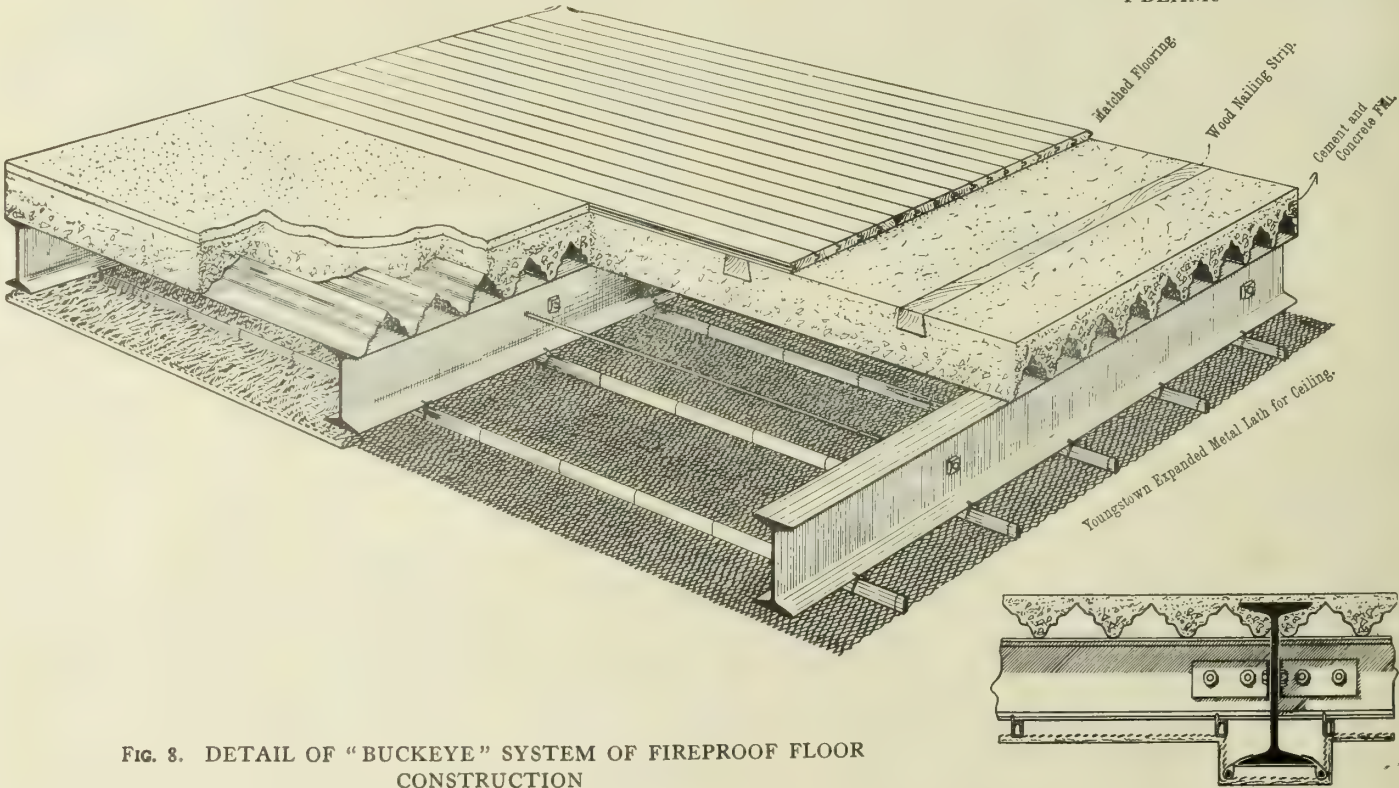


FIG. 8. DETAIL OF “BUCKEYE” SYSTEM OF FIREPROOF FLOOR CONSTRUCTION

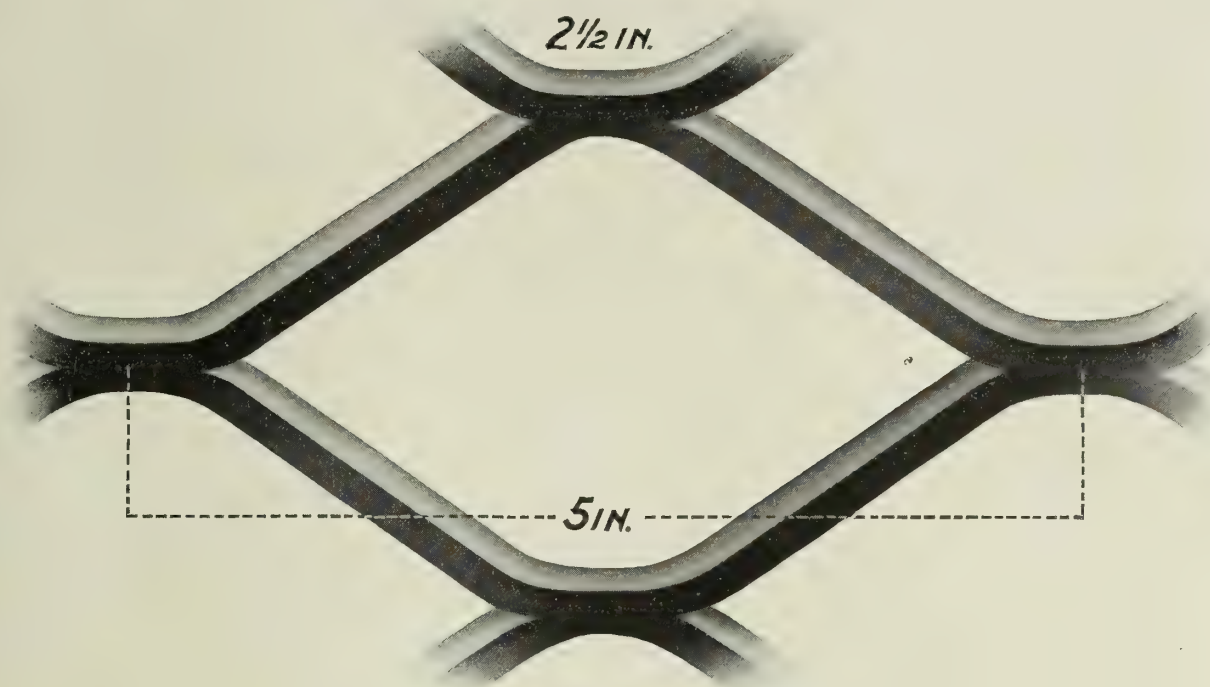


FIG. 9. "YOUNGSTOWN" EXPANDED METAL (FULL SIZE)

"YOUNGSTOWN" EXPANDED METAL.

Our Youngstown Expanded Metal (Fig. 8) is used for reinforcing concrete, also in the manufacture of metal lockers, etc. It is made in different gauges and meshes, as shown in tables below.

Standard sizes, 6 feet wide, 10 feet long.

WEIGHTS, MEASURES, ETC., OF "YOUNGSTOWN" EXPANDED METAL AND METAL LATH

ULTIMATE TENSILE STRENGTH OF
"YOUNGSTOWN" EXPANDED METAL

3 1/2-inch x 7-inch Mesh	
Gauge	
7	1050 to 1250 pounds per sq. in.
10	750 to 925 pounds per sq. in.
12	620 to 750 pounds per sq. in.
2 1/2-inch x 5-inch Mesh	
7	1300 to 1580 pounds per sq. in.
10	935 to 1140 pounds per sq. in.
12	760 to 930 pounds per sq. in.
16	430 to 530 pounds per sq. in.
1 1/2-inch x 3-inch Mesh	
10	1000 to 1220 pounds per sq. in.
12	820 to 1000 pounds per sq. in.
16	465 to 565 pounds per sq. in.
18	370 to 450 pounds per sq. in.

Mesh	Description		Approximate Sectional Area in Square Inches per foot of Width	Approximate Weight per Square Foot in Pounds	Size of Standard Sheets	Number of Sheets in a Bundle	Number of Square Feet in Bundle
	Gauge U. S. Standard	Strand Standard or Extra					
In.	No.				ft. ft.		
3 1/2	18	Mahoning	.146	.49	4 x 8	5	160
	16	or Standard	.182	.61	4 x 8	5	160
	20	"	.076	.25	6 x 10	5	300
	18	"	.098	.33	6 x 10	5	300
	10	"	.166	.55	6 x 10	6	360
	10	"	.180	.61	6 x 10	6	360
	16	"	.084	.28	6 x 10	6	360
	10	"	.139	.46	6 x 10	6	360
	20	Youngstown	.110	.37	6 x 10	5	300
	18	or 50%	.132	.44	6 x 10	5	300
	16	"	.158	.53	6 x 10	5	300
	13	"	.234	.78	6 x 10	4	240
	16	"	.126	.42	6 x 10	6	360
	12	"	.216	.72	6 x 10	4	240
	10	"	.266	.89	6 x 10	4	240
	16	"	.124	.42	5 x 10	6	300
	12	"	.192	.64	6 x 10	4	240
	10	"	.240	.80	6 x 10	4	240
	7	"	.333	1.11	6 x 10	3	180
	12	"	.166	.55	6 x 10	4	240
	10	"	.206	.69	6 x 10	4	240
	7	"	.276	.92	6 x 10	3	180

F. P. SMITH WIRE AND IRON WORKS

Manufacturers of Concrete Reinforcement, etc.

100-102 Lake Street

CHICAGO, ILL. CHESTER ST., CLYBOURN AND FULLERTON AVES.
FOUNDRY AND SHOPS
TELEPHONE, LINCOLN 473

TELEPHONES, CENTRAL 437, 438

PRODUCTS
AND
SERVICE.

STEEL REINFORCEMENT, including SPIRALS for Columns; STIRRUPS and SHEAR BARS for Beams; FABRIC for Floors in woven wire (square mesh); also, our special FOLDING BAR FABRIC. We make in addition ORNAMENTAL IRON, BRASS BRONZE and WIRE WORK, for which see General Index. We control patents on all the above; and having a large stock of materials always on hand, guarantee prompt and efficient service at all times.

SPIRAL REIN-
FORCEMENT.

Our patented Spiral-Column Reinforcement (Fig. 1) consists of a continuous spiral of cold-drawn high or low carbon wire of high elastic limit, up to sizes as heavy as $\frac{5}{8}$ inch. This spiral wire is wound around and securely clinched to vertical reinforcing bars of special section with any desired pitch or spacing; see Fig. 2.

The advantage of this design is that the spiral is continuous, that the material is very ductile, and of very high elastic limit and tensile strength to resist the lateral tensile strains, and offers no weakened sections or joints. The section is perfectly circular, the spacing of the spirals is absolutely regular and unalterable. The column is delivered completely fabricated and is erected in place intact, saving a vast amount of labor at the building.

We can furnish any desired length or diameter, with two or more reinforcing bars. Our patent on this construction covers not only our standard bar shown in Fig. 2, but any similar form of bar with punched edge; and where the quantity warrants it we will roll any special shape and weight of bar desired; where only light-spacing bars are wanted for the wire spirals, we use flat bars punched for the reception of the wires, as per our patented design.

SPECIAL
K. D. CON-
STRUCTION.

For out-of-town shipments, our new improved K. D. Construction is specially recommended. We use for same two or more vertical spacing bars, as described above, so the spiral can be knocked down flat, thus taking a lower freight classification.

MULTIPLE
HOOP
STIRRUPS.

We illustrate on Fig. 3 our improved Stirrup (Patent applied for) or Shear Reinforcement for concrete beams. These are made of round wire of any desired size, and are interspaced along the length of the beam at distances according to the intensity of the shear. They also act as supports and separators for the tension reinforcement.

GIRDERLESS
FLOOR
CONSTRUC-
TION.

We control patents on the best and most economical system of "Girderless" or "Flat-Slab" Floor Construction, the advantages of which are generally conceded as regards the saving in floor height, better reflection of light, absence of unsanitary corners along the beams, saving in piping and wiring, etc. We use a continuous floor fabric, made of a size of wire and mesh to suit the conditions of each building, with special bracketed connections to our spiral column reinforcement.

BAR FABRIC.

We also have a special "Folding-Bar Fabric" (Patent applied for) for use where a floor reinforcing of small round rods is desired.

REFERENCES.

We refer, among many large orders, to the new Montgomery, Ward & Co.'s Warehouse, Chicago, Ill., of over 1,500,000 square feet floor area, throughout which our reinforcement was used. Our pamphlet on "Modern Concrete Reinforcing" will be mailed free on request. Correspondence solicited.

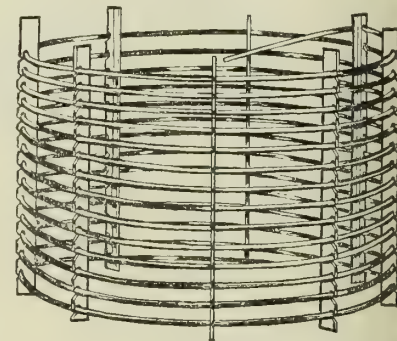


FIG. 1. SPIRAL-COLUMN REINFORCEMENT

Patented June 25, 1907

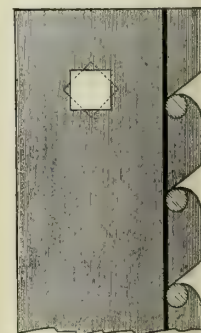


FIG. 2. STANDARD BAR

$\frac{1}{8}$ full size. Weight $4\frac{9}{10}$ lbs. to foot
Patented June 25, 1907

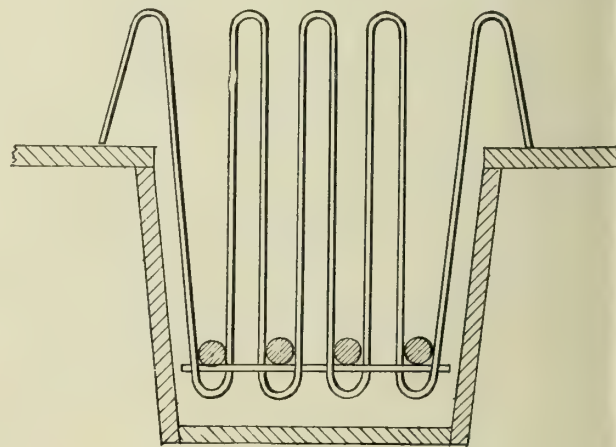


FIG. 3. WIRE STIRRUP

THE COMERMA CO.

"Spanish" Tile Arch Construction

1181 Broadway
NEW YORK, N. Y.

PRODUCTS AND SERVICES.

"SPANISH" TILE ARCH CONSTRUCTION, as used in Spain for hundreds of years, in erecting FIREPROOF STAIRCASES, ARCHES, VAULTS, DOMES, and FLOORS for heavy loads; and adapted for State Houses, Cathedrals, Churches, Libraries, Court Houses, Banks, Railroad Stations, Mausoleums, and other public edifices.

The equipment of this Company has been specially designed and adapted for furnishing and constructing "Spanish" Arches with a view to their practicability for all uses. Our tiles are manufactured expressly for this purpose in all colors, and are of superior quality for the beautifying of interior and exterior, exposed or finished surfaces.

GLAZED TILE.

Our Glazed Tile for "Spanish" Arches is made from transparent glazes, and in all colors and shades; with mottled effects, gold, silver, etc.

OPAQUE TILE.

The Opaque Enamel Tile we make in dull greens, yellows, browns; with luster effects.

UNGLAZED TILE.

The Unglazed Tile may be had in white, cream, salmon, red, buff, etc.

ROUGH TILE.

This is for use where plaster and stucco finishes are desired and for fireproofing and heavy loads. A minimum of steel bracing is required.

SURFACES.

All tiles are furnished either plain, ribbed or embossed.

FACILITIES.

We have ample facilities for prompt installation, and can quote lowest prices.



AN ADAPTATION OF "SPANISH" TILE ARCH CONSTRUCTION

REFERENCES.

Sheffield Farms Dairy, Manhattan Street, near Broadway, New York, N. Y., Frank A. Rooke, Architect, and Dawson & Archer, Builders, New York, N. Y.

R. GUASTAVINO, PRESIDENT

WM. E. BLODGETT, TREASURER

A. E. ROBST, SECRETARY

R. GUASTAVINO COMPANY

INCORPORATED UNDER THE LAWS OF THE STATE OF MASSACHUSETTS

Designing and Installing the System of Timbrel Vault Construction

Old South Building
BOSTON, MASS.NEW YORK OFFICE
FULLER BUILDINGFACTORY
WOBBURN, MASS.PRODUCTS
AND
SERVICES.

The business of this Company is that of DESIGNING and INSTALLING the SYSTEM OF TIMBREL VAULT CONSTRUCTION with which its name has been identified for many years. It is equipped for work in any section, and owns and operates for its sole use, as contractors, a factory for the manufacture of the finer grades of TIMBREL TILE required in its exposed or finished work, thus having unexcelled facilities for prompt installation and the making of special pieces in connection with its contracting business.

A large portion of our business is in FIREPROOF STAIRCASE CONSTRUCTION in all its forms when enclosed in masonry shafts, and FLOOR CONSTRUCTION for very heavy loads.

In nearly all cases the small amount of steel required is used in tension only, and thoroughly embedded in the masonry.



GUASTAVINO GLAZED TILE CEILING, MARKET PLACE UNDER MANHATTAN APPROACH OF QUEENSBORO BRIDGE, NEW YORK
PALMER & HORNBOSTEL, Architects

CO-OPERATIVE
SERVICE.

Owing to the diverse characteristics of this system, embodying engineering and architectural features, it has been found impracticable to present in a reasonable compass sufficient information or data to serve for specification purposes, as usually each proposition is a problem by itself, requiring its own special treatment. The most satisfactory method for its application is to forward the Company, before the plans are fully drawn, a sketch outline of the requirements, in order that suggestive drawings may be submitted embodying the principles of construction, with approximate cost of same.

ADAPTABILITY.

The class of work for which this system is particularly adapted is that of buildings of a monumental type, State Houses, Court Houses, Libraries, etc., in which the vaulted ceiling is notably acceptable, especially when laid in finished repressed tiles of designs as required, either unglazed or glazed, of any color desired.



REFERENCES.

Some recent important and interesting work:

BUILDING

St. John's Cathedral
Carnegie Technical Schools
Manhattan Approach, Queensboro Bridge
New Railway Terminal
New D. L. & W. Terminal
McKinley Memorial
New Building for Girard Trust Co.

Greenpoint Savings Bank
Building for the National Museum
New Terminal for P. R. R.
Williamsburg Bridge Terminal
New Post Headquarters
New Phipps Natatorium
Church Street Terminal Hudson Buildings
Elephant House, Bronx Park

CROSS-SECTION OF DOME, ST. PAUL'S CHAPEL,
COLUMBIA UNIVERSITY, NEW YORK, N. Y.

HOWELLS & STOKES, Architects

LOCATION

New York, N. Y.
Pittsburg, Pa.
New York, N. Y.
Birmingham, Ala.
Hoboken, N. J.
Cleveland, Ohio
Philadelphia, Pa.

Brooklyn, N. Y.
Washington, D. C.
New York, N. Y.
Manhattan, N. Y.
West Point, N. Y.
Pittsburg, Pa.
New York, N. Y.
New York, N. Y.

ARCHITECT

Heins & La Farge
Palmer & Hornbostel
Palmer & Hornbostel
P. Thornton Marye
K. I. Murchison
H. Van Buren Magonigle
McKim, Mead & White,
and A. Evans
Helmle & Huberty
Hornblower & Marshall
McKim, Mead & White
Palmer & Hornbostel
Cram, Goodhue & Ferguson
Grosvenor Atterbury
Clinton & Russell
Heins & La Farge

KEYSTONE FIREPROOFING COMPANY

MANUFACTURERS OF

"Keystone" Gypsum Blocks

1123 Broadway
NEW YORK, N. Y.

16 South Broad Street
PHILADELPHIA, PA.

PRODUCTS. Manufacturers of "KEYSTONE" GYPSUM BLOCKS for Fireproof Partitions, Wall Furring, Column Covering, Roofs, Cold-Storage Insulation, etc.

ADVANTAGES. "Keystone" gypsum blocks are *half the weight* of clay tiles; are more fireproof, not only as to being non-combustible, but as *non-conductors of heat*; they effectually *resist the action of water* after a fire; they have *won every comparative test as non-conductors of sound*.

PARTITIONS, COLUMN PROTECTION. By reason of their size and their bond with the mortar, "Keystone" blocks form the stiffest partition; they save in the cost of erection because of their size, lightness, and the almost complete absence of waste in handling and cutting.

FURRING. "Keystone" blocks being practically impenetrable by heat or cold, are unequalled for wall furring.

FACILITIES. We have the largest plant in the country making plaster or gypsum blocks, and carry stock in warehouse in the larger cities.

ERECTION. We are pleased to bid on "Keystone" gypsum blocks, set in place, ready for plastering. Ours is the largest organization for erection in the country.

TESTS. We are prepared to furnish convincing proof of all our claims for these blocks, and will send booklet on request, giving official fire and water tests made in New York, Philadelphia, and elsewhere.

SPECIFICATIONS. *Partitions and Column Covering*—Furnish and erect all partitions throughout, including skylight curbs and walls of pent houses, of "Keystone" gypsum blocks, of thicknesses shown on drawings or as follows: For partitions not over 13 feet in height, 3"; from 13 to 17 feet, 4"; and over 17 feet, 6". All to be hollow blocks laid up in mortar, true and plumb to $\frac{1}{2}$ " grounds. Break all joints, bond corners and leave ready for brown and finish coats of plaster.

Cover all exposed interior columns with 2" solid "Keystone" gypsum blocks laid up in mortar, and left ready for brown and finish coats of plaster. Build all pilasters in same manner, as per details.

Build all heat and vent flues and pipe chases of 3" hollow "Keystone" blocks with withes of 2" solid blocks where shown on plans, striking all joints on inner side.

Wall Furring—Furr all exterior walls, where shown, with 2" hollow-back "Keystone" gypsum furring blocks; to be laid up in same manner, and securely anchored to wall by 20d nails, driven in every second course.

Book Tile—All Mansards or other sloping roofs and dormers to have 3" "Keystone" gypsum blocks, laid dry on tees, and grouted with cement. All tees to be 24" on centers and furnished and set by Steel Contractor.

Mortar—All blocks to be laid up in a mortar composed of one (1) part "Victor" cement, as manufactured by the Keystone Plaster Co., or equal, to three (3) parts clean sharp sand, thoroughly mixed.

[INSERT IN CARPENTER'S SPECIFICATIONS]

The carpenter is to set all rough frames or bucks for all openings in partitions, etc. All frames to be exact size of openings and to be securely braced and left plumb and true for the fireproofing contractor. Bucks to be exact width of abutting partition by 3", and to have $\frac{1}{2}$ " x $3\frac{1}{2}$ " grounds nailed thereon to receive the ends of the fireproof blocks.

[INSERT IN PLASTERING SPECIFICATIONS]

The partitions, furring and column protection are all to be of "Keystone" gypsum blocks, and require but one brown coat to bring up to $\frac{3}{4}$ " ground.

REFERENCES.

BUILDING

Home Club
Perry Building
Bulletin Building
Y. M. C. A. Building
Walter Reed Army Hospital
Marlborough-Blenheim Hotel
Hotel Chalfonte
Hotel Belvidere
Naval Y. M. C. A.
New England Conservatory of Music
Boston Globe Building

LOCATION

New York, N. Y.
Philadelphia, Pa.
Philadelphia, Pa.
Philadelphia, Pa.
Washington, D. C.
Atlantic City, N. J.
Atlantic City, N. J.
Baltimore, Md.
Norfolk, Va.
Boston, Mass.
Boston, Mass.

ARCHITECTS

Gordon, Tracy & Swartwout
Wilson, Harris & Richards
Edgar V. Seeler
Horace Trumbauer
Marsh & Peter
Price & McLanahan
Addison Hunter
Parker & Thomas
L. E. Jallade
Wheelwright & Haven
Winslow & Bigelow

MONARCH ENGINEERING COMPANY

Engineers and Contractors

Chamber of Commerce Building
BUFFALO, N. Y.

SERVICES.

ENGINEERS and CONTRACTORS; BUILDERS of FIREPROOF GRAIN ELEVATORS and GENERAL REINFORCED CONCRETE CONSTRUCTION.

We design and build GRAIN ELEVATORS and STORAGE BINS of either STEEL or CONCRETE, in any locality.

CONCRETE WORK.

We represent the Standard Concrete Steel Co. of New York in this territory, and are prepared to design and construct reinforced concrete buildings using System "M" I-Beam reinforcement.

This system excels in safety, economy, and speed of erection. Information furnished.

FACILITIES.

Our Engineering Department is in charge of experienced engineers, assuring economical and efficient design of all work. Our organization for handling Steel, Concrete and Millwright work is capable and experienced.

REFERENCES.

Some buildings constructed with System "M" Reinforcement:

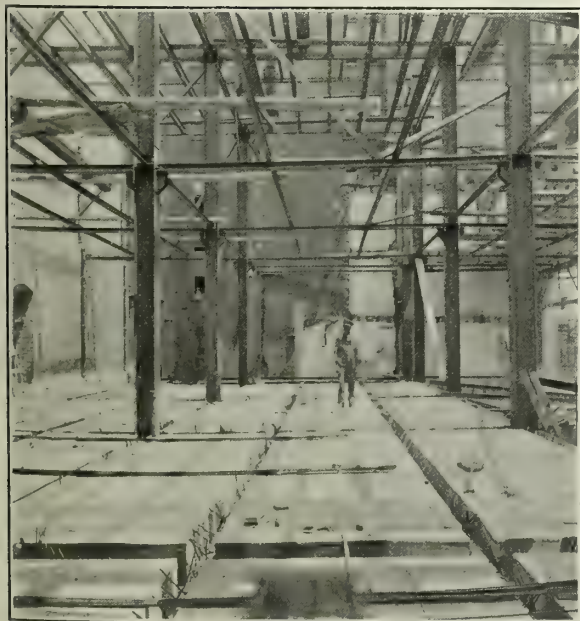
214-220 East 23rd Street, New York, N. Y., 100' x 100', ten stories, Otto Strack.

533-535 West 48th Street, New York, N. Y., 75' x 100', six stories, Salvation Army.

Borden Avenue, Long Island City, N. Y., 175' x 180', six and one half stories, J. F. Blanchard.

Thirtieth and Market Streets, Philadelphia, Pa., 225' x 150', four stories, D. B. Martin and Co.

40-42 Renwick Street, New York, N. Y., 50' x 60', eight stories.



MARTIN ABATTOIR, PHILADELPHIA, PA.

Typical Building using System "M" Concrete Reinforcement



WHEELER ELEVATOR, BUFFALO, N. Y.

Concrete Construction, 700,000 bushels capacity

ESTABLISHED 1856

HENRY MAURER & SON

MANUFACTURERS OF

Fireproof Building Materials Made of Hollow Terra Cotta

420 East Twenty-Third Street

NEW YORK, N. Y.

PHILADELPHIA OFFICE
PENNSYLVANIA BUILDINGFACTORIES
MAURER, NEW JERSEY

PRODUCTS.

FIREPROOF BUILDING MATERIALS made of HOLLOW TERRA COTTA, Porous and Semiporous, also all kinds of FIREPROOFING made of CLAY, for ARCHES (end and side construction), POROUS TERRA-COTTA BOOK-TILES, PARTITIONS, FURRING, GIRDER and COLUMN PROTECTION, FIRE-CLAY FLUE LININGS, FIRE-BRICK, CLAY and GLASS ROOFING-TILES.

Among our many specialties are the "PHOENIX" HOLLOW-TILE WALL CONSTRUCTION (patented) and the "HERCULEAN" FLAT ARCH (patented), which are described below.

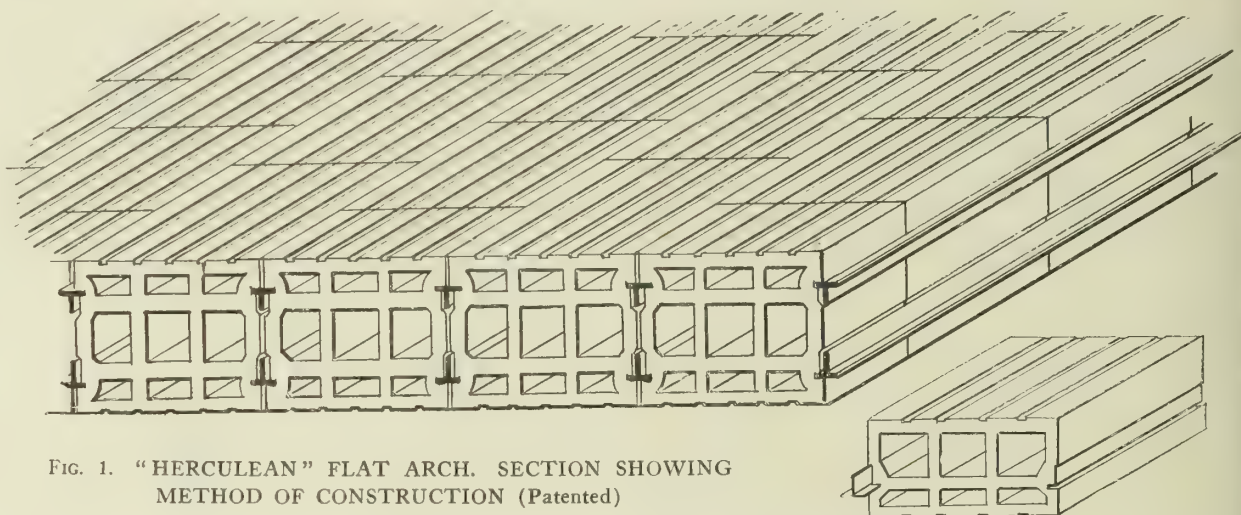


FIG. 1. "HERCULEAN" FLAT ARCH. SECTION SHOWING METHOD OF CONSTRUCTION (Patented)

"HERCULEAN"
FLAT ARCH.

The "Herculean" Flat Arch (Fig. 1) is well adapted to wide spans up to 22 feet, eliminating entirely the use of steel beams, and is especially suitable where light weight in combination with great strength is essential.

The blocks, 12 by 12 inches, are of semiporous terra cotta, of uniform size and shape, with webs of from $\frac{3}{4}$ inch to $\frac{7}{8}$ inch and, according to the length of the spans, are 6, 8, 10, and 12 inches in depth.

The reinforcement consists of T irons $1\frac{1}{2}$ by $1\frac{1}{2}$ inches by $\frac{3}{16}$ inch, and of lengths to suit the spans required. They are embedded in grooves of the terra-cotta blocks which have previously been filled with cement mortar, thus insuring the steel from corrosion; and, secured by the grooves in the blocks, absolutely preclude any shifting of the reinforcement. The T irons are further fireproofed as shown, by being thoroughly protected by never less than 2 inches of hollow tile.

For arches of greater depth than 8 inches, we use two T irons.

The weight of this construction per square foot, including necessary T irons, is as follows: 6 inches deep, 30 lbs.; 8 inches deep, 33 lbs.; 10 inches deep, 42 lbs.; and 12 inches deep, 54 lbs.

An arch measuring 18 feet from wall to wall, loaded with 108,000 pounds of hard brick, distributed over a surface of 180 square feet (600 pounds to the square foot), and left from May 21st to June 10th, showed no perceptible deflection.

OFFICIAL
INDORSE-
MENT.

"Herculean" Flat Arch Construction has been approved by the Philadelphia Building Department and by the Building Departments of many other cities, and by the United States Government Engineers.

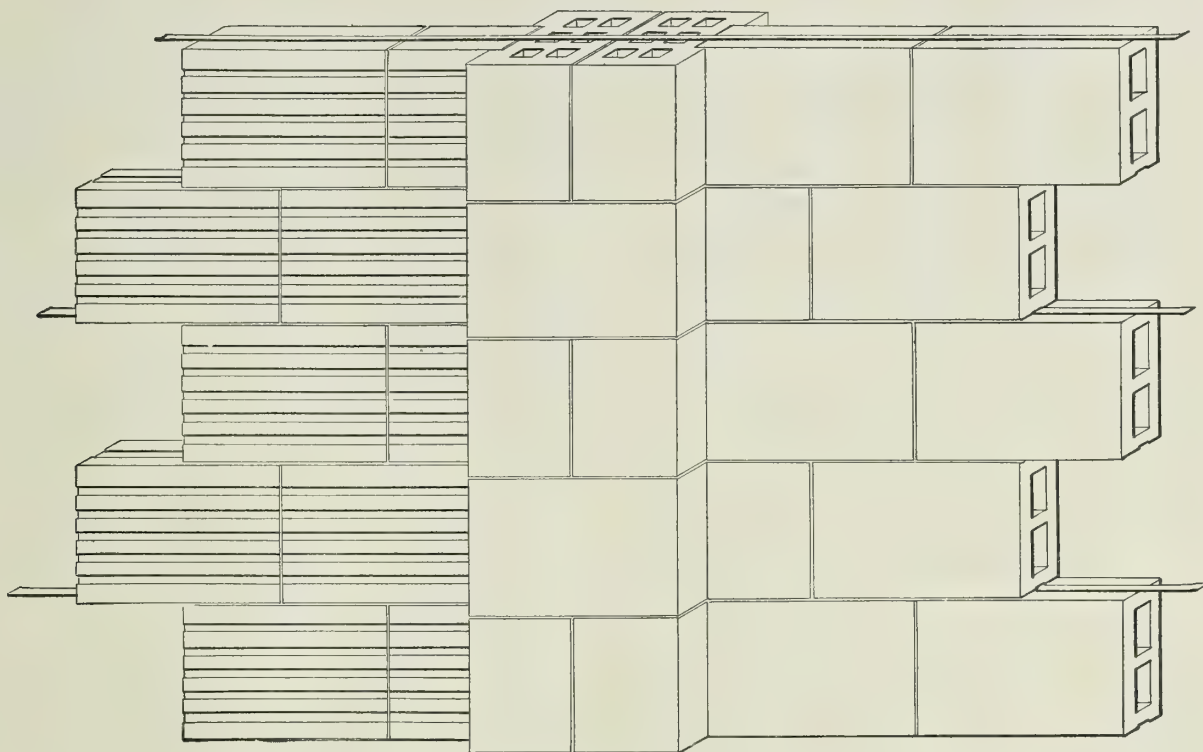


FIG. 2. "PHOENIX" WALL, WITH PIERS, SMOOTH OR RIBBED FOR PLASTERING

"PHOENIX"
HOLLOW-TILE
WALL
CONSTRUCTION.

"Phoenix" Wall Construction (Patented) for the erection of outer walls, 4, 6, 8, 10, or 12 inches thick is a substitute for common brick and consists of specially prepared hard burned hollow clay blocks impervious to weather, either smooth or ribbed, to receive stucco on face of walls, and having grooves in the blocks (Fig. 2) to receive courses of band iron, horizontally and continuously; laid in Portland cement mortar.

The walls are further strengthened, when necessary through long reaches, by piers of similar material 12 by 12 inches or 12 by 18 inches, or larger, spaced as required.

A building of this construction, the blocks having dead-air spaces, insures warmth and dryness to the structure.

ADVANTAGES.

In the "Phoenix" Wall Construction there is a saving in weight of 25 per cent over common brick. Furthermore the concrete or other foundations for these walls, owing to the lesser weight, need not be solid, except under the piers.

The piers spaced as plans may designate are sufficiently strong to carry the weight of the girders and other parts of the building, and obviate the use of upright steel members as ordinarily required in building construction.

Where steel skeleton designs are planned, we manufacture piers to incase the upright steel members, thus giving proper weather and fire protection to them and adding to the strength of said uprights.

"PHOENIX"
PARTITIONS.

The same method of construction is applied to inside partitions of Hollow Burnt Clay and Porous Terra Cotta Blocks. Beside their positive fireproof qualities they have the greatest degree of strength combined with lightness, are entirely vermin-proof, and do not transmit cold or heat. Being hollow, all sound is deadened, and they are absolutely free from dampness.

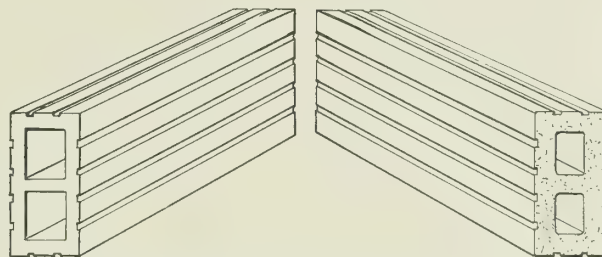


FIG. 3. HOLLOW CLAY AND POROUS TERRA COTTA BLOCKS

Stock Sizes		
3 x 8 x 12 inches	4 x 12 x 12 inches	6 x 8 x 12 inches
3 x 12 x 12 inches	5 x 8 x 12 inches	8 x 6 x 12 inches
4 x 8 x 12 inches	6 x 12 x 12 inches	2 x 9 x 12 inches

NATIONAL FIRE PROOFING COMPANY

PITTSBURG, PA., Fulton Building
CHICAGO, ILL., Commercial National Bank Building
NEW YORK, N. Y., Flatiron Building
PHILADELPHIA PA., Land Title Building
ST. LOUIS, MO., Bank of Commerce Building
CINCINNATI, OHIO, Union Trust Building
SAN FRANCISCO, CAL., Monadnock Building

BOSTON, MASS., Old South Building
WASHINGTON, D. C., Colorado Building
CLEVELAND, OHIO, Cuyahoga Building
MINNEAPOLIS, MINN., Lumber Exchange
LOS ANGELES, CAL., Union Trust Building
LONDON, ENG., 27 Chancery Lane
TORONTO, CAN., Traders Bank Building

PRODUCTS.

Manufacturers of DENSE and POROUS TERRA COTTA for FIREPROOF FLOORS, ROOFS, CEILINGS, PARTITIONS, WALL FURRING, COLUMN and GIRDER COVERINGS. Contractors for FIREPROOF CONSTRUCTION.

ADVANTAGES.

(1) Terra cotta, a product of fire, is absolutely fireproof. Boards of Fire Underwriters give the lowest rates where it is used.

(2) It is much lighter than any other fireproofing material.

(3) Arches of terra cotta strongly brace the steel structure. There is no shrinkage possible, as with composition.

(4) The Portland cement setting for terra cotta acts as a rust-proofing for the steel work.

(5) Terra cotta can be set in winter and dries out in a few days.

(6) It is more nearly sound-proof than is solid construction.

(7) We have 26 factories, each of which is in a center of population, thus insuring cheap transportation and prompt delivery.

CORRESPONDENCE SOLICITED.

We shall be pleased to send, upon application, a more exhaustive description of our products, giving tables of safe loads for various spans of floor constructions and further details of materials.

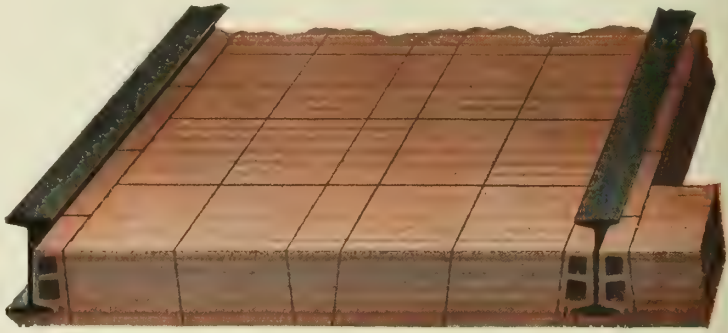
The services of our corps of engineers and estimators are always at the disposal of those who are interested in the design and construction of fireproof buildings, and estimates of the cost of the work will be cheerfully given.

ILLUSTRATIONS.

Following are descriptions and illustrations of some of the forms in common use. Only typical sections are given.

FLAT ARCHES.

END CONSTRUCTION — This type of arch is now generally used for all ordinary purposes, being light and very strong. We recommend the combination end-construction arch with the side-construction soffit skew, as illustrated in perspective.



PERSPECTIVE OF TYPICAL FLAT ARCH
End Construction

To find total dead load of any floor use the following weights: Tile, rock asphalt or cement finish weighs about 140 pounds per cubic foot; wood flooring, 3½ pounds per square foot; wood sleepers, 25 pounds per cubic foot; cinder concrete fill, 60 pounds per cubic foot; T. C. arch, see table below; plastering, 5 pounds per square foot; steel I, divide weight of beam by span in feet.

TABLE OF WEIGHTS AND SPANS

Depth of Arch, inches	Weight, pounds per square foot	Spans allowable between I-Beams	
		Arch set flat, feet and inches	Set with slight camber, feet and inches
6	20 to 25	4-6	5-0
7	22 to 26	5 0	5-9
8	24 to 30	5-6	6-6
9	26 to 34	6-0	7-0
10	28 to 36	6-6	7-6
12	30 to 40	7-6	9-0
15	37 to 50	9-0	10-0

NOTE—The heavier weights are the ones commonly used. The lighter weights can be made if required.

NOTE—The strength of any arch depends as largely upon the workmanship as upon the material, therefore the maximum spans given can only be used where experienced workmen are employed and the work is guaranteed by a responsible contractor.

SEGMENTAL
ARCHES.

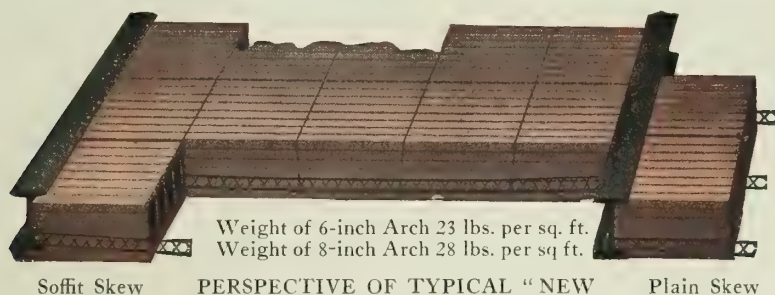
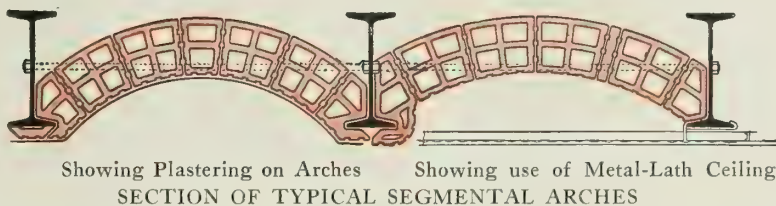
This form of arch combines great strength with cheapness and lightness. It is suitable for warehouses, lofts, factories, side-walks, or wherever a flat ceiling is not essential. Metal lath and plaster ceiling may be used in combination with it, as in the New York public schools, private houses, stores, etc. The 6-inch arch is used for all ordinary purposes.

Weight of 6-inch hollow-tile arch 27 pounds per square foot.

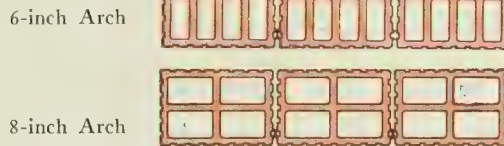
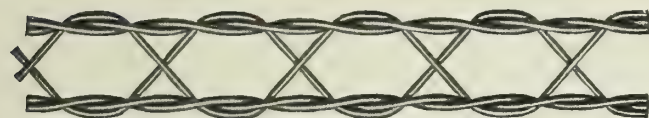
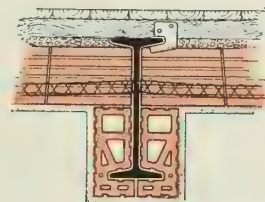
"NEW YORK"
REINFORCED
TERRA COTTA
ARCH "BEVIER
PATENT."

This arch is light, cheap and strong, and is particularly adapted to wide spans in shallow beams. It is the ideal construction for hotels, residences, hospitals, etc. It is lighter than any other system of terra cotta or concrete construction now in use. The wire-truss reinforcement is embedded in Portland-cement mortar, the best known rust preventive for steel, and between the blocks, where it is protected from the heat in case of fire. The open-work construction of the wire truss enables the mortar to flow freely all about it, insuring it to be perfectly embedded.

The 6-inch arch for 6-foot span and the 8-inch for 7-foot 6-inch span are approved by the Bureau of Buildings of New York for a live load of 150 pounds per square foot.



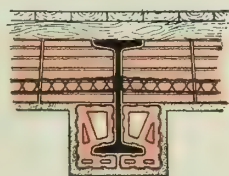
Weight of 6-inch Arch 23 lbs. per sq. ft.
Weight of 8-inch Arch 28 lbs. per sq. ft.



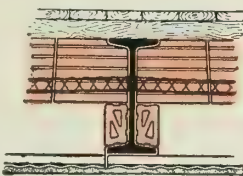
SECTION THROUGH ARCH PARALLEL TO BEAMS

TOTAL
WEIGHTS OF
TYPICAL
FLOORS.

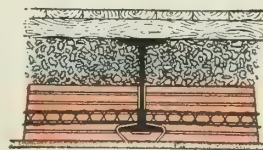
Weights of complete floors given below are based on following weights per square foot: 1-inch maple flooring at 3.5 pounds; 2 x 4-inch spruce sleepers, 16-inch centers and 2-inch cinder concrete filling between sleepers at 8.5 pounds; 6-inch arch blocks and mortar joints at 23 pounds; cinder concrete at 60 pounds per cubic foot; metal lath and plaster ceiling at 10 pounds; plaster ceiling on T. C. arch, 5 pounds; dry cinders, 48 pounds per cubic foot. Weight of beam included.



15" I. .52 lbs.
12" I. .50 lbs.
10" I. .47 lbs.
8" I. .46 lbs.
6" I. .46 lbs.



15" I. .56 lbs.
12" I. .54 lbs.
10" I. .54 lbs.
8" I. .54 lbs.



12" I. .73 lbs.
10" I. .64 lbs.
9" I. .60 lbs.
8" I. .55 lbs.
6" I. .47 lbs.

WEIGHTS OF "NEW YORK" FLOOR IN VARIOUS DEPTHS OF BEAMS PER SQ. FT.

All the above weights are based on the use of the 6-inch arch with dry cinder fill to top of beams and cinder concrete between sleepers. If 8-inch is used instead of 6-inch and set 1 inch below the beams, using 15, 12, 10, 9, 8 and 7 inch I-beams, the total respective weights will be 80, 67, 58, 54, 49, and 44 lbs.

THE "JOHN-
SON" SYSTEM
OF FLOOR CON-
STRUCTION.

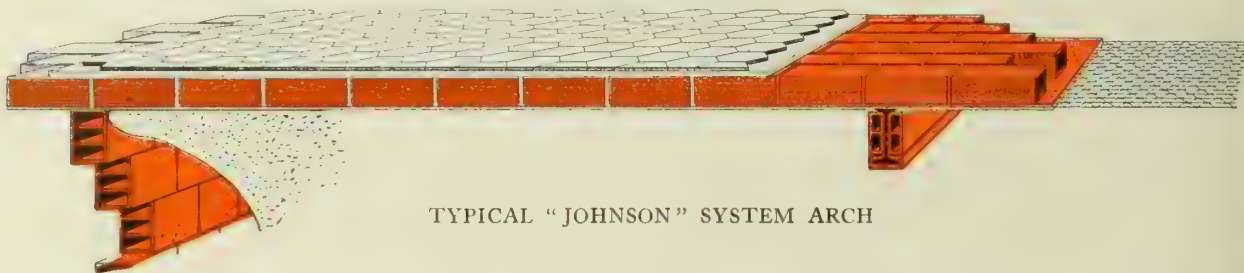
The "Johnson" System makes a floor of wonderful strength and tenacity. It has been adopted in many modern buildings of the highest type, notably the Post Office Building at Chicago.

The basis of this flooring is formed of large steel wires transversely interwoven with

still larger wires placed four inches apart. These last run straight from bearing to bearing; the line of natural tension being in the line of bearing strain, therefore they do not deflect.

Over and through these wires is placed the cement which supports and unites the tiles—making a complete monolith, a homogeneous structure.

The "Johnson" System does away with the necessity for steel beams, thus saving weight and expense. It makes the floor a clean, solid monolith stretching from girder to girder or from wall to wall. Spans may safely be made as wide as 25 feet.



TYPICAL "JOHNSON" SYSTEM ARCH

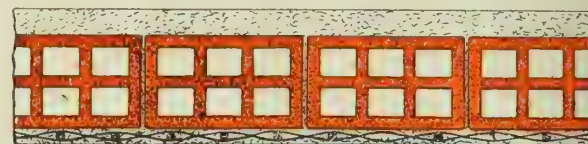
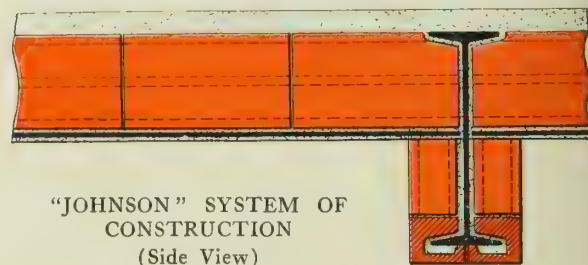
TABLES OF
STRENGTH.

The accompanying tables give the ultimate strength of "Johnson" construction for various spans and thicknesses of tile and floor surface.

"JOHNSON" SYSTEM TABLE NO. 2

With 1-inch Portland-Cement Floor Surface

Spans From 6 to 25 Feet	Ultimate Strength In Pounds Per Square Foot									
	Thickness of Tile, 12 ins.	Thickness of Tile, 10 ins.	Thickness of Tile, 9 ins.	Thickness of Tile, 8 ins.	Thickness of Tile, 7 ins.	Thickness of Tile, 6 ins.	Thickness of Tile, 5 ins.	Thickness of Tile, 4 ins.	Thickness of Tile, 3 ins.	
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	
6 feet.....	8083	7166	5666	5120	4256	3520	2800	2160	1560	
7 feet.....	6920	5300	4400	3800	3120	2600	2040	1600	1160	
8 feet.....	5280	4040	3360	2880	2400	2000	1580	1220	880	
9 feet.....	4080	3180	2656	2280	1892	1568	1240	968	696	
10 feet.....	3375	2580	2140	1850	1525	1265	1000	775	560	
11 feet.....	2800	2340	1780	1536	1264	1052	832	640	464	
12 feet.....	2350	1800	1480	1280	1064	880	700	540	390	
13 feet.....	2000	1540	1265	1100	910	752	595	460	334	
14 feet.....	1730	1325	1100	950	780	650	510	400	290	
15 feet.....	1500	1160	950	840	680	590	450	348	250	
16 feet.....	1320	1010	840	720	600	500	395	305	220	
17 feet.....	1180	900	740	640	578	440	350	270	194	
18 feet.....	1020	795	664	570	473	392	310	242	174	
19 feet.....	940	718	590	515	422	352	277	216	156	
20 feet.....	844	645	535	462	381	314	250	194	.....	
21 feet.....	770	585	485	420	346	287	226	176	.....	
22 feet.....	700	536	445	384	316	263	208	.....	.....	
23 feet.....	635	490	405	350	290	240	188	.....	.....	
24 feet.....	587	450	370	320	266	220	.....	.....	.....	
25 feet.....	538	415	343	297	243	202	.....	.....	.....	

"JOHNSON" SYSTEM OF CONSTRUCTION
(End View)"JOHNSON" SYSTEM OF
CONSTRUCTION
(Side View)

"JOHNSON" SYSTEM TABLE NO. 1

With either of the following floor surfaces:

Wood floors on wooden sleepers; tile or mosaic floors; gravel or other suitable roofing material.

"JOHNSON" SYSTEM TABLE NO. 3

With 2-inch Portland-Cement Floor Surface

Spans From 7 to 25 Feet	Ultimate Strength In Pounds Per Square Foot								
	Thickness of Tile, 12 ins.	Thickness of Tile, 10 ins.	Thickness of Tile, 9 ins.	Thickness of Tile, 8 ins.	Thickness of Tile, 7 ins.	Thickness of Tile, 6 ins.	Thickness of Tile, 5 ins.	Thickness of Tile, 4 ins.	Thickness of Tile, 3 ins.
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.
7 feet.....	8785	8000	6714	6160	5240	4480	3680	3000	2328
8 feet.....	7840	6200	5360	4720	4040	3440	2820	2320	1800
9 feet.....	6200	4900	4200	3720	3180	2828	2332	1820	1420
10 feet.....	4980	3950	3400	3000	2560	2180	1800	1470	1140
11 feet.....	4120	3272	2840	2500	2120	1800	1480	1220	948
12 feet.....	3450	2750	2360	2100	1780	1520	1250	1020	800
13 feet.....	2950	2350	2020	1780	1520	1300	1080	870	680
14 feet.....	2550	2040	1740	1540	1310	1120	920	750	582
15 feet.....	2240	1760	1520	1340	1140	980	800	656	510
16 feet.....	1960	1550	1340	1180	1010	860	705	580	450
17 feet.....	1740	1380	1180	1040	895	760	645	510	395
18 feet.....	1550	1225	1050	930	795	707	558	455	355
19 feet.....	1380	1100	940	830	710	608	500	410	320
20 feet.....	1245	987	850	750	640	545	450	367	285
21 feet.....	1140	900	770	680	580	495	410	335	260
22 feet.....	1030	818	710	625	530	450	370	305	200
23 feet.....	950	750	645	570	485	415	340	280	.....
24 feet.....	862	687	590	525	445	380	312	.....	.....
25 feet.....	790	630	545	480	410	350	290	.....	.....

The foregoing tables of the ultimate strength of the "Johnson" System of Fireproof Floor and Roof Construction are based on having supports at the two ends of the span. Where there are supports at the two sides, in addition to the end supports, the construction will carry a greater load.

Spans From 5 to 25 Feet	Ultimate Strength In Pounds Per Square Foot									
	Thickness of Tile, 12 ins.	Thickness of Tile, 10 ins.	Thickness of Tile, 9 ins.	Thickness of Tile, 8 ins.	Thickness of Tile, 7 ins.	Thickness of Tile, 6 ins.	Thickness of Tile, 5 ins.	Thickness of Tile, 4 ins.	Thickness of Tile, 3 ins.	
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	
	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	Lbs.	
5 feet.....	8000	6720	5120	4400	3400	2760	1820	1440	880	
6 feet.....	6400	4720	3560	3056	2360	1920	1280	936	616	
7 feet.....	4680	3440	2624	2256	1744	1400	928	688	480	
8 feet.....	3580	2628	2000	1732	1340	1088	720	528	344	
9 feet.....	2840	2080	1580	1376	1060	860	564	480	272	
10 feet.....	2290	1680	1280	1100	850	690	455	335	220	
11 feet.....	1888	1400	1060	920	704	568	380	276	184	
12 feet.....	1600	1180	890	764	590	480	320	234	154	
13 feet.....	1360	990	760	654	505	410	270	200	130	
14 feet.....	1170	860	656	564	436	350	232	172	120	
15 feet.....	1020	750	570	490	380	310	205	150	98	
16 feet.....	895	657	500	433	335	272	180	132	86	
17 feet.....	790	583	445	335	295	240	158	116	.....	
18 feet.....	710	520	395	344	265	215	141	120	.....	
19 feet.....	637	465	356	308	237	193	123	.....	.....	
20 feet.....	572	420	320	275	212	172	114	.....	.....	
21 feet.....	522	382	290	250	194	157	.....	.....	.....	
22 feet.....	472	350	265	230	176	142	.....	.....	.....	
23 feet.....	434	318	242	207	162	.....	.....	.....	.....	
24 feet.....	400	295	222	191	.....	.....	.....	.....	.....	
25 feet.....	365	270	205	.....	.....	.....	.....	.....	.....	

In these tables the following Factors of Safety should be used:
Factor 4—Floors of Offices, Schoolrooms, Hospital and Asylum Wards, Dwellings and Rooms.
Factor 5—Floors of Stores, Warehouses, Theaters, Public Halls and Assembly Rooms.
Factor 6—Floors of buildings where vibration of machinery or loads, causing a sudden impact, occurs.

PARTITIONS.

Terra cotta blocks form absolutely the best fireproof partitions now known and can be erected at a very reasonable cost. They are commonly built of semiporous material, with about 15 per cent of full porous for securing the trim where nailing is required. Where 2-inch partitions are required, we recommend the use of the "New York" Reinforced Partition. 3-inch blocks can be used safely to a height of 12 feet, 4-inch to 14 feet, and 6-inch to 20 feet.

STOCK SIZES

2-inch	3-inch	4-inch	5-inch	6-inch
2 x 6 x 12	3 x 6 x 12	4 x 6 x 12	5 x 8 x 12	6 x 8 x 12
2 x 8 x 12	3 x 8 x 12	4 x 8 x 12	5 x 12 x 12	6 x 12 x 12
2 x 12 x 12	3 x 12 x 12	4 x 12 x 12		

WEIGHTS PER SQUARE FOOT

	2-inch	3-inch	4-inch	5-inch	6-inch
Semiporous.....	12 lbs.	15 lbs.	16 lbs.	18 lbs.	24 lbs.
Porous.....	14 lbs.	17 lbs.	18 lbs.	20 lbs.	26 lbs.



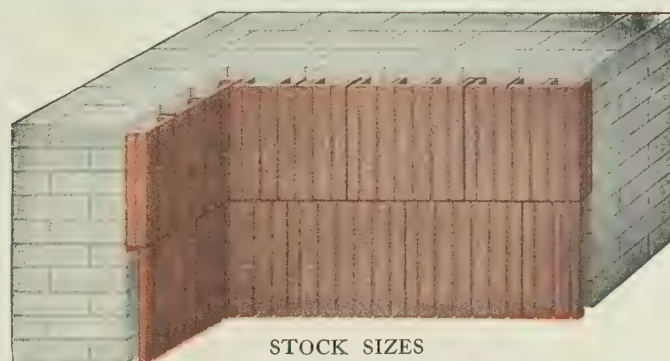
TYPICAL SHAPES OF TERRA COTTA BLOCKS

WALL FURRING.

Walls are furred to prevent the admission of moisture, either by lining the inside with terra cotta furring blocks, or by building the inside face of the wall with hollow brick, "Haverstraw" size. The former method is more effective.



Header
Stretcher
Porous
Stretcher
"Haver-
straw" Brick



STOCK SIZES

1½ x 12 x 12 inches, weight per square foot, 9 pounds
2 x 12 x 12 inches, weight per square foot, 10 pounds

COLUMN COVERING.

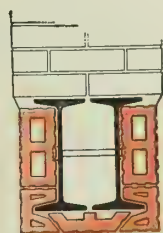
Steel and cast-iron columns must be covered by at least two inches of porous terra cotta.



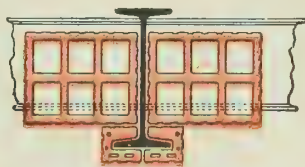
STANDARD SHAPES OF COLUMN COVERING

GIRDER COVERING.

The terra cotta girder covering is made in various forms to meet special cases. It is usually self-supporting, except where the space to be covered is wider than 12 inches, when the soffit is supported by metal clips.



DOUBLE-BEAM
GIRDER SUP-
PORTING BRICK
WALL



STANDARD SHAPES OF GIRDER COVERING

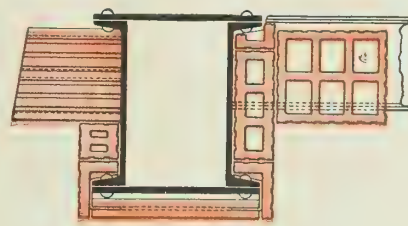
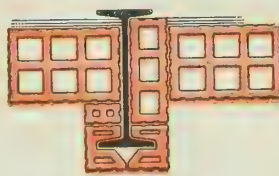
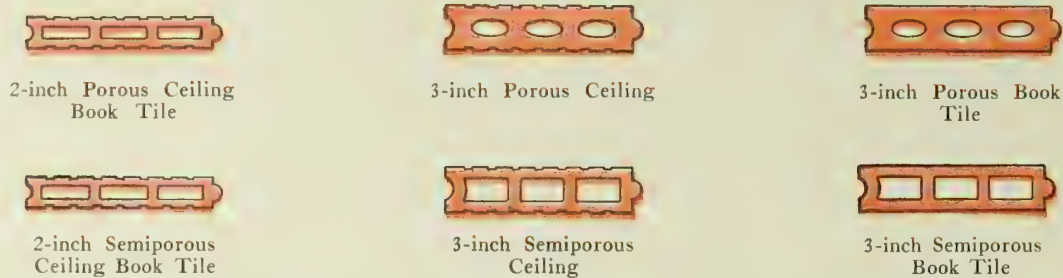


PLATE-GIRDER PROTECTION HUNG
ON METAL CLIPS

ROOF AND CEILING BLOCKS.

Roof and ceiling blocks, also called "book tile," are used between T irons to form flat and mansard roofs and hung ceilings. Tile and slate or metal roofing can be nailed directly on the porous blocks. Ceiling blocks have rabbeted ends so that the blocks are flush with bottom of the iron.



SECTIONS OF STANDARD ROOF AND CEILING BLOCKS

STANDARD SIZES AND WEIGHTS

Roof Blocks, Inches		Ceiling Blocks, Inches	
3 x 12 x 18	20 lbs. per square foot	3 x 12 x 16	20 lbs. per square foot
3 x 12 x 20	20 lbs. per square foot	3 x 12 x 18	20 lbs. per square foot
3 x 12 x 24	20 lbs. per square foot	3 x 12 x 20	20 lbs. per square foot
4 x 12 x 24	22 lbs. per square foot	3 x 12 x 24	20 lbs. per square foot
		2 x 12 x 16	12 lbs. per square foot
		2 x 12 x 18	12 lbs. per square foot
		2 x 12 x 20	12 lbs. per square foot

FIREPROOFING
FOR REIN-
FORCED-
CONCRETE
STRUCTURES.

The necessity for a fireproof protection for reinforced-concrete structures is fully recognized by architects designing structures in that material.

In "Concrete and Constructional Engineering" for September, 1906, Capt. John Stephen Sewell, the eminent Government engineer, says:

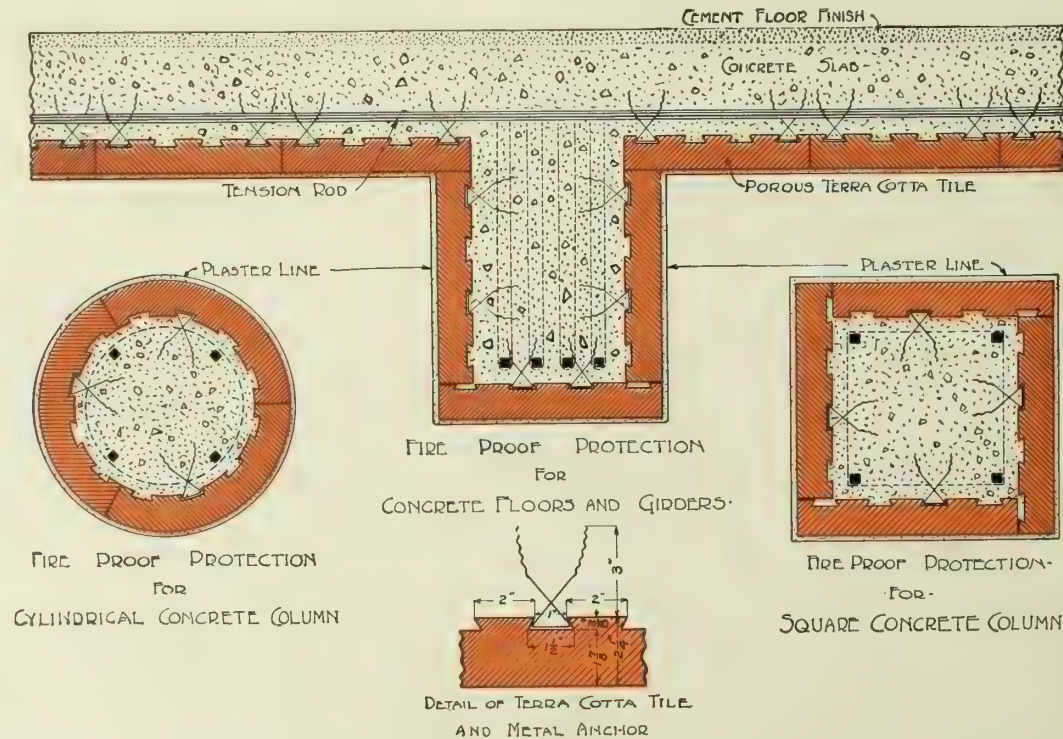
"Structural duty and fire resistance should be differentiated. The same material should not in an ideal design be expected to perform both duties. It would not be surprising if the future tendency in the more important buildings should be to treat reinforced concrete as a structural material pure and simple, and to protect it much as steel work is now protected."

A report on the San Francisco disaster, by the American Society of Civil Engineers, and published in the "Proceedings" of that Society, says:

"All structural parts of a building, of whatever material constructed, must be protected by another material which will be a more or less complete loss in a fire. This applies to a steel frame, to floors of any type, and to roofs. It is impossible to protect some parts, such as fronts, partitions, and other parts directly exposed. The floors and frame constitute the structural parts, failure of which means destruction of the building. All such should be fireproofed. This remark applies with equal force to buildings with reinforced-concrete columns, girders, beams and floors. As integral structural parts they should be fireproofed as well as similar members of a steel-frame structure, for concrete is destroyed by fire nearly as quickly as steel."

ESTIMATES
AND
CO-OPERATIVE
SERVICE.

We will promptly submit plans and estimates for fireproofing any concrete building. Copies of our "Blue Books" Nos. 1 and 2, containing valuable data on the resistance of concrete to fire when unprotected, and when protected by Terra Cotta Hollow Tile, will be mailed upon request.



ONE OF OUR METHODS FOR PROTECTING CONCRETE WITH TERRA COTTA HOLLOW TILE

SPECIFICATIONS FOR
STANDARD
HOLLOW TILE
FIREPROOFING.

General—The contractor for this work shall be required to furnish all the material and labor of every description required to erect the same in place complete.

Details—When requested to do so the contractor shall furnish large scale details or full-sized drawings for all special shapes, which shall be submitted to the architects for their approval.

Scaffolding, Tools, etc.—Furnish all the tools, machinery, hoisting apparatus and centering necessary to carry on the work.

Tile—All the tile required for this work shall be of the best quality of hard-burned fire clay, semiporous, or porous terra cotta. Material to be equal to that manufactured by the NATIONAL FIRE PROOFING COMPANY.

Mortar and Laying—All the tile work for the floor construction shall be laid in mortar composed of one (1) part American Portland Cement of approved brand, four (4) parts sharp sand, and one (1) part lime mortar, all thoroughly well mixed together. All other tile work is to be laid in mortar composed as follows: One (1) part Louisville, Rosendale, or other natural cement, three (3) parts sharp sand, and one (1) part lime mortar. All tile must be laid with full flush joints plumb to a line. Fill all the joints and crevices between the tile and steel work with mortar well slushed in.

Type of Arch—The arches for the floors in general shall be inch segment or flat arches (side) (end) construction. Skew-backs must be carefully bedded in place against beams.

Beam Tile—The soffits of all beams to be protected with slabs of tile at least one inch in thickness.

Roofs—The arches for the main roof are to be inch segment or flat arches same as specified for the floors.

Minor Roofs—The roofs of pent houses, roof over projecting portion in second story, floor of bulkheads, and other portions indicated on details as book tile shall be made of three-inch (3-inch) book tile set in place between tee irons.

Tee irons to be furnished by the iron contractor.

Partitions—All partitions must start on steel beams or on fireproof floor arches.

Partitions shown on the plans to be built the thickness indicated in figures. If no dimensions are given, the following sizes will govern:

Partitions for all corridors and for partitions over 12 feet and up to 14 feet in height, to be 4 inches.

Partitions over 14 feet in height to be 5 or 6 inches, and all cross partitions 12 feet or less to be 3 inches. Partition walls to be built straight, true, plumb and well-bonded, and to be well-wedged underneath fireproof ceiling.

Furring Tile—Where indicated on plans, two-inch (2-inch) furring tiles to be built against the outside walls of the building. These tiles are to be secured to the brick walls with tenpenny spikes on every second course, driven into the brick work at intervals not greater than 36 inches apart.

Curb Wall—The curb wall in basement shall be furred with three-inch (3-inch) tile extending up to the under side of the iron plate along the edge of curb wall and properly fitting around all beams.

Rough Frames—The contractor for carpenter work will furnish and erect the rough wood frames at all openings in partitions and furring.

Column Covering—Column covering shall be designed to properly fit the columns. All corners of square columns shall be left (square) (round).

Column covering to be wired (once) (twice) in each course in height or secured together with clasps. Blocks must be set to break joints.

Nailing Blocks—Furnish and set where required for nailing trim, thick, porous blocks which will receive and hold nails.

Covering Exposed Steel Work—All girders, beams, channels, etc., that show below the under side of ceiling, are to be incased on all sides with at least one-inch thickness of fireproof tile secured to the steel in the usual manner.

Boxes for Plumbing Pipes—All pipes shall be boxed in, using three-inch (3-inch) tile, starting from the floor tile in all cases. This boxing shall not be done until the pipes have been properly tested, and covered by another contractor. Outlet fireproof frames to be furnished by carpenter shall be set by the fireproofing contractor.

Bulkheads—All bulkheads shall be built of three-inch (3-inch) tile; the structural iron contractor furnishing all necessary tee irons for the support of the tile.

Pent Houses—The contractor shall build the walls of pent houses with four-inch (4-inch) hard or glazed tile, laid up in Portland-cement mortar, all joints to be thoroughly flushed.

Curbs of all skylights shall be built of four-inch (4-inch) tile.

Floor Strips and Concrete Filling—After the floor arches have been set in place, the contractor for carpenter work shall furnish and set the 2-inch by 3-inch wood floor strips required for nailing the finished wood flooring, where wooden flooring is called for.

After the strips have been set, the fireproofing contractor must fill in between the same with concrete filling; this concrete is to be composed of one (1) part American Portland cement of approved brand, and ten (10) parts broken tile, stone, gravel or fine, clean coal cinders, thoroughly mixed together dry, then tempered and mixed, and tamped in place.

Finally—Do everything necessary to finish the entire work in a thorough and substantial manner.

Remove promptly from the premises all the tools, scaffolding, unused tile, debris, etc., as soon as the work is completed.

FIREPROOF
HOUSES OF
TERRA COTTA
HOLLOW TILE.

The value and economy of Terra Cotta Hollow Tile for structural as well as for fireproofing purposes is now fully recognized and residence buildings are being built of this material in great numbers, with extremely satisfactory results to owners and architects.

The following data give examples and methods of this construction, and for complete data every architect should have a copy of our book "Fireproof Houses of Terra Cotta Hollow Tile and How to Build Them." We will send copy free upon request.



A HOLLOW TILE RESIDENCE AT CALDWELL,
N. J.

UPJOHN & CONABLE, New York, Architects

This building is fireproof throughout. Its cost complete, including contractor's profit, was \$4,500



RESIDENCE AT JAMAICA, L. I., DESIGNED
AND OWNED BY

ALBERT THOMPSON, Architect, New York

A strictly fireproof building of Terra Cotta Hollow Tile throughout. The photograph shows the building complete except the stucco finish which is still to be applied



A HOTEL AT GLEN COVE, L. I.

CRUTE & WECK, Brooklyn, N. Y., Architects. FREDERICK WANDELT, Jersey City, N. J., Engineer

FIREPROOF
HOTEL.

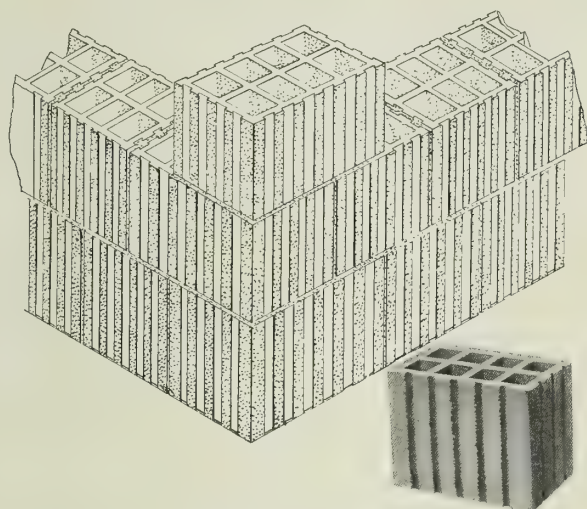
This is a four-story building, strictly fireproof throughout, the walls being of 8-inch Terra Cotta Hollow Tile; the floors of reinforced Hollow Tile, and the porches of this same construction; the stairs of reinforced concrete; the balconies of cast concrete reinforced, and the roof the same as the floor construction and supported on reinforced-concrete girders. All partitions are of Terra Cotta Hollow Tile.

This building was originally figured for frame construction, but fireproof construction as detailed above was finally adopted. By adopting the fireproof construction there was secured a saving in insurance premiums alone amounting to \$500 per year. This saving will in itself in a few years cover the entire difference in cost between frame and fireproof construction.

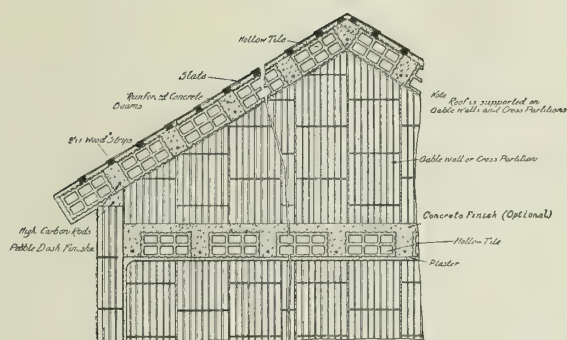
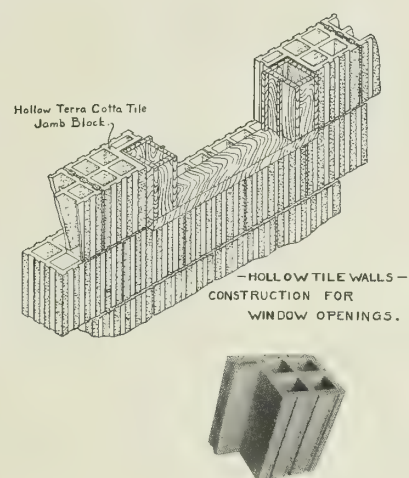
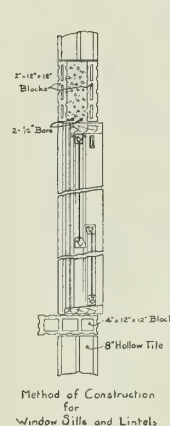
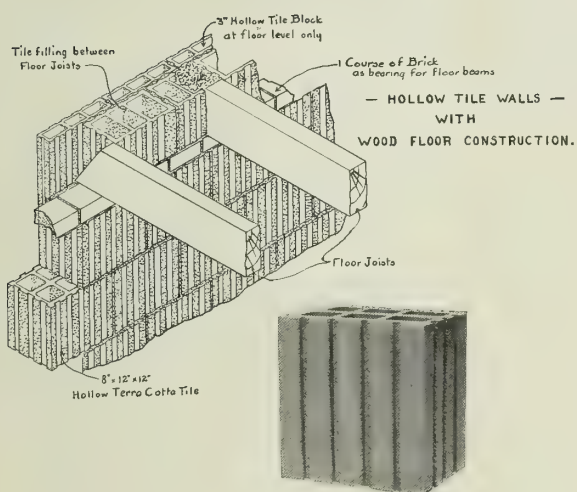
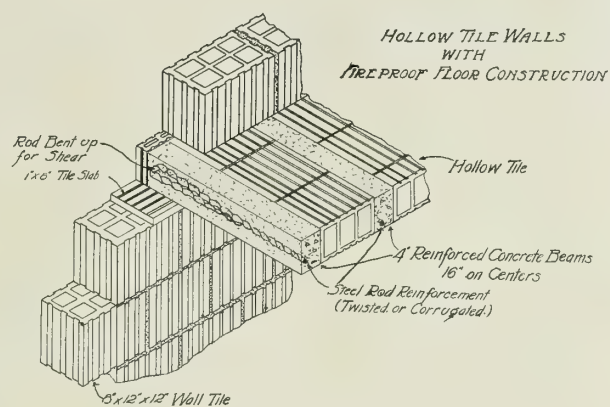
DETAILS FOR HOLLOW TILE HOUSES.

The illustrations on preceding page show clearly the general character of construction of buildings such as are described.

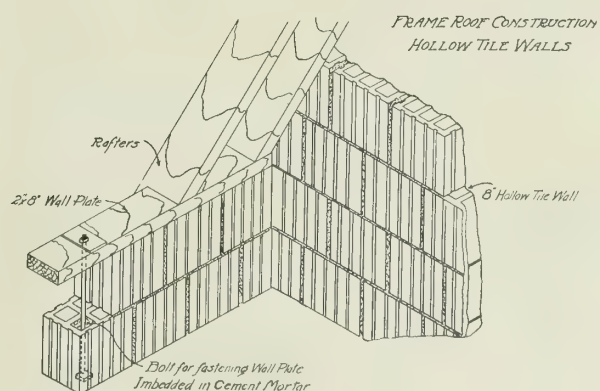
The detail drawings shown below give specific information as to important details of carrying on construction of this character. These details can be readily applied to any contemplated work where Hollow Tile is used.



Wall Corner Block and Detail



Detail of Roof & Floor Construction



DETAILS OF CONSTRUCTION FOR FIREPROOF TERRA COTTA HOLLOW TILE HOUSES

Note that in the fireproof roof construction the roof bears on gable walls and on cross-partitions of hollow tile built up solidly from the floor immediately below the roof

SACKETT PLASTER BOARD COMPANY

MANUFACTURERS OF

“Sackett” Plaster Board

GENERAL OFFICE

17 Battery Place
NEW YORK, N. Y.

BRANCH OFFICE

CHICAGO, ILL.
134 EAST MONROE STREET

WORKS

GARBUTT, N. Y.
GRAND RAPIDS, MICH.
FORT DODGE, IOWA

PRODUCT.

“SACKETT” PLASTER BOARD.

“SACKETT”
PLASTER
BOARD.

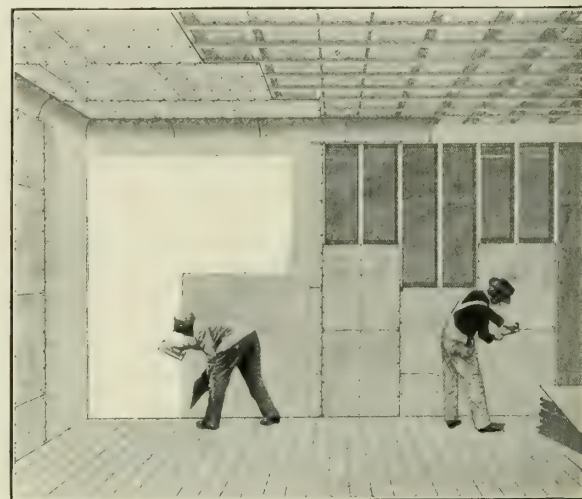
“Sackett” Plaster Board is composed of alternate layers of strong fibrous felt and plaster, and combines lathing and fireproofing in one inexpensive commodity. It was patented May 22, 1894, and is made in sheets 32 x 36 inches.



UTILITY.

Being an efficient and economical fireproofing, it is rapidly supplanting wood and metal lath, not only for walls and ceilings but between floors, and for protecting exposed wooden surfaces in mills, warehouses, and other industrial structures. It is also used extensively instead of lumber for outside sheathing under weather boards. In fact, “Sackett” Plaster Boards have been successfully used since 1891 in thousands of buildings of all classes, including cottages, costly residences, prominent hotels, churches, and theaters.

Its superior insulating qualities make warmer houses with less fuel. Its first cost is no more than good work on wood lath, and less than on metal lath.



METHOD OF APPLYING “SACKETT” PLASTER BOARD

ADVANTAGES.

A TIME AND MONEY SAVER—“Sackett” Plaster Board speeds construction; it increases the value of the building; it reduces fixed charges for insurance and fuel.

A PLASTER SAVER—When ordinary lathing is applied, rough plastering has to be done. This means an immense quantity of wet binding-mortar that takes days to apply, days to dry, and weeks to season.

A LABOR SAVER—The wet mortar warps the joints and framework of the building; it makes the building damp; if the mortar has not been properly made it falls, and the work has to be done over again.

DOES NOT BUCKLE—“Sackett” Plaster Board is a perfect surface for the finishing plaster. It requires a smaller quantity of water than lath and dries quickly. There is no warping or swelling of the framing and trim from excessive water, and less labor and time are required.

HANDY FOR QUICK BUILDING, REPAIRS AND ALTERATIONS—The builder can “lath” a house more quickly with “Sackett” Plaster Board than with any other material.

ADAPTABILITY.

At little or no increase in cost “Sackett” Plaster Board can make a light-framed cottage not only more fireproof but warmer during cold weather. For large apartment houses, tenements, hotels, hospitals, theaters; in fact, for buildings of every sort its use is ideal.

When considering the question of partitions for the apartment house connected with the New England Conservatory of Music, at Boston, Mass., the architect, wishing to have separations between rooms as sound-proof as possible, caused a comparative test of five fireproof methods of constructing partitions to be made by Prof. Charles L. Norton to determine the relative value of each as a sound-deadener. "Sackett" Plaster Board was one of the five materials tested, and showed such positive merit that it was used throughout the building.

Plumbing should be protected from frost by the use of "Sackett" Plaster Board sheathing. Hot-air flues from furnace should be lined with this plaster board for greater efficiency and as a fire protection.

"Sackett" Plaster Board is an effectual and economical covering for exposed wooden surfaces in manufacturing and commercial plants as a protection against fire. It is also adaptable for use between floors, both as a fire-retardant and sound-deadener, and in the construction of warm-air ducts, etc.

GENERAL
DIRECTIONS
FOR APPLI-
CATION OF
"SACKETT"
PLASTER
BOARD
INSTEAD OF
LATH.

The plaster boards are nailed directly to the studding, set 16 inches from centers. Ceilings requiring leveling may be furred with $\frac{7}{8}$ - x 2-inch strips, 8 or 12 inches from centers. Curved boards for coves of moderate radius require no bracketing. For buildings of slow-burning construction nail plaster boards solid to wooden surface.

To cut plaster boards, use an ordinary saw or score with lather's hatchet and break on straight edge. In nailing, use $1\frac{1}{4}$ -inch No. 10 $\frac{1}{2}$ wire nails with large head. Nails should be 4 to 6 inches apart, and driven home firm and tight to prevent any working under the plaster coat. Space boards about $\frac{1}{4}$ of an inch apart, and see that each edge has a bearing on the stud of not less than $\frac{3}{4}$ of an inch. Break joints horizontally on the walls and at right angles with the beams or furring on ceilings.

Do not wet the boards before applying the plaster. Adhesion between the plastering material and the dry board is perfect. For first-class work we advise $\frac{3}{4}$ -inch grounds.

The best results are obtained by first thoroughly filling the joints between the boards, and applying a base or brown coat, $\frac{1}{4}$ to $\frac{3}{8}$ inch thick (according to thickness of board used) of any good brand of hard wall plaster. When the first coat is thoroughly set, finish with a thin coat of regular hard finish (lime, putty and plaster) or a patent ready finish.

We do not recommend one-coat work on "Sackett" Plaster Board for the reason that the plaster coat will check more or less at the joints. However, we find there is a large consumption of our board in work where quick construction and finish are prime factors, or where the expense of two coats is not justified as a matter of investment.

In this construction a wall paper finish is usually immediately applied. If wall paper is applied direct to the surface of the boards without an intervening skim-coat, all the imperfections in the surface of the boards will show through the wall paper. Pointing up the joints alone will not suffice to prevent this, and it will be found in practice that it costs but little if any more to skim-coat the entire surface, filling and pointing the joints at the same operation, thus obtaining smooth surface for the wall paper, than to simply fill and point the joints alone.

OFFICIAL
ENDORSE-
MENT.

"Sackett" Plaster Boards are accepted by building departments and Underwriters for slow burning construction on the same basis as metal lath.

CAPACITY.

500,000 square feet of "Sackett" Plaster Boards per day.

SUPPLY.

"Sackett" Plaster Boards are carried in stock by up-to-date Building Material Dealers everywhere.

REFERENCES.

Booklets showing buildings all over the country where the "Sackett" Plaster Boards have been used, with samples and name of nearest dealer, will be furnished upon application.

THE SHARON STEEL HOOP CO.

MANUFACTURERS OF

Slotted Steel Studding for Fireproof Partitions, Suspended Ceilings and Furrings

Commercial National Bank Building

CHICAGO, ILL.

EASTERN REPRESENTATIVE

FULLER BROTHERS & COMPANY, 139 Greenwich Street,
New York, N. Y.

MILLS

SHARON, PA.

PRODUCT.

SLOTTED STEEL STUDDING.

SERVICES.

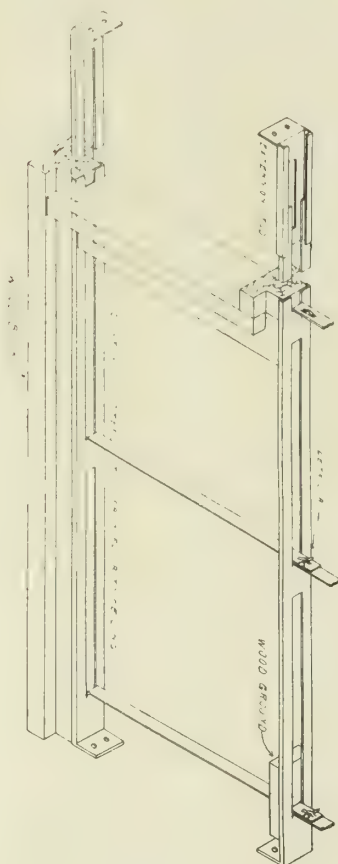
We offer a special system of Fireproof Partitions, Suspended Ceilings and Furrings. We supply the materials but do not erect. We can meet any special requirements for which wood and tile partitions can be used.

ADVANTAGES.

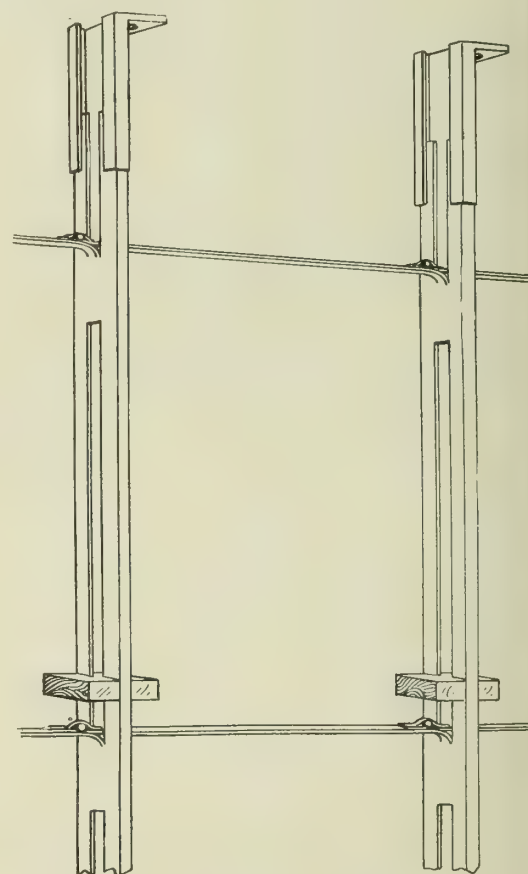
Our Slotted Steel Studding makes partitions, ceilings, and furrings absolutely fireproof. It combines lightness with rigidity, the studding being formed of light open-hearth hoop steel of great tensile strength.

RIGIDITY.

Its use makes a very rigid partition, due to the interlocking braces. After the scratch-coat of plaster is applied, the partition becomes absolutely rigid, owing to the adhesion of the plaster to the metal.



SECTION OF SLOTTED STEEL STUDDING WITH EXTENSION AT TOP
READY TO ATTACH TO
CEILING



DETAIL OF SLOTTED STEEL STUDDING
Also Wood Nailing Blocks firm in the
slot without other fastening

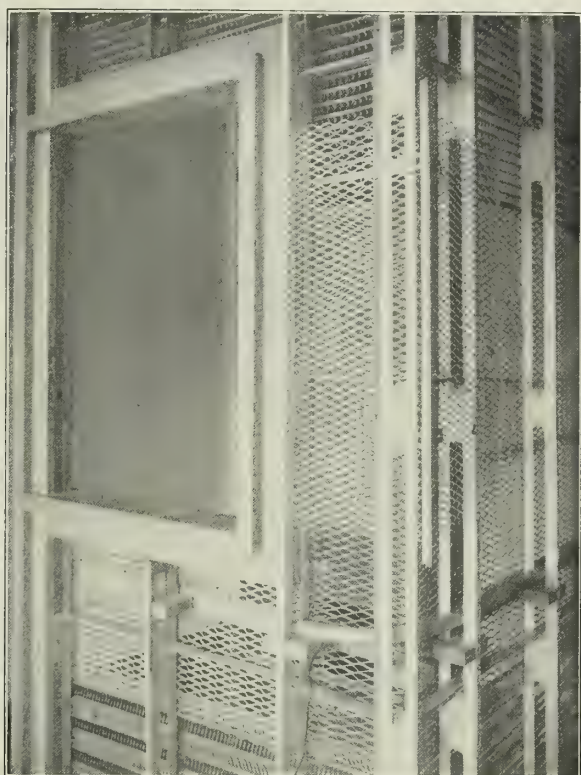
THE BRACING FEATURE.

The steel tongue cut out from the studding in forming the slot is thrown out at right angles, forming a horizontal brace every 17 inches in height. This forms an automatically interlocked web of steel, the brace of one stud being securely attached to the next by small

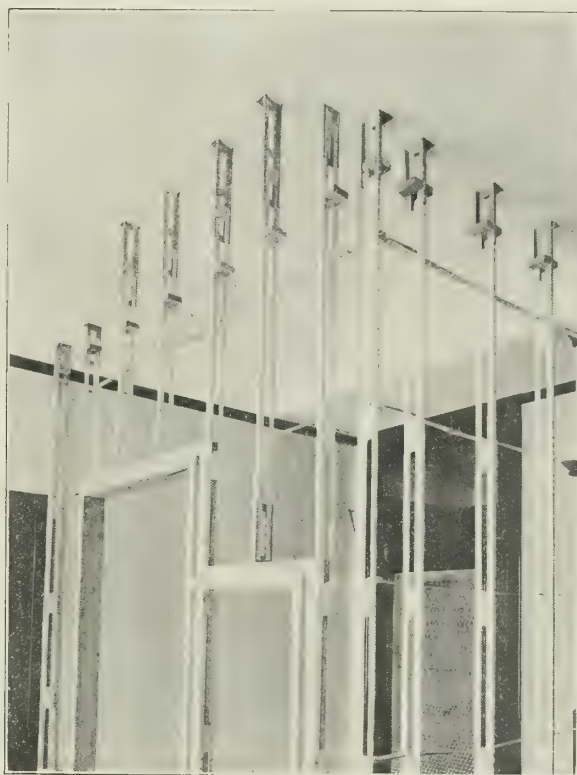
nails and loops. These tongues also space studs automatically on 12-inch centers. The braces are especially adapted to the use of wire, as well as expanded metal lath, as wire lath may be drawn taut by tying to the braces, which is not possible with other studding. Shoes are bent at the bottom of the studs, at the factory, so that studding when shipped is complete in every detail and ready to erect.

ALIGNMENT.

Slotted Steel Studding forces perfect alignment. This is due to the system of interlocking tongues, which automatically hold the studs perfectly true; in fact the braces make it impossible for the partitions to be erected out of line.



Showing use of slots for carrying concealed conduits and pipes



Showing practical use of extension studs

SLOTTED STEEL STUDDING PARTITIONS

EXTENSION STUDS.

We manufacture extension studs which fit over the section of the channel. They take care of expansion and contraction and provide perfect fastening to the ceiling. They allow stock lengths of studding to be used and eliminate delays in getting material. These extension studs are manufactured in two lengths, seven and thirteen inches. They take care of all inequalities in the floor and ceiling.

SLOTS AND THEIR ADVANTAGES.

The slots in the studding make an ideal place for carrying and supporting pipes, wires, and conduits. The slots are also convenient to receive the wire used in tying on the lath, assuring speed in lathing, because the wire is inserted through the slots and it is not necessary to carry the wire around the entire studding. The saving in labor because of this feature is specially apparent on the hollow type of partition, after one side is lathed. It would be quite impracticable to have to carry the wire through the lath on the opposite side from which the workman is "tying on."

NAILING BLOCK.

The slots are especially adapted to the use of nailing blocks, which are inserted flat and turned over, making the blocks firm without other fastening. These blocks are used as a nailing base for grounds to receive picture moulding, chair-rail and base-board. Owing to the particular adaptability of this studding for the insertion of these blocks, there is a great saving in the cost of installing wood trim.

DEADENING
QUALITIES.

Slotted Steel Studding partitions are sound-proof, owing to the continuous dead-air space between the walls of the partition.

ECONOMY
OF AREA.

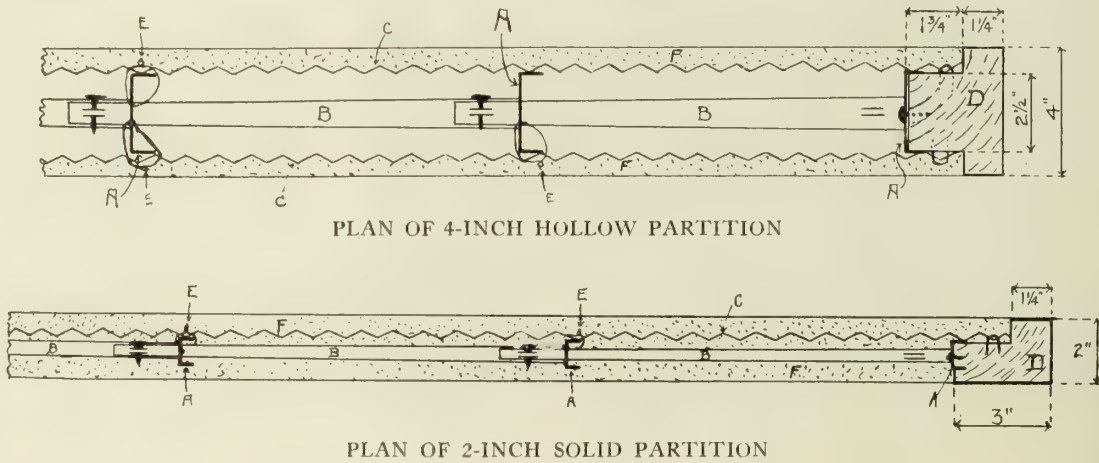
Less area is consumed by this type of partition than tile, terra-cotta, or similar construction. The use of Slotted Steel Studding in 1½" finished solid partitions is practical for heights up to 15 ft. and in 2" partitions for heights up to 25 ft. For hollow partitions, this studding is practical for partitions as narrow as 3" for heights up to 15 ft.; 4" for heights up to 25 ft.; 5" for heights up to 30 ft.

NON-CON-
DUCTIVITY OF
HEAT.

This system is a low conductor of heat. A two hour test at Ohio State University with furnace temperature 1200 degrees showed temperature of 276 degrees in non-conducting air-box behind partitions. Compare with the charring point of paper at 475 degrees.

SIZES.

Width of Channel	Width of Flange	Width of Slot	Remarks
1"	3/4"	3/8"	For 1½" and 2" solid partition
1 1/8"	3/4"	3/8"	For 2" solid partition
1 3/8"	1"	3/8"	For suspended ceiling
1 7/8"	1 1/4"	3/8"	For 3" hollow partition
2 3/8"	1 3/4"	7/8"	For 3½" hollow partition
3"	2"	7/8"	For 4" hollow partition
3 1/2"	2 1/4"	7/8"	For 4½" hollow partition



- A—Slotted Steel Stud

B—Leaf cut forming slot and used for brace

C—Expanded or Wire Lath
- D—Rough Door Buck

E—Galvanized Tie Wire

F—Plaster

WEIGHT					
Approximate Weights of Several Types					
Pounds per square foot					
Size of Finished Partition	2"	3 1/2"	4"	5"	6"
Porous Terra-Cotta			26	29	32
Hollow Tile			24	25	29
Slotted Steel (Solid)	20				
Slotted Steel (Hollow)		15	15		
					Lbs.
Approximate weight of 5-inch Terra-Cotta Partitions in modern 18-story building, containing 50,000 sq. yds. of Partitions					13,050,000
Approximate weight of 3½-inch Slotted Steel Partitions for same building					6,750,000
Saving in weight by using Slotted Steel					6,300,000

AREA		Sq. Ft.
Approximate floor space consumed by 5-inch Terra-Cotta Partitions in modern 18-story building, containing 45,000 lin. ft. of Partitions		18,750
Approximate floor space consumed by using 3½-inch Slotted Steel for same building		13,125
Saving in floor space by using Slotted Steel		5,625
If 4-inch Corridor and 2-inch Intermediate Slotted Steel Partitions are used, approximate space consumed		9,600
Saving in floor space by using Slotted Steel		9,150

NOTE.—These estimates are approximated for a building containing 500,000 sq. ft. of floor space.

CO-OPERATION.

We will furnish estimates from detailed drawings and we will furnish the necessary sketches, showing typical construction. There is no charge for these services.

STANDARD CONCRETE-STEEL COMPANY

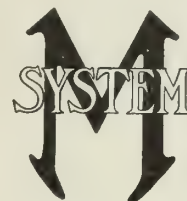
ENGINEERS AND CONTRACTORS FOR

Modern Reinforced Concrete Buildings and Guy B. Waite Systems of Fireproofing

413-417 East Thirty-First Street

NEW YORK, N. Y.

MANUFACTURING AND BEAM SHOPS
31ST to 32D STREETS AND EAST RIVER
NEW YORK, N. Y.



TRADE-MARK

PRODUCTS.

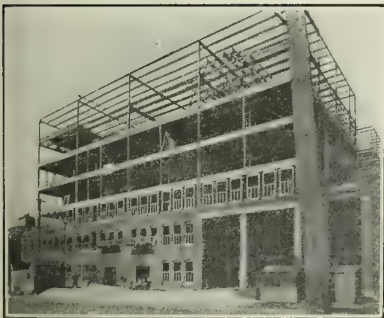
This Company designs and furnishes STEEL FRAME and REINFORCEMENTS and erects STANDARD REINFORCED CONCRETE CONSTRUCTIONS for buildings.

Where the greatest speed and economy are required the SYSTEM "M" method is employed.

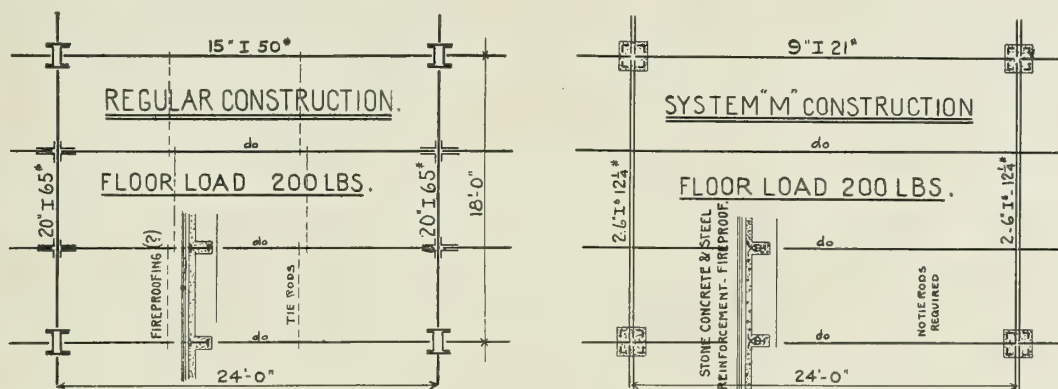
SYSTEM "M."

System "M" is a type of floor, roof and column construction differing materially from all other systems of reinforced concrete. Rods are used only as reinforcement in the floor slabs and as shear bars in the beams and girders. These shear bars pass through holes in the beams and are thus rigidly held. The reinforcement of the beams and girders consists of light I-beams or channel-beams fastened together and to the columns by standard-beam connections, and are, therefore, always definitely placed and maintained in their proper positions.

The reinforcements for columns are made of any required number of light angles or channel-beams tied together by clips or straps similar to those used in regular steel column work.



BLANCHARD BUILDING, LONG
ISLAND CITY, N. Y.



COMPARISON OF SYSTEM "M" WITH REGULAR STEEL CONSTRUCTION

ADAPTABILITY.

This form of construction is made ready and erected very rapidly. The reinforcing members being standard beams and channels in light sections are easily worked, transported and placed, and a small stock of small beams only is required to be ready for the immediate starting of a job. The steel frame composing the reinforcement goes up ahead of the walls and gives independent support for the forms.

ASSISTANCE IN DESIGNING.

This Company will always assist architects and engineers who have System "M" in contemplation, by correspondence or personal representatives, free of charge.

FACILITIES.

This Company has its own well-stocked beam yard and fabricating plant and is equipped for the successful handling of work of any magnitude.

APPROVALS.

System "M" has been tested by the Bureaus of Buildings of New York and other large cities, and has the approval of every building department where regulations governing reinforced concrete have been adopted.

UNITED STATES GYPSUM CO.

Fireproofing Department

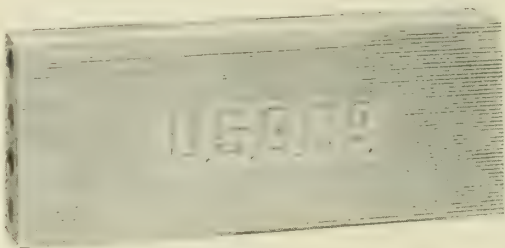
MANUFACTURERS OF

U. S. Gypsum Hollow Tile

1123 Broadway
NEW YORK, N. Y.

PRODUCTS.

We are manufacturers of "U. S. GYPSUM" HOLLOW TILE, a practical, economical material for partitions, wall furring, column covering, etc.; also, manufacturers of HARD WALL PLASTERS and the products of GYPSUM generally, as described elsewhere in this Catalogue.



"U. S. GYPSUM" HOLLOW TILE
PARTITION BLOCK

DESCRIPTION.

"U. S. Gypsum" Hollow Tile is made of the highest grade calcined gypsum that the purest rock and most expert treatment can produce, combined with a sufficient quantity of strong fiber to impart the necessary element of toughness. It contains absolutely no other ingredient.

ADVANTAGES.

The advantages in "U. S. Gypsum" Hollow Tile, aside from its fire-resisting qualities, are lightness, toughness, non-staining qualities, stiffness, economy of labor in erection and in plastering materials.

WEIGHTS
AND SIZES.

Size, inches	Weight	Ceiling Heights up to
2 x 12 x 30 hollow (wall furring)	5½ lbs. per sq. ft.	—
2 x 12 x 30 solid	8 lbs. per sq. ft.	10 ft.
3 x 12 x 30 hollow	9 lbs. per sq. ft.	13 ft.
4 x 12 x 30 hollow	11 lbs. per sq. ft.	17 ft.
6 x 12 x 24 hollow	17 lbs. per sq. ft.	28 ft.
8 x 12 x 15 hollow	23 lbs. per sq. ft.	40 ft.

CONTRACTS,
ESTIMATES.

We contract to erect the "U. S. Gypsum" Hollow Tile or to sell and deliver the tile as desired.

We are always prepared to submit bids and quotations in competition.

SPECIFICATION.

Setting Tile—All partitions, column coverings, wall furring, pipe chases and vent ducts, where shown on plans, shall be built of the UNITED STATES GYPSUM COMPANY'S Tile.

Partitions shall be 3-inch Hollow Tile except where ceilings exceed 13 feet in height, where 4-inch tile shall be used unless otherwise shown on plans. They shall be started on the fireproof floor, which shall be properly leveled off to receive same before this work is begun and shall be tightly wedged against the under side of the fireproof floor-arch above.

The carpenter contractor shall set the rough bucks for openings ahead of the contractor for this work, so as not to delay its progress. These bucks shall be left plumb and true by the carpenter, and shall consist of....., the face abutting the partition tile to be 1 inch wider than the thickness of tile, and to be rabbeted in $\frac{3}{4}$ inch, and the exact thickness of the tile, to receive the same; or each tier of blocks to be nailed at top, with 10d. nails, to plain bucks.

Cover all exposed interior columns with 2-inch solid tile, securely bonded, and wrapped as often as necessary with No. 12 galvanized wire.

Construct all pipe chases and vent ducts shown on plans, except those built into brick, stone or concrete walls, with 2-inch solid tile.

Furr all outside walls, where shown on plans, with 2-inch UNITED STATES GYPSUM COMPANY'S Hollow Furring Tile laid up against the wall and securely spiked to same every square yard.

Build walls of penthouses of 4-inch tile, and form skylight curbs with 3-inch tile.

For roofs of penthouses, mansards, etc., where shown on plans, fill in between T-irons with 3-inch solid tile well grouted and left level.

All tile to be laid up in mortar composed of one (1) part UNITED STATES GYPSUM COMPANY'S Cement Plaster and three (3) parts clean sharp sand, thoroughly mixed. No mortar shall be retempered.

If Gypsum Cement Plaster can not be procured, the contractor may use a mortar composed of one (1) part Portland Cement, three (3) parts sand, and one (1) part lime; all to be thoroughly mixed and no retempered mortar to be used.

All the foregoing work to be laid up with broken joints, and plumb and true, so that not more than $\frac{1}{2}$ inch of plaster will be necessary to finish on a side.

The general contractor may obtain from the UNITED STATES GYPSUM COMPANY'S Fireproofing Department, New York, a bid for furnishing and erecting the foregoing work complete, ready for plastering.

Grounds—Shall be $\frac{1}{2}$ inch.

Plastering—For base coat use one (1) part UNITED STATES GYPSUM COMPANY'S Cement Plaster and two (2) parts clean, sharp sand, mixed according to directions of manufacturers. To be applied in one coat, well filled out to grounds and darbied to a straight and even surface.

For finish coat, use "Universal" Finish applied according to directions of manufacturers, or regular hard finish (lime-putty and plaster).

For Sand Float Finish use "Silico" applied in one (1) coat according to directions of manufacturers.

REFERENCES.

The following are a few of the many large buildings throughout which the "U. S. Gypsum" Hollow Tile partitions have been used:

BUILDING	LOCATION	ARCHITECT
Dormitory, Wesleyan University	Middletown, Conn.	Albro & Lindeburg
Phelps Publishing Co. Building	Springfield, Mass.	Fred S. Hinds
New York Athletic Club	Travers Island, N. Y.	George K. Thompson
Y. M. C. A. Building	Binghamton, N. Y.	Walter H. Whitlock
Hotel Statler	Buffalo, N. Y.	Esenwein & Johnson
Seneca Hotel	Rochester, N. Y.	Esenwein & Johnson
Linton Apartments	Montreal, Quebec, Can.	Finley & Spence
New Battle House	Mobile, Ala.	Frank M. Andrews & Co.
New Grunewald Hotel	New Orleans, La.	H. C. Koch & Son
Charlevoix Apartments	Detroit, Mich.	Tufts & Strong
Connors Hotel	Joplin, Mo.	Barnett, Haynes & Barnett
Boston Building	Salt Lake City, Utah	Henry Ives Cobb
Central Park View and Rossley Court		
Apartments	New York, N. Y.	Mulliken & Moeller
Studio Apartments	New York, N. Y.	William J. Taylor
Mayfair Apartments	New York, N. Y.	Charles A. Rich
Hendrick Hudson Apartments	New York, N. Y.	Rouse & Sloane
North Bachelor Quarters	West Point, N. Y.	Cram, Goodhue & Ferguson
Harvard Dental School	Boston, Mass.	Shepley, Rutan & Coolidge

WHITE FIREPROOF CONSTRUCTION COMPANY

Engineers and Contractors

1 Madison Avenue
NEW YORK, N. Y.

MONTREAL, CAN.

PRODUCTS.

We are Engineers and Contractors for FIREPROOF FLOORS and CEILINGS; FIREPROOF PARTITIONS, 2, 3 and 4 inches thick; FIREPROOF ELEVATOR and LIGHT SHAFTS; METAL FURRING and LATHING, and FIREPROOF CONCRETE STAIRS.

THE "WHITE" SYSTEM.

The WHITE FIREPROOF CONSTRUCTION COMPANY'S System differs from all other systems in that it is correct in principle, entirely simple, and thoroughly practical. The work can therefore be done in the very best manner at the lowest cost.

ADAPTABILITY.

The types shown are approved by the Bureau of Buildings of New York City, and by the National Board of Fire Underwriters.

TERRITORY

We are in a position to estimate on the fireproofing of buildings in any part of the United States and Canada.

FORM OF SPECIFICA- TION.

For System "A," Type 1 arch, as illustrated. (This specification may be varied for other types, adding or omitting parts as may be necessary to meet the special requirements.)

All floors and roof tiers of beams to be filled in with WHITE FIREPROOF CONSTRUCTION COMPANY'S System "A," Type 1: (NOTE—Specify here type desired as per cuts on opposite page.) Cinder concrete floor construction, with metal lath ceilings clipped to under side of same, or hung down to levels shown on drawings. (NOTE—If ceilings are not desired the foregoing reference to same may be omitted.)

Floors—Arches to be of cinder concrete laid on temporary wood centering, and composed of one (1) part high-grade Portland Cement, two (2) parts sand, and five (5) parts steam cinders well tamped and embedding 9-16" round rod tension members in said concrete, 1" above bottom of arch, and spaced 12" on centers.

Column Covering—All interior columns to be inclosed in concrete of same mixture as specified for arches, to be not less than 2" thick at any point, and left square or round as required.

Alternate for Column Covering—All interior columns to be furred and lathed, using 1" angles, 1" channels and 1"x3-16" flats, so applied that there will be at least an inch air space between the column and the plastering.

Sleeper Fill—Fill in between all sleepers with cinder fill mixed in proportions of one (1) part cement, two (2) parts sand, and ten (10) parts cinders. Fill for all cement, marble or mosaic floors, etc., to be done by contractor for that work.

Roof Grading—Grade roof with proper cinder fill, grading same to leaders and finish smooth with coat of cement, leaving surface ready for roofer.

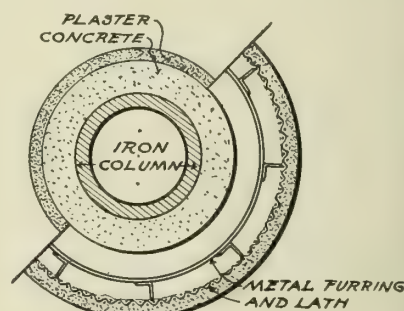
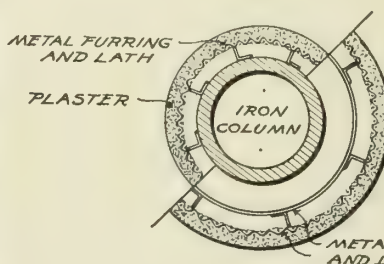
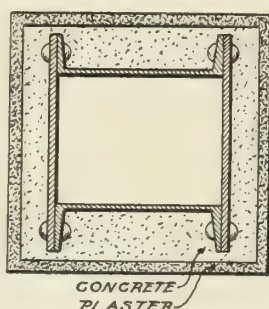
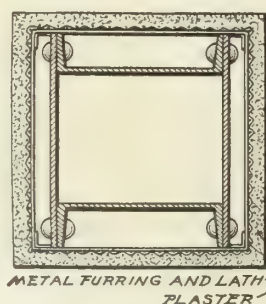
Ceilings—Ceilings to be clipped or hung in approved manner, using 1"x3-16" flats or 1" channels for furring bars, spaced not over 12" on center and galvanized metal lath attached to same with No. 18 galvanized annealed tie wire.

All cornices, false girders, arches, etc., to be furred as shown with 1½"x3-16" angles and 1"x3-16" flats and to be securely bolted together. No "tying up" of furring will be permitted. All furring covered with galvanized lath.

Partitions—All partitions shown thick on plans to be double metal lath partitions, built of 2"x½" or 3"x½" flats spaced not more than 14 on center, securely fastened to a floor and ceiling plate and all doors framed out with 2" or 3" angles properly punched for carpenter to fasten wood jambs. Lath both sides with galvanized metal lath.

Partitions shown thin on plans to be constructed of 1"x3-16" flats, spaced and fastened same as specified for heavy partitions and lathed on one side only.

Wall Furring—All exposed outside walls to be furred and lathed, bringing same out to lines shown on plans and covering in all pipes, ducts, etc., where directed. This work to be constructed generally same as thin partitions, but where furring stands out from walls, it is to be braced once every 6' 0" in height.



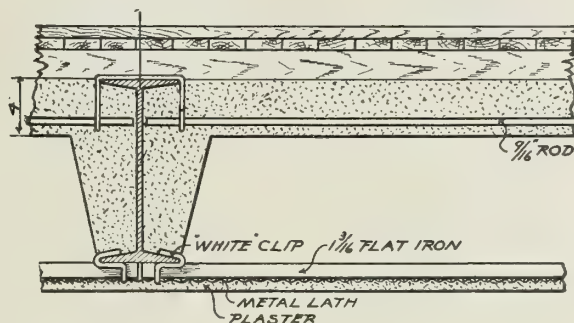
VARIOUS METHODS OF FIREPROOFING COLUMNS
Metal Furring and Lathing may be built out any desired distance

Weight of arch	28 lbs. sq. ft.
" " lath and plaster ceiling.....	10 " " "
" " 2½" sleeper fill including sleepers.	10 " " "
" " double flooring	6 " " "

Ceiling may be dropped down or omitted.

Specially adapted for use in office buildings, residences and public buildings.

Approved by N. Y. Bldg. Dept., 230 lbs. live load per sq. ft.



SYSTEM A, TYPE 1

Weight of arch	30 lbs. per sq. ft.
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Hung ceiling may be used or plaster applied directly to arch.

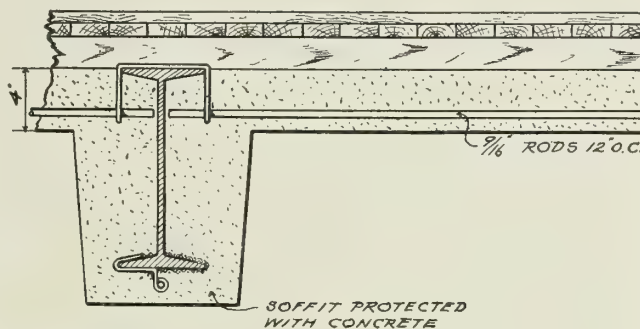
Specially adapted for use in stores, warehouses, or wherever a flat ceiling is not essential.

Approved by N. Y. Bldg. Dept., 230 lbs. per sq. ft.

With tension rods hooked over top of beams. Approved by N. Y. Bldg. Dept., 370 lbs. per sq. ft.

With tension rods hooked over top of beams, 5" slab.

Approved by N. Y. Bldg. Dept., 415 lbs. per sq. ft.



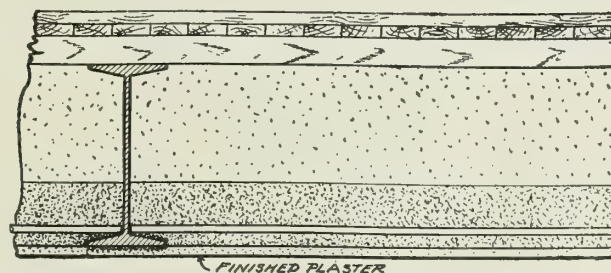
SYSTEM B, TYPE 1

Weight of arch	28 lbs. per sq. ft.
Weight of fill for each inch in height....	4 " " "

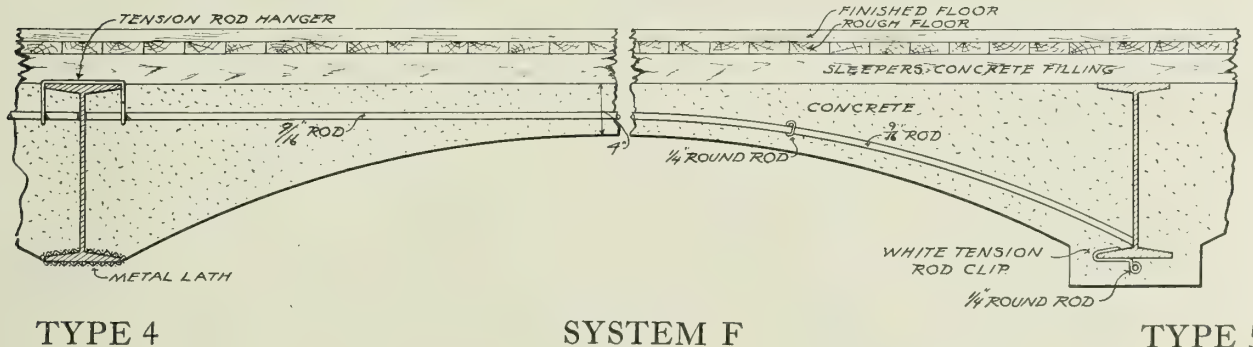
Plaster is applied directly to arch leaving flat ceiling. Iron should be designed for this system with a view to using small size beams.

Especially adapted for use in apartment houses, hotels, residences, etc.

Approved by N. Y. Bldg. Dept., 150 lbs. per sq. ft.



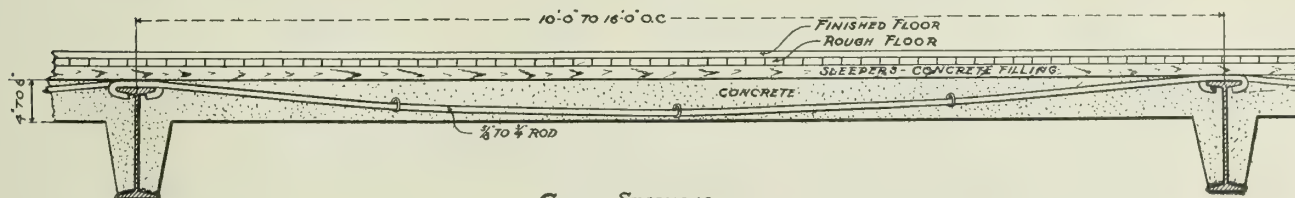
SYSTEM E, TYPE 1



TYPE 4

SYSTEM F

TYPE 5



CROSS SECTION

SYSTEM D, TYPE 1

Weight depends upon thickness of arch, which will vary with span and kind of concrete, viz.: cinder or stone. Especially adapted for use on roofs, etc.

STONE-STEEL COMPANY

Reinforced Fireproof Construction

Marbridge Building, Herald Square
NEW YORK, N. Y.

BRANCH OFFICES

GREAT NECK, L. I., Station Square

ALBANY, N. Y., 43 Eagle Street and 141-147 Broadway

PRODUCTS.

PATENT REINFORCED HOLLOW TILE or CONCRETE-BLOCK FIREPROOF BUILDING CONSTRUCTION.

Also, MODELERS and WORKERS in ARTIFICIAL STONE, CONCRETE and STUCCO; METALLIZED DECORATIVE CONCRETE and STUCCO, STONE and WOOD, etc.; NATURAL MARBLE, GRANITE and other STONE SCULPTURED PRODUCTS, for which see General Index.

OUR PATENT REINFORCED CONSTRUCTION.

In this system of Hollow Block and Steel Construction there is embodied a method entirely different from any other now practiced and which presents great advantages of strength, simplicity, rapidity of erection and economy of cost. For structures of moderate dimensions it is superior to any other fireproof system of building. It can be carried to any height.

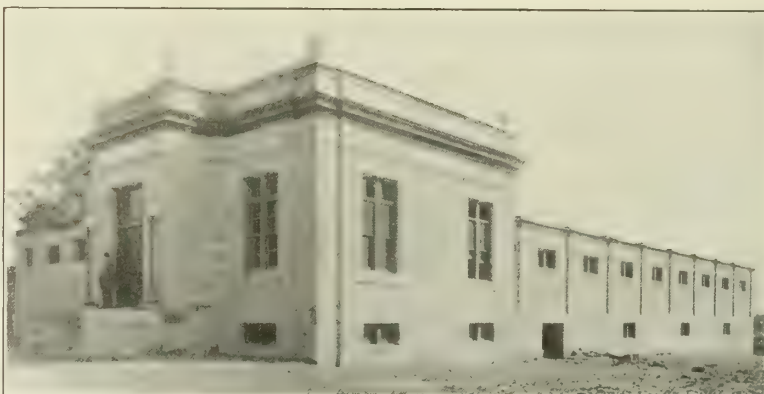
The leading idea of this invention is to provide a System of Construction in which the walls can be erected first, story by story, in advance of the steel framework that is to bind the whole into a rigid structure. The manner of accomplishing this is plainly shown by the illustrations.

MANNER OF ERECTION.

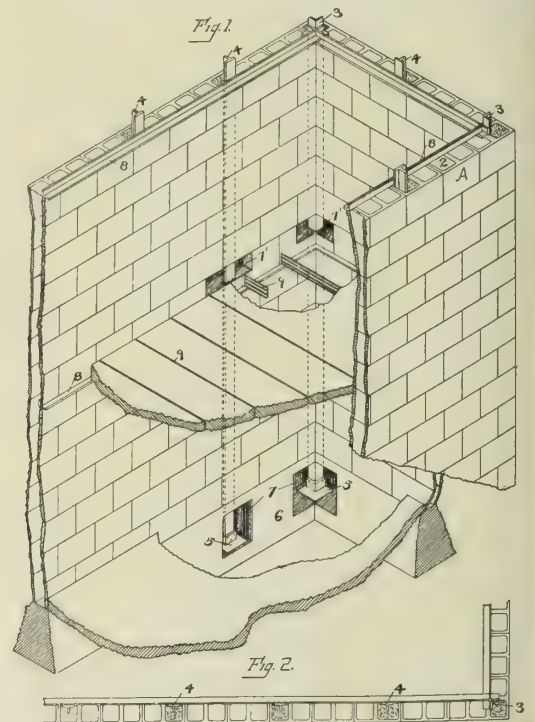
Referring to Figs. 1 and 2, the main and principal division walls are built of Hollow Concrete or Tile Blocks of different thicknesses according to the height of the building, laid breaking joints so that continuous hollow spaces (2) are formed into which the steel T and L posts, (13, 3, 4, 4) can be inserted from above. Openings are left (7, 7) for bolting to the base plate at the bottom for joining the separate sections at each story. To carry the floors, angle irons (8, 8) are bolted at each story to the posts. The floor construction is preferably of Hollow Tile, or concrete of any approved reinforced system, the reinforcement being bolted or bound. The hollow spaces surrounding the posts are then solidly packed with cement concrete, which makes them an integral part of the wall and produces with the floors a homogeneous, immovable fabric.

INFORMATION, COST.

The illustration shows a building erected by us on this system. We shall be glad to furnish additional information and references, also cost data and complete estimates. Our Engineering Department is at the service of Architects and Builders.



PUBLIC BATH, ALBANY, N. Y.



PLAN AND PERSPECTIVE VIEW OF OUR PATENT FIREPROOF CONSTRUCTION

THE B. F. GOODRICH COMPANY

MANUFACTURERS OF

“Goodrich” Interlocking Tiling
AKRON, OHIO

BRANCH OFFICES

CHICAGO, ILL., 24 East Lake Street
PHILADELPHIA, PA., 1332 Arch Street
BOSTON, MASS., 851-855 Boylston Street
DETROIT, MICH., Woodward Avenue, cor.
Garfield Street

CLEVELAND, OHIO, 2188 Ninth Street, S. E.
ST. LOUIS, MO., 3931-33 Olive Street
KANSAS CITY, MO., 1728 Grand Avenue
MINNEAPOLIS, MINN., 827 Hennepin Avenue
PITTSBURG, PA., Cor. Penn and Beatty Sts.

ATLANTA, GA., 64 North Pryor Street
DENVER, COLO., 1422-24 Court Place
LONDON, ENG., 7 Snow Hill, E. C.
PARIS, FRANCE, 2 Rue Brunel, Avenue de la
Grande Armee

OUR PRODUCTS ARE ALSO HANDLED IN

NEW YORK, N. Y., Broadway and 57th Street

BUFFALO, N. Y., 731 Main Street

BY THE B. F. GOODRICH COMPANY OF NEW YORK
AND IN

SAN FRANCISCO, CAL., 50-56 Fremont Street

LOS ANGELES, CAL., 818 South Broadway

SEATTLE, WASH., 310 First Avenue South

PRODUCT.

INTERLOCKING RUBBER TILING.

DESCRIPTION.

We enjoy the reputation of making high-grade Rubber Goods, and “Goodrich” Interlocking Rubber Tiling is no exception. It is made of a rubber compound which has no wear-out to it, and in clean, bright colors showing white, black, red, green, blue, buff, and chocolate. These tiles are in two shapes (see illustration) that afford every opportunity to produce many pleasing designs.

UTILITY.

Originally used only in a limited way in public buildings, it is now almost the universal floor covering for such places, and is fast finding favor in the better class of private dwellings. For steamships, yachts, etc., it is ideal.

DESIGNS AND SAMPLES.

Special designs and samples furnished on application.



INTERLOCKING RUBBER TILING



DISPLAY ROOM OF THE ELDRIDGE-HIGGINS COMPANY, CLEVELAND, OHIO, SHOWING FLOOR OF “GOODRICH” INTERLOCKING RUBBER TILING

THE GOODYEAR TIRE AND RUBBER COMPANY

Manufacturers of Interlocking Rubber Tiling

1914 Broadway
NEW YORK, N. Y.

FACTORY AND EXECUTIVE OFFICES
AKRON, OHIO

BRANCHES

BOSTON, MASS.
PHILADELPHIA, PA.
BALTIMORE, MD.

CHICAGO, ILL.
CLEVELAND, OHIO
ST. PAUL, MINN.

ST. LOUIS, MO.
KANSAS CITY, MO.
PORTLAND, ORE.

SEATTLE, WASH.
SAN FRANCISCO, CAL.

PRODUCT. INTERLOCKING RUBBER TILING.

ADVANTAGES. "Goodyear" Interlocking Rubber Tiling is made from a carefully selected stock, proven by years of excessive service under the most severe conditions to possess exceptional wearing qualities. It is the embodiment of floor comfort, quiet and durability. The charm of its noiseless, restful surface is enhanced by its attractive and inviting appearance. It does away with the jar and the distracting, nerve-racking noise and clatter of hard floors, substituting resiliency, and giving a secure foothold, thus avoiding the dangers of slippery floors. Dirt and all stains may be readily removed, leaving the floor perfectly sanitary.

DESCRIPTION. To meet the demand of the trade we have adopted two distinct types of interlocking tile, one $\frac{5}{16}$ inch as shown in Fig. 1, and the other $\frac{3}{8}$ inch as shown in Fig. 2.

The $\frac{5}{16}$ inch tile meets the requirements where the conditions of service are not so severe, the $\frac{3}{8}$ inch where the traffic is excessive. Owing to their perfect construction these tiles make a thoroughly interlocking integral mass, from which it is impossible for a tile to become loosened.

COLORS AND DESIGNS. Made of a solid composition in a wide range of colors, subdued and unobtrusive, permitting harmonious and appropriate selection from the following colors: white, black, red, blue, green, slate, pearl, buff, salmon and chocolate.

PREPARATION OF UNDER FLOOR. This tiling may be laid on a wood or concrete floor brought to a smooth and level surface to within $\frac{3}{8}$ inch of the desired finished level.

UTILITY. Rubber Tiling may be employed to advantage in hospitals, court houses, libraries, churches, banks, offices, vaults, corridors and public buildings of all kinds, where quiet is a necessity and carpets for sanitary and non-wearing qualities are objectional features.

It is particularly adapted for use in kitchens, laundries, pantries, bathrooms, hallways, stairs, elevators, railroad cars, steamships, yachts and floating property generally.



FIG. 1. $\frac{5}{16}$ INCH TILE



FIG. 2. $\frac{3}{8}$ INCH TILE

SANITARY RUBBER BASE.

Sanitary Rubber Base (Fig. 3) is made from the tiling composition and is designed for the purpose of overcoming the accumulation of dust and to prevent damage in cleaning so common in the use of ordinary base. It is indestructible and may be applied where stone and ceramic tiles would not be suitable.

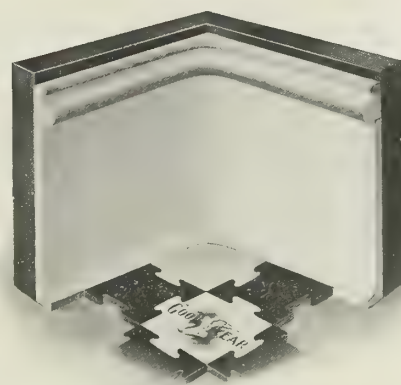


FIG. 3. SANITARY RUBBER BASE

INTERLOCK- ING RUBBER STAIR TREADS AND NOSING.

The method of applying this rubber nosing is shown in Fig. 4. It interlocks perfectly with the tiling tread and its adaptability for the purpose is apparent.

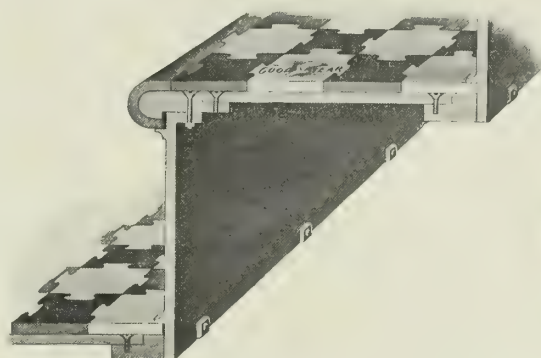
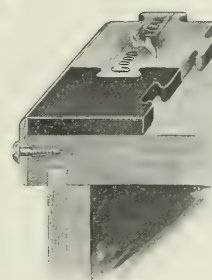


FIG. 4. RUBBER STAIR TREADS AND NOSING


FIG. 5. BRASS
NOSING

BRASS NOSING.

The brass nosing as shown in Fig. 5 is cheaper, indestructible, and gives a perfect finish to the edge of the tread. The tile sets $\frac{1}{16}$ inch above the edge of this nosing, bringing the foot in contact with the rubber at all times.

SAMPLES, ETC.

Send for samples and our new catalogue giving further illustrations.



FIG. 6. ONEIDA COUNTY COURT HOUSE, UTICA, N. Y.

METAL LOCK TILE COMPANY

MANUFACTURERS OF

Rubber Floor Tiles, Metal-Connected

400 Chestnut Street
PHILADELPHIA, PA.

FACTORY
WILMINGTON, DEL.

PRODUCTS. RUBBER FLOOR TILES, unlimited in shape, joined together by a Metal Lock.

DESIGN AND
CONSTRUCTION.

The general merits of Rubber Tiling are now well established. We enumerate them in detail further on. It remained for the METAL LOCK TILE COMPANY to improve this fabric in respect to those deficiencies of design and construction which the extended use of Interlocking Rubber Tiling has revealed. These consist of the limitation and monotony of the design, made unavoidable by the interlocking style of jointing, and in the general defects of that joint and of the manner of fastening the tiles to the floor.

DESCRIPTION
AND
ADVANTAGES.

By the use of our Patent Metal Lock, which is entirely invisible, we completely overcome these drawbacks and secure other advantages also. The metal lock not only fastens the tiles solidly together so that nothing can move them, but also secures that freedom in the shapes of our tiles which is absent in the "interlocking" kind, and which makes possible every style of tile-design in our product. We can produce every kind of geometrical, broken and strip designs in our stock patterns or to special detail from architects.

In addition, our method does entirely away with the unsightly "buckling" and opening of joints so commonly met with in interlocking tiling, due to expansion and contraction which can go nowhere, and to the fact that the tiles are cemented to the floor. In our system the expansion and contraction are taken up by the grooves necessary for our metal locks. As a result the tiling lies flat and close-jointed under all temperatures.

Our tiles not being cemented to the floor, they can be taken up and relaid in another place without the loss of a single unit.

MERITS OF
RUBBER
TILING.

We briefly enumerate the undisputed merits of Rubber Tiling over other kinds of flooring as follows:

- (1) It is durable, will not crack or chip is impermeable to moisture, unaffected by stains and in every way sanitary.
- (2) It is noiseless, soft and elastic to the tread, and non-slippery.
- (3) It is very ornamental in effect.
- (4) It will conform to any smooth surface and can be laid anywhere and by anybody, and without interfering with traffic.
- (5) Its colors and general appearance improve with age.
- (6) In case of accident it can be easily repaired and will not appear like patchwork.

QUALITY.

The best quality of rubber compound is used in our product; its wearing qualities are unexcelled.

WEIGHT AND
THICKNESS.

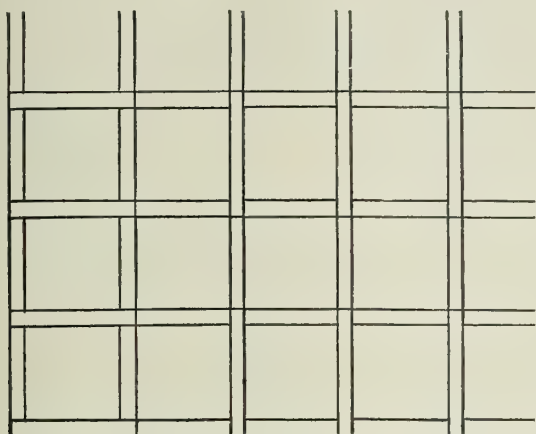
The weight of our tiling is about four pounds to the square foot, and the thickness is $\frac{3}{8}$ inch.

COLORS.

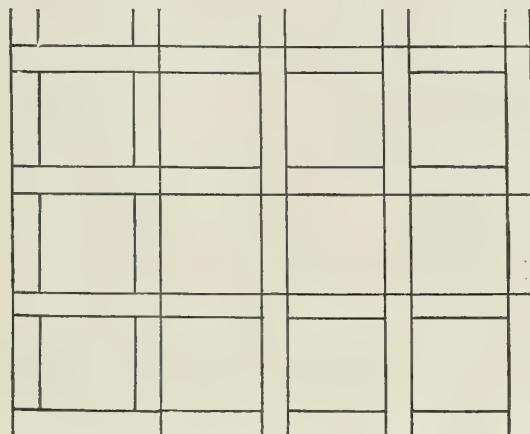
We furnish our tiles in all the usual colors in attractive, subdued shades, to wit: White, black, gray, red, green, blue, buff, slate, pearl, salmon, terra-cotta (chocolate-brown).

PRICE.

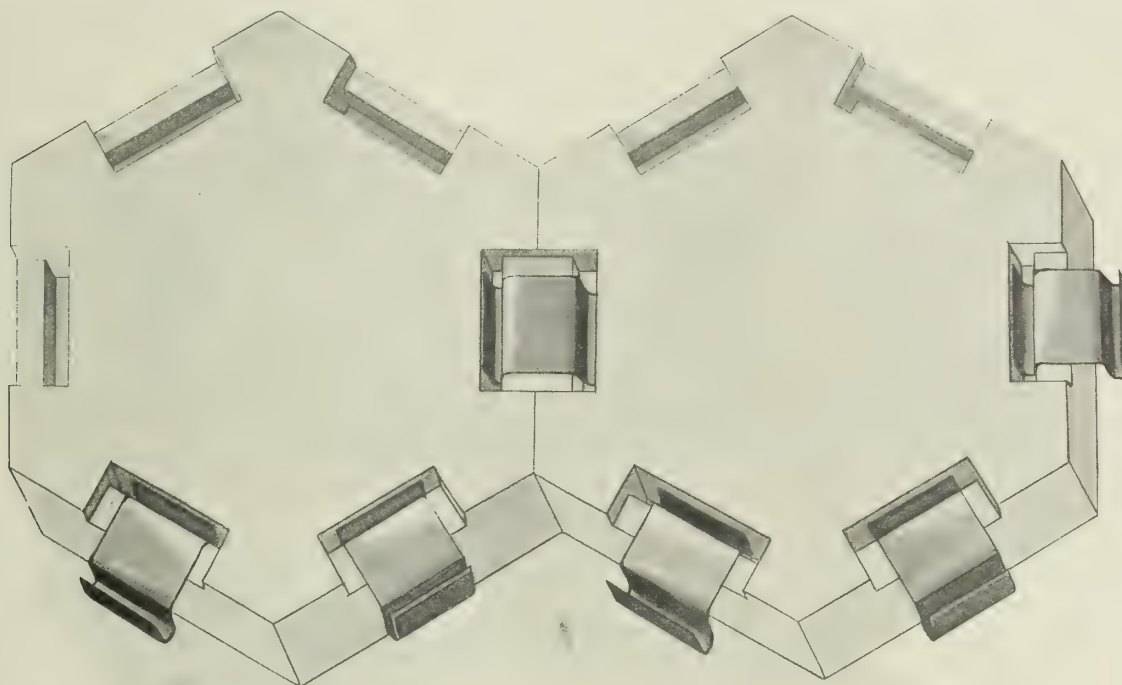
The price of our tiles is \$1.15 per square foot as a general basis. We make special quotations on all orders according to quantity and style, and submit estimates for special designs promptly.



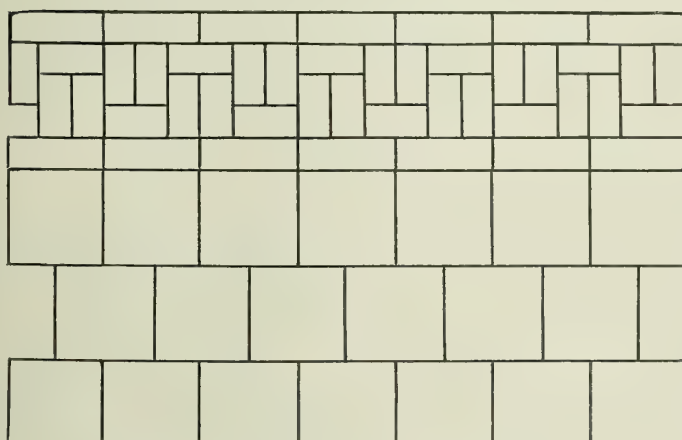
DESIGN COMPOSED OF SIX-INCH SQUARES AND NARROW STRIPS



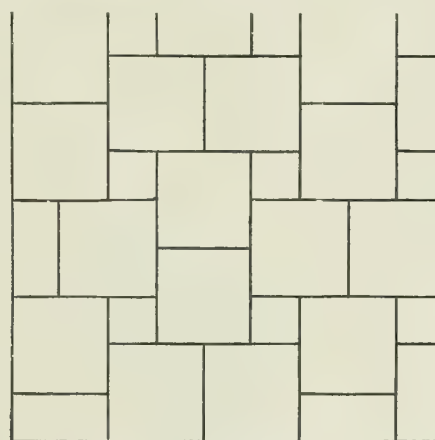
DESIGN COMPOSED OF SIX-INCH SQUARES AND WIDE STRIPS



BACK VIEW OF TILES, SHOWING PATENT METAL LOCKS HOLDING THE TILES TOGETHER.



DESIGN OF BROKEN SQUARES WITH BORDER



BROKEN DESIGN OF THREE-INCH AND SIX-INCH SQUARES

SPECIFICA-
TION FORM.

A well known architect writes specifications for our 6" squares and strips as follows:

"Cover the entire floor with $\frac{3}{8}$ " thick rubber tiling. The design shall be of white tiles approximately 6 inches square, divided by strips $1\frac{1}{2}$ " wide, of light slate color, running in each direction. This tiling shall be furnished by the METAL LOCK TILE COMPANY, of Philadelphia, Pa."

CO-OPERATIVE
SERVICE.

Samples of tiles and any additional information desired will be cheerfully furnished on request.

NEW YORK BELTING AND PACKING CO., LTD.

Interlocking Rubber Tiling

BRANCH STORES
CHICAGO, ILL.
PHILADELPHIA, PA.
SAN FRANCISCO, CAL.
INDIANAPOLIS, IND.
SPOKANE, WASH.

91-93 Chambers Street
NEW YORK, N. Y.

BRANCH STORES
ST. LOUIS, MO.
BALTIMORE, MD.
BOSTON, MASS.
PITTSBURG, PA.
BUFFALO, N. Y.

PRODUCTS.

NEW YORK BELTING AND PACKING CO., LTD., are the original Manufacturers and Patentees of INTERLOCKING RUBBER TILING.

ADVANTAGES.

Careful tests made after years of service and under the most trying conditions prove the superiority of the compound and the perfection of our interlocking feature, which unites the tiles in a smooth, unbroken sheet of rubber, unlimited in area, preventing separation or coming up, lending itself more readily to architectural characters and affording a wider range of design.

DESCRIPTION.

These tiles are made of two skilfully designed shapes, Figs. 1 and 2 as illustrated. A larger variety of shapes may be produced by cutting the tile shown in Fig. 1 without affecting the interlocking feature and affording an opportunity of producing curvilinear effects. (See Fig. 3.)



FIG. 1. INTERLOCKING RUBBER TILING



FIG. 2. INTERLOCKING RUBBER TILING

Each tile is $2\frac{3}{8}$ " square, $\frac{3}{8}$ " thick, and weighs 4 lbs. to the square foot. They are made in a carefully selected variety of colors, as follows: red, black, slate, blue, pearl, light and dark chocolate, light and dark green, buff and salmon.

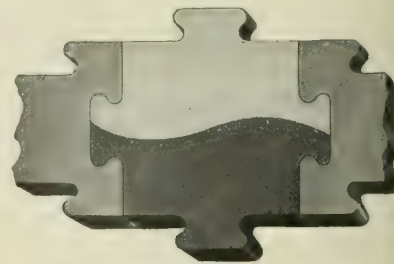


FIG. 3. CUT INTERLOCKING RUBBER TILING

ADAPTABILITY.

An ideal floor covering for court houses, banking institutions, churches, hospitals, libraries, business offices, restaurants, vestibules, elevators, kitchens, laundries, pantries, bathrooms, and for steamships and floating property generally.

SANITARY RUBBER BASE.

Sanitary Rubber Base (Fig. 4) is indestructible and a protection against abrasion in cleaning and is often found superior to wood, stone or hard tile. The composition is the same as the tiling, and made up in the same variety of colors.

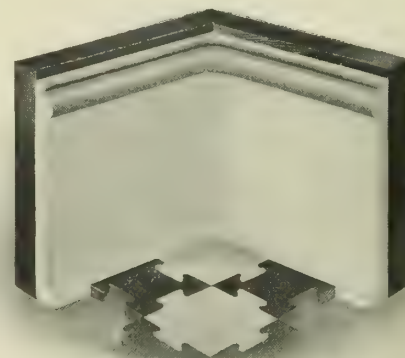


FIG. 4. SANITARY RUBBER BASE

INTERLOCKING RUBBER NOSING AND STAIR-TREADS.

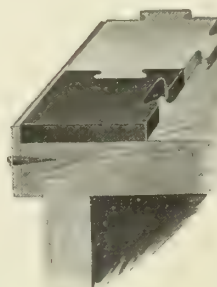


FIG. 5. BRASS NOSING ON STAIR-TREADS

Our illustrations in Figs. 5 and 6 show two forms of applying the tiling to stair-treads, one with rubber nosing and the other employing brass. It is especially adapted for this purpose owing to its non-slippery character and its wonderful durability, and also by concealing unsightly appearance of an iron tread. A selection of the base shown may be employed for covering risers in connection with rubber nosing and tiling.

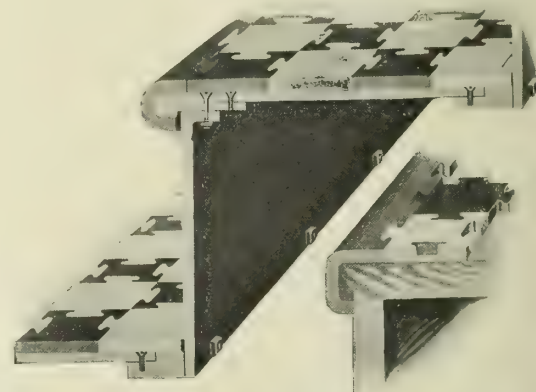


FIG. 6. APPLYING INTERLOCKING RUBBER TILING TO STAIR-TREADS, RUBBER NOSING

CATALOGUE.

A handsome illustrated catalogue will be sent upon application, also, samples if desired.

PENNSYLVANIA RUBBER COMPANY

MANUFACTURERS OF

Interlocking Rubber Tiling

JEANNETTE, PA.

BOSTON, MASS., 167 Oliver Street
CHICAGO, ILL., 1241 Michigan Avenue

BRANCH OFFICES

NEW YORK, N. Y., 1741 Broadway
SAN FRANCISCO, CAL., 512-14 Mission Street

PRODUCTS. INTERLOCKING RUBBER TILING; MATS and MATTING of every description; all kinds of RUBBER HOSE.

DESCRIPTION. Interlocking Rubber Tiling is a perfect flooring material. It is made in interlocking shapes, $\frac{3}{8}$ -inch thick and is readily adaptable to a variety of beautiful designs. The coloring is rich and permanent. It may be had in pure white and the following colors: slate, red, green, chocolate, buff, black and blue, or any combination of these.

ADAPTABILITY. Interlocking Rubber Tiling is particularly suitable for public buildings, banks, hospitals, hotels, churches, residences and steamships, and is unsurpassed in any flooring use. A smooth cement floor should be specified to receive this tiling. However, it can be applied with equal success directly over existing floors of any material, by any one having ordinary mechanical skill.

ADVANTAGES. Interlocking Rubber Tiling is noiseless and agreeable to the tread. It is indestructible and has the durability of marble. It is absolutely waterproof and readily cleaned with soap and water, making it thoroughly sanitary. It has no suggestion of odor. It is non-inflammable and a non-conductor of electricity.

FACILITIES. We can fill any order up to 10,000 square feet within 30 days, if necessary.

REFERENCES. We give a partial list of the buildings in which Interlocking Rubber Tiling has been laid:

HOTELS AND CAFES

Great Northern Hotel, Chicago, Ill., 200 sq. ft.
Majestic Hotel, Philadelphia, Pa., 1,800 sq. ft.
Streeter's Café, Detroit, Mich., 1,500 sq. ft.
Café Brauer, 950 sq. ft.

COURT HOUSES

Allegheny County Court House, Pittsburg, Pa., 5,000 sq. ft.
Luzerne County Court House, Wilkesbarre, Pa., 25,000 sq. ft.
Westmoreland County Court House, Greensburg, Pa., 20,000 sq. ft.
Blair County Court House, Hollidaysburg, Pa., 5,000 sq. ft.

CHURCHES

First Church of Christ, Scientist, Los Angeles, Cal., 10,000 sq. ft.
St. Paul's Cathedral, Pittsburg, Pa., 6,000 sq. ft.
Emanuel Roman Catholic Church, Dayton, Ohio, 2,500 sq. ft.
St. Vincent de Paul Church, New York, N. Y., 2,000 sq. ft.

OFFICE BUILDINGS

General Electric Co.'s Offices, New York, N. Y., 4,000 sq. ft.
Oliver Building, Pittsburg, Pa., 15,000 sq. ft.
Lawyers Title Guarantee Trust Co., Building, New York, N. Y., 3,000 sq. ft.

LIBRARIES

Carnegie Institute, Pittsburg, Pa., 105,000 sq. ft.
Two Carnegie Libraries, Brooklyn, N. Y., 5,000 sq. ft.

BANKS

First National Bank, Erie, Pa., 15,000 sq. ft.
Grenada Bank and five branches, Grenada, Miss., 2,000 sq. ft.
Diamond National Bank, Pittsburg, Pa., 1,200 sq. ft.
John S. Cook & Co., Bank, Goldfield, Nevada, 1,150 sq. ft.
First National Bank, Pittsburg, Pa., 4,000 sq. ft.

RAILROAD STATIONS

Union Station, Washington, D. C., 2,000 sq. ft.
Baltimore & Ohio Railroad Building, Baltimore, Md., 4,000 sq. ft.
Delaware, Lackawanna & Western Terminal, Hoboken, N. J., 3,000 sq. ft.

BOATS AND SHIPS

Detroit Ship Building Co., Steamer No. 168, 5,000 sq. ft.
Steamer City of Savannah, 1,100 sq. ft.
Five Staten Island Ferry Boats, 26,000 sq. ft.

DOCK COMPANIES

Burlee Dry Dock Co., 5,500 sq. ft.
Manitowoc Dry Dock Co., 5,500 sq. ft.

THEATERS

Hippodrome, New York, N. Y., 3,000 sq. ft.
Grand Opera House, Pittsburg, Pa., 500 sq. ft.
Lyric Theater, Altoona, Pa., 700 sq. ft.

AMERICAN ENCAUSTIC TILING COMPANY, LTD.

FACTORY AND GENERAL OFFICES
ZANESVILLE, OHIO

NEW YORK OFFICE
1123 BROADWAY

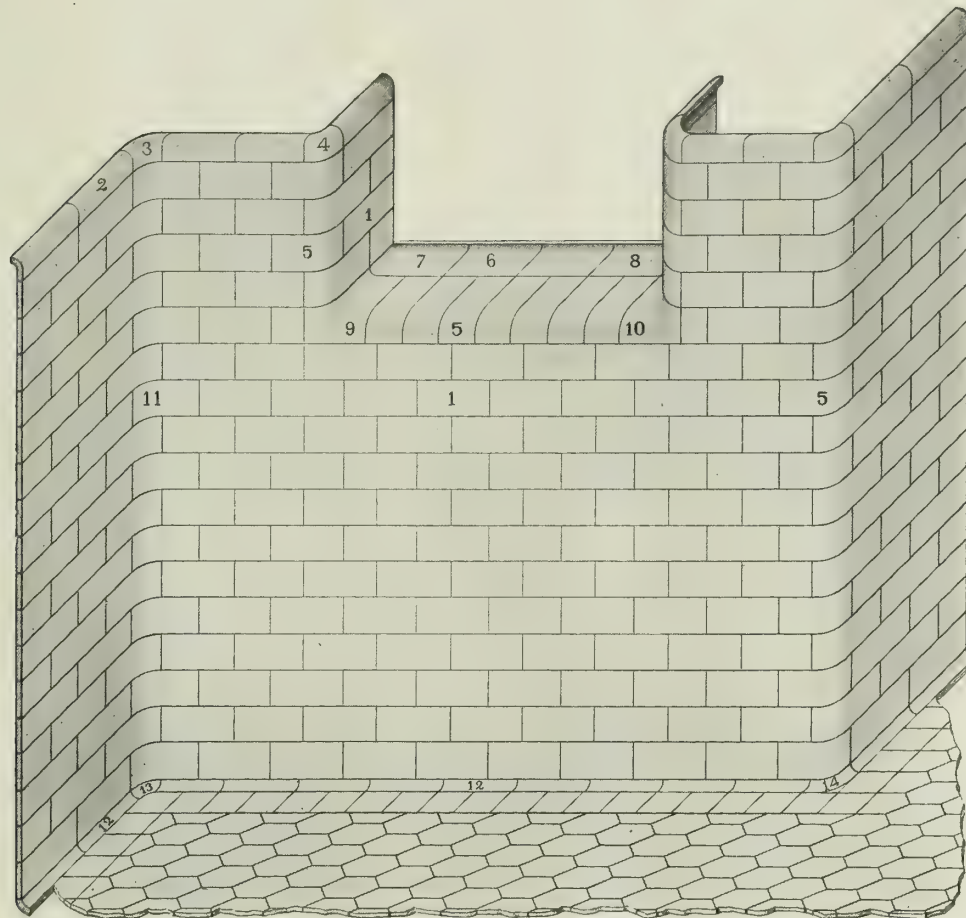
ADDRESS ALL INQUIRIES TO ZANESVILLE, OHIO

- PRODUCTS. FLOOR, WALL, ENAMEL, EMBOSSED, and DECORATED TILES for all purposes, as follows:
- FLOOR TILES. UNGLAZED TILE made in all standard shapes and sizes. Colors: Buff, Salmon, Light Gray, Dark Gray, Red, Chocolate, and Black.
For porch floors, engine rooms, etc., HYDRAULIC TILES made in sizes 5" x 10", 6" x 6", 6" x 3", 4 $\frac{1}{4}$ " x 4 $\frac{1}{4}$ ", 21-32" thick, and in all above colors except Black.
CORRUGATED PAVING TILES, 6" x 6", 13-16" thick.
OHIO FLINT VITREOUS PAVING TILES, 6" x 6", with Patent Grip Back, in Pearl Gray, White, and Green.
VITRIFIED TILES, made in standard sizes for this class of goods up to 3" x 3". Colors: Alabaster White, Silver Gray, Celadon, Green Vitreous, Blue-Green, Light Blue, Dark Blue, and Pink.
CERAMIC MOSAIC TILES in all above mentioned colors (vitrified and semi-vitreous).
- WALL TILES. WALL TILES with Patent Grip Back, made in the following sizes: 6" x 3", 6" x 2", 4 $\frac{1}{4}$ " x 4 $\frac{1}{4}$ ", 4 $\frac{1}{4}$ " x 2 $\frac{1}{8}$ ", $\frac{3}{8}$ " thick. Also 6" x 6" and 9" x 3", which are made $\frac{1}{2}$ " thick.
(GLAZED.) BRICK TILES, 9" x 3", with Patent Grip Back, in White Glaze and Enamel colors on White body, 1" thick; also, Bull Nose (exterior corner), 5 $\frac{1}{2}$ " x 3".
- ENAMELED TILES. FIREPLACE, WAINSCOTING TILES, etc., made in Enamel colors, Onyx colors, Marble colors and Matt Glazes.
- EMBOSSED TILES. EMBOSSED DECORATED TILES for fireplace facings, friezes, wainscoting and hearth borders, made in numerous decorations.
- DECORATED TILES. HAND-PAINTED DECORATED TILES. Work executed from architects' drawings. Special designs furnished on request; also, Printed and Hand-Filled Tiles.
- TERRA VITREA TILES. "FAENZA," made in sizes 9" x 9", 9" x 4 $\frac{1}{2}$ ", 6" x 6", and 6" x 3".
- ART CERAMIC MOSAICS. These are produced in Hand Cut Tiles. Special designs furnished on application. ZIGZAG MOSAIC produced in Geometrical Tile in similar shades to our regular Ceramic Mosaic as previously given.
- TERRITORY. The operations of the Company cover the entire United States and foreign countries.
- QUOTATIONS. For prices apply to the trade. All goods are of standard sizes, as above described, and can be obtained through the local dealers.
- ARCHITECTS' DESIGNS. Architects' special designs promptly executed.
- SPECIFICATIONS. In order to obtain the products of this Company architects should embody the name of the Company in full in the specifications.
- CATALOGUES. Architects desiring our catalogues will be cheerfully supplied upon application.

SANITARY
TILES FOR
HOSPITALS
AND
BATHROOMS.

The illustration below is an arrangement in Sanitary Glazed Wall Tiles of a number of new and special shapes especially adapted to produce, in their assembled form, rounded corners in all angles of a room; thus combining with the glazed finish of the tiles themselves those features of sanitation absolutely essential to the modern construction of hospitals, bathrooms, kitchens, and spaces of similar nature.

The Unglazed Tile Floor may be composed of Art Mosaic, Ceramic Mosaic or other Encaustic Tiles in Vitreous or Semi-Vitreous colors. The cut represents a floor section of 3-inch hexagons, with the marginal line or border of 3"x 3" squares, all in Alabaster White Vitreous.



SPECIAL SHAPES OF SANITARY GLAZED WALL TILE

EXPLANATION
OF KEY
NUMBERS.

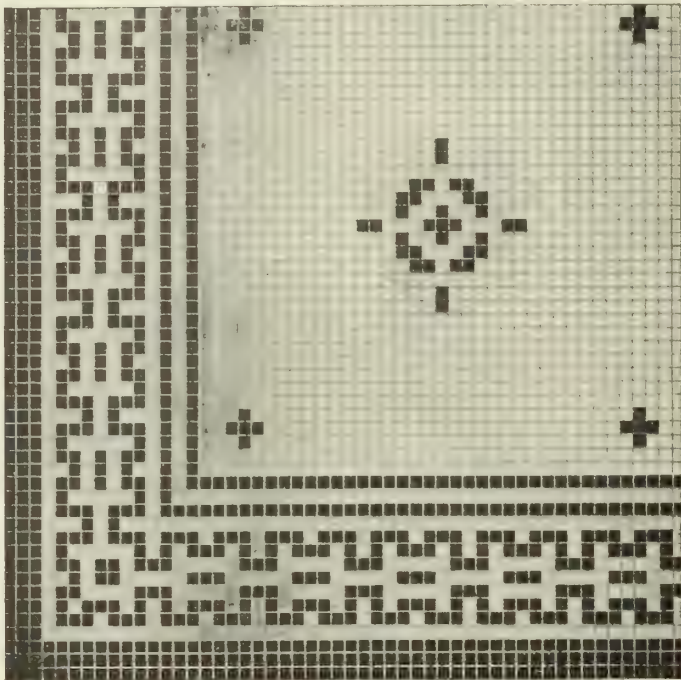
1	6 x 3 Wall Tile.	8	Pattern 845, Right-hand Stop.
2	Pattern 722, 6 x 2 Cap.	9	Pattern 843, Left-hand Combination Angle.
3	Pattern 722, Concave Angle, 2 in. radius.	10	Pattern 843, Right-hand Combination Angle.
4	Pattern 722, Convex Angle, 2½ in. radius.	11	Pattern 843, 5½ x 3 Cove, 2 in. radius.
5	Pattern 843, 5½ x 3 Bead, 2½ in. radius.	12	Pattern 842, 6 x 2½ Cove, 1 in. radius.
6	Pattern 845, 6 x 3 Window Sill Cove.	13	Pattern 842, Concave Angle, 2 in. radius.
7	Pattern 845, Left-hand Stop.	14	Pattern 842, Convex Angle, 2½ in. radius.

Where it is desired to carry this wainscoting up to the ceiling, this may be done by omitting the cap member, Pattern No. 722.

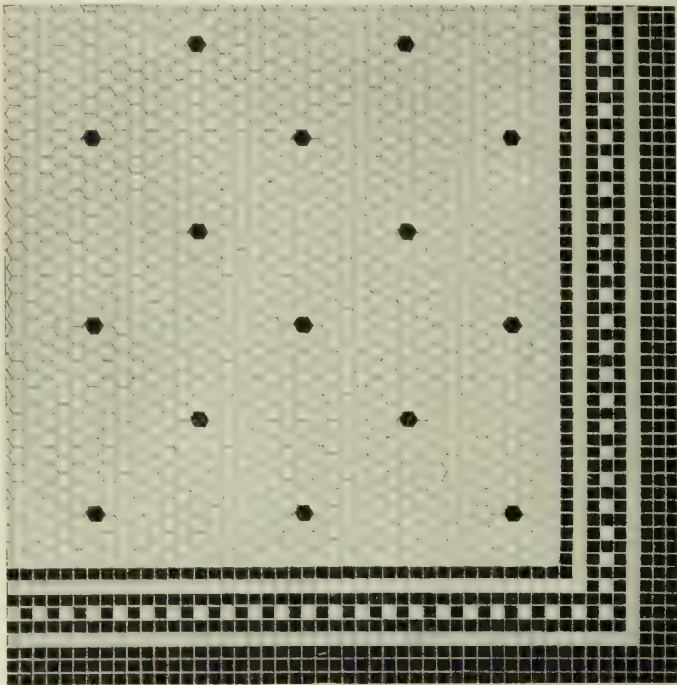
Other patterns of cove, base and cap mouldings are made to work on same radii as above tiles, maintaining rounded corners as shown.

CERAMIC
MOSAIC AND
VITREOUS
FLOOR TILE.

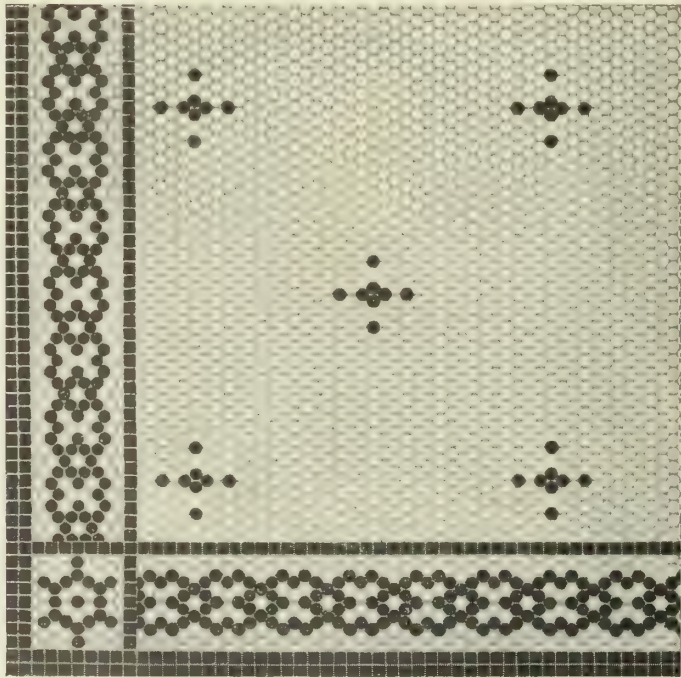
The sizes of tile shown on this page are manufactured in the following colors: Alabaster White, Dark Blue, Light Blue, Green, Celadon, Silver Gray, Pink, Black, Chocolate, Red, Dark Gray, Light Gray, Buff, Salmon, Cream, Dove, Sage, Blue-Green.



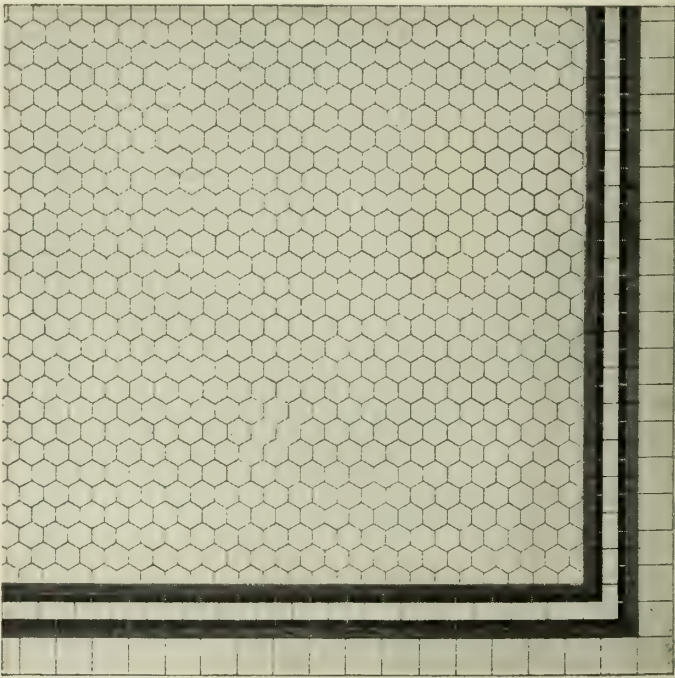
BORDER 2008. 12" WIDE. BODY 2009. SIZE TILES,
 $\frac{3}{4}$ " SQUARE
Colors: Black and Alabaster White



BORDER 2090. $7\frac{1}{4}$ " WIDE. BODY 2091. SIZE TILES,
 $\frac{3}{4}$ " SQUARE, 1" HEXAGON
Colors: Black and Alabaster White



BORDER 2098. 8" WIDE. BODY 2099. SIZE TILES,
 $\frac{3}{4}$ " SQUARE, $1\frac{3}{16}$ " ROUND
Colors: Black and Alabaster White



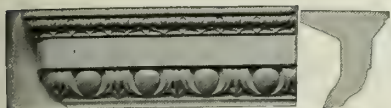
NO. 586. BORDER IN LINES OF WHITE OR IN COLORS
2-INCH HEXAGON BODY
In all the above colors, except Cream, Dove and Sage

ILLUSTRATIONS.

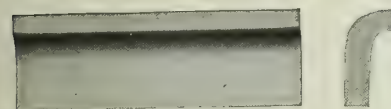
The cuts herewith show the forms of some of our leading patterns.



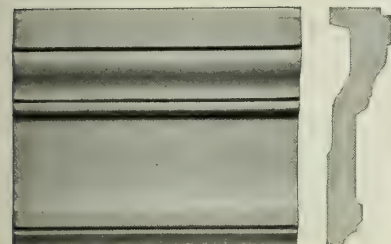
No. 786. Cap moulding, 6 x 1½, with angles and stops.



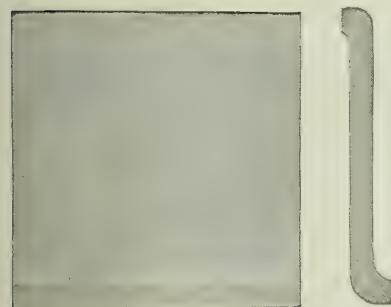
No. 829. Cap, 6 x 2, with angles and stops.



No. 722. Cove, 6 x 2. Glazed inside for cove, and outside for cap. All angles, round and square, for both cove and cap. Can be used also as shoe base.



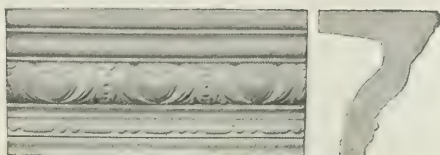
No. 836. Door trim, 5 x 6, with patent grip back.



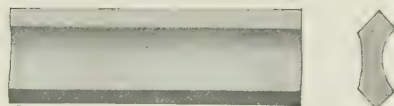
No. 805. Sanitary base, 6 x 6, with angles and stop ends.



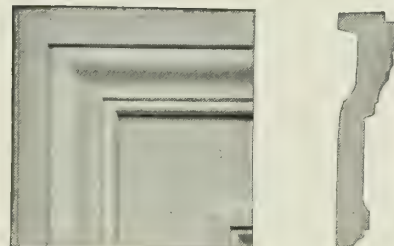
No. 806. Straight base, 6 x 6, with angles.



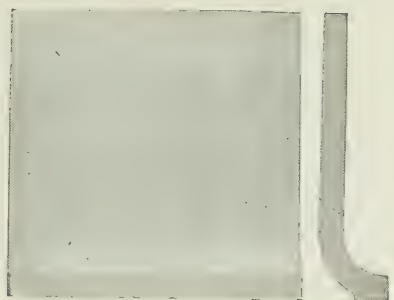
No. 752. Cap, 6 x 3, with angles and stops.



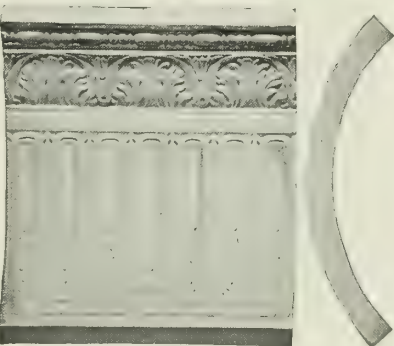
No. 635. Cove, 6 x 2. Concave and convex angles, round and square.



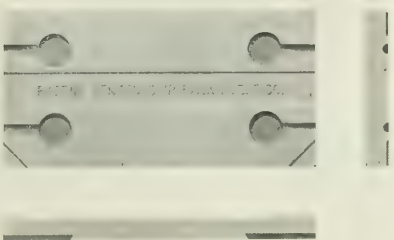
No. 837. Angle for door trim, 5 x 5.



No. 751. Sanitary base, 6 x 6. Large cove at floor line. Large cove angles to meet cove 635 in corners of room. Stop ends and square angles for corners.



No. 822. Ceiling cove, 6 x 7½, radius 4½.



METHOD OF ATTACHMENT.

The accompanying cut illustrates our patent vented Grip Back, a circular dovetail mortise on back of our Wall Tiles. The Grip Back guarantees against tiles coming loose, and the vent provides a channel into the grip, allowing any air to escape from grip when tiles are set by floating method.

OTHER FORMS.

We also make an extensive line of Combination Angle Beads and Combination Coves; Grip Back Beads for convex angles; Coves for concave angles, etc.; also, Cap Mouldings and Bases in plain and embossed patterns, samples of which can be had upon application.

MART & LAWTON

Agents and Contractors for Domestic and Foreign Tiles

1123 Broadway
NEW YORK, N. Y.

SOLE AGENTS FOR
MINTON, HOLLINS & CO.
STOKE-ON-TRENT, ENGLAND

TELEPHONE 2078 MADISON SQUARE

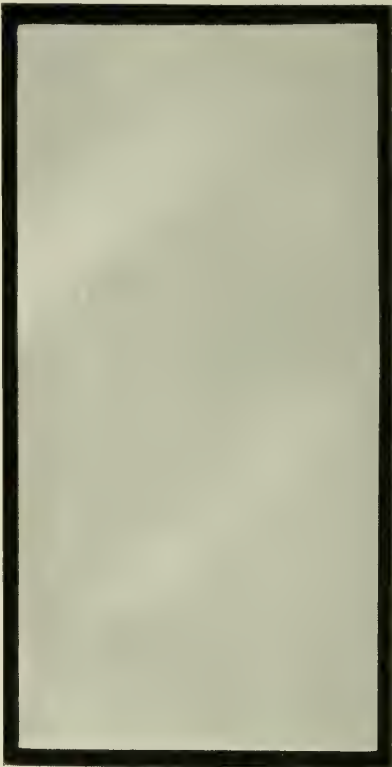
PRODUCTS.

GUARANTEED NON-CRAZING WHITE GLAZED TILE and MOULDED MEMBERS; STANDARD MANUFACTURE AMERICAN and IMPORTED GLAZED ENCAUSTIC and ENAMELED TILE in Plain and Embossed Patterns for Walls and Ceilings; ENAMELED, ENCAUSTIC and PLAIN UNGLAZED FLOOR TILE.

NON-CRAZING TILE.

Non-Crazing White Glazed Tile, manufactured by Minton, Hollins & Co., of Stoke-on-Trent, England, is the only tile guaranteed positively not to craze or discolor, and the only tile retaining permanently its original pure whiteness and unrivaled sanitary qualities.

These important and very desirable features are obtained by means of a secret composition of the glaze. A very high temperature is used in the firing, which produces a hardness of the tile, insuring it from ever being affected by the influence of ordinary temperature changes.

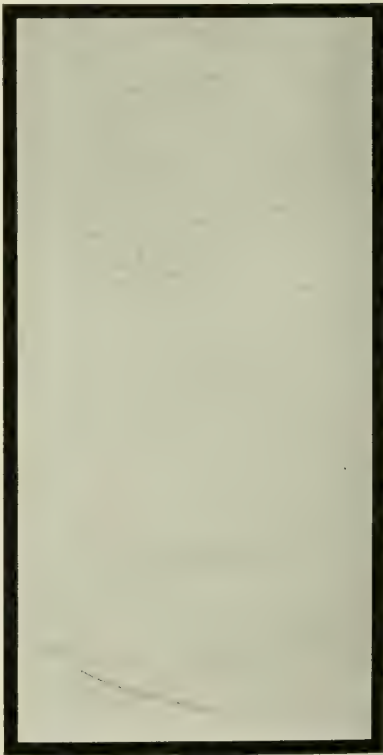


NON-CRAZING TILE

CRAZING TILE.

The ordinary tile, while it may have, when first installed in place, the same appearance as our guaranteed non-crazing tile, will after a short time become crazed; that is, the face or surface will become covered with a network of fine cracks.

These cracks in the glaze are caused by the unequal expansion and contraction of the glaze and the clay body of the tile. The appearance of the cracks or crazing found on all ordinary tiles will be followed by the discoloration of the tile and the entire surface of the white tile will assume a dirty yellowish and unsightly appearance, and instead of being a sanitary protection becomes a sanitary danger.



CRAZING TILE

ILLUSTRATIONS.

The difference in appearance of our Non-Crazing tile and the ordinary tile is illustrated in the two cuts on this page.

ADAPTABILITY.

Non-Crazing Tile can be supplied in all shapes and for all purposes where ordinary tile may be used, and

when a hard, positively non-absorbent tile is required, our Non-Crazing Tile should be specified and no substitution of the ordinary crazing tile allowed.

Non-Crazing Tile is recommended for all first-class work, for tiling bathrooms, kitchens, pantries, laundries, dairies, public toilet-rooms, barber shops, baths, cold-storage warehouses and refrigerating plants, and by reason of its superior sanitary qualities is specially valuable for hospitals and operating rooms.

MOULDED SHAPES.

The various moulded shapes made in our non-crazing tile (illustrated) enable us to design complete tiled rooms with sanitary bases and capping, inside and outside angles, rounded corners, also door and window trim.

SIZES.

The Non-Crazing White Tile is made in the following sizes: 3" x 6", 6" x 6", 7" x 7", 8" x 8" and 9" x 9", the latter size being very desirable where large surfaces are to be covered.

STOCK.

We carry a large stock of these tiles in New York, N. Y., and are prepared to furnish, or furnish and set, large or small orders in any part of the United States at short notice.

We prefer to contract for both furnishing and setting our Non-Crazing Tiles, and we guarantee all of our work.

PRICES.

The cost of our guaranteed Non-Crazing Tile is but slightly higher than that of the best quality of the ordinary white tile, which is not guaranteed and will craze.

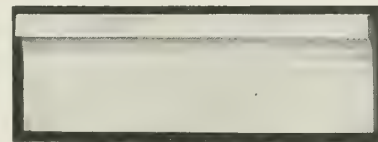
SPECIFICATION FORM.

Architects should specify Non-Crazing Tile as follows:

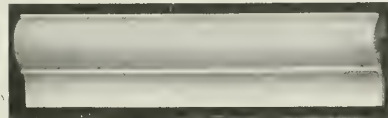
Tiling—All wall tiling throughout in the, to be Non-Crazing White Glazed Tile manufactured by Minton, Hollins & Co., of the sizes and shapes shown on plans and described by Specification.

ESTIMATES.

We will submit estimates promptly for Non-Crazing White Tiles in accordance with architects' designs and specifications, or from our stock designs, and will also prepare designs for special work.



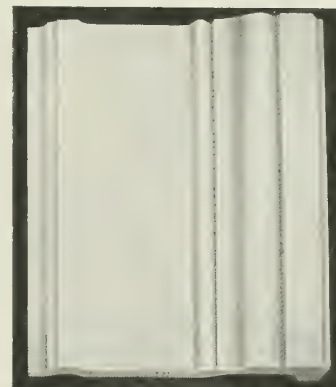
COVE



CAPPING



COMBINATION BEAD



DOOR TRIM



PLINTH



SANITARY BASE

THE MOSAIC TILE COMPANY

FACTORY AND GENERAL OFFICES

ZANESVILLE, OHIO

EASTERN OFFICE

NEW YORK, N. Y., 109-115 West 26th Street
TELEPHONE, 6137, 6138 MADISON SQUARE

WESTERN OFFICE

SAN FRANCISCO, CAL., 412 O'Farrell Street

PRODUCTS.

FLOOR TILE, including CERAMIC MOSAIC, VITREOUS and ENCAUSTIC; WALL TILE, including all styles of CAP and BASE MOULDINGS, with angles and stops; ENAMELED TILE for Fireplace Work; ART MOSAIC (CERAMIC) for Floors and Walls, including Fireplace Work; PORCELAIN BRICK for the lining of Ball Mills.

FACILITIES.

We carry at all times sufficient stock at our different warehouses to fill orders promptly.

A large and well-equipped Design Department is always at the disposal of customers or architects.

Special water-color designs will be supplied upon receipt of floor plans or measurements.

FLOOR TILE, CERAMIC MOSAIC.

This tile is made in five different sizes, namely: $\frac{3}{4}$ " and $\frac{1}{2}$ " squares, $\frac{13}{16}$ " rounds, 1" and $1\frac{1}{4}$ " hexagons, and in sixteen different colors.

FLOORS.

This class of material has practically supplanted all others for Floor work. The many different sizes and shapes make it possible to work out designs that follow the architectural details of the room, and in colors to harmonize with the decorations.

WAINSCOTING.

Ceramic Mosaic (unglazed), particularly $\frac{1}{2}$ " x $\frac{1}{2}$ ", is largely used for wainscoting, as shown in the cut (Fig. 1). Base and Cap Mouldings can be supplied in the same unglazed materials, and in the same colors.

VITREOUS AND ENCAUSTIC.

Both of these grades of Floor Tile are made in the usual sizes and colors.



FIG. 1. ENTRANCE HALL, SHOWING CERAMIC MOSAIC WAINSCOTING

WALL TILE.

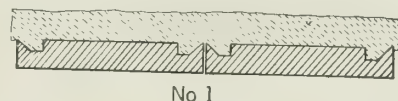
Made in the usual sizes, 6 x 6, 6 x 3, 6 x 2, $4\frac{1}{2} \times 4\frac{1}{2}$ and $4\frac{1}{2} \times 2\frac{1}{2}$; also, a large variety of Base and Cap Mouldings, with angles and stops, with such other mouldings as are necessary to finish around any angle or opening.

All of our Wall Tile are made with the patent Rim Grip back (the tile that won't come loose) and have been on the market long enough to demonstrate their non-crazing qualities. It is being used by the most exacting trade.

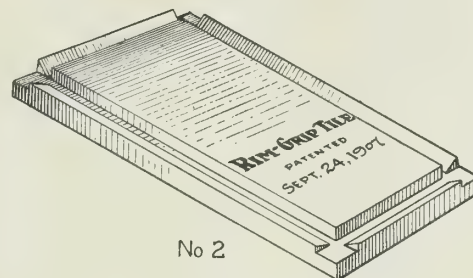
REFERENCES.

Following is a list of the more important buildings where Wall Tiles have been used:

Mohican Hotel, New London, Conn.
 La Salle Hotel, Chicago, Ill.
 Hudson Terminal Buildings, New York, N. Y.
 Preston Retreat, Philadelphia, Pa.
 Immigration Buildings, Ellis Island, N. Y.



No 1



No 2

FIG. 2. RIM-GRIP WALL TILE

HOSPITAL
TILE.

We manufacture all kinds of special Radius Tile for rounded corners, together with Door and Window Trim, for rooms in hospitals and other places where absolute sanitary conditions must prevail.

A room finished with Rim-Grip Wall Tile and these Mouldings, in a non-crazing material, with a Vitreous or Ceramic Mosaic Floor, gives conditions to meet most exacting requirements.

VITREOUS
COVE AND
BASE.

The accompanying illustrations (Figs. 3 and 4) show our Vitreous Cove Tile and Base, which is often required by sanitary experts in place of the glazed material. It joins the floor with surrounding wall finish, giving an angle easily kept clean. Nearly all of our Trim Tile can be made in the Vitreous and Encaustic bodies.

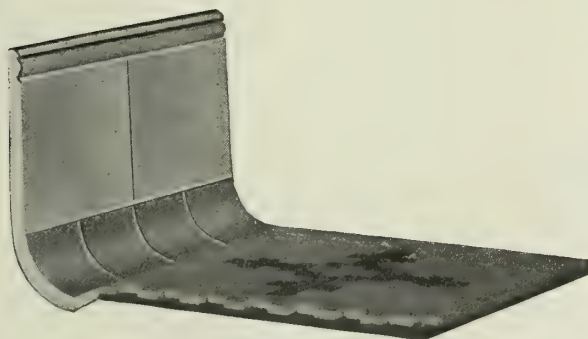


FIG. 3. VITREOUS COVE BASE

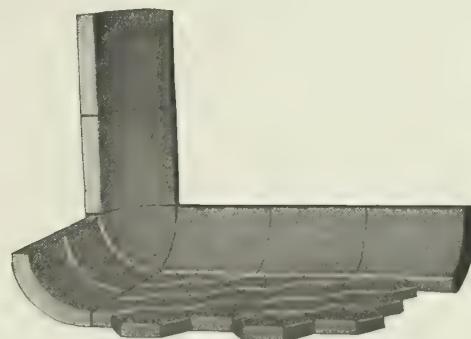


FIG. 4. VITREOUS COVE BASE TREATMENT OF CORNERS

FLOOR TILE
FOR
EXTERIOR
USE.

Floors in terraces, porches, etc., where exposed to the weather, require a tile of a non-absorbent nature. We recommend our Gray and Red Granite Tiling as meeting this requirement. The body is made up of a combination of clays that admit of very great heat in burning, producing a product that is not affected by freezing. While practically Vitreous, it is classed with, and sold at the price of Encaustic Tile.

We make it in all sizes, and are therefore prepared to substitute same for any other material specified.

SANITARY METAL TILE CO.

GENERAL OFFICES AND FACTORY

137 Duffield Street

334 Flatbush Avenue Extension

BROOKLYN, N. Y.

TELEPHONE, 6554 MAIN

AGENTS IN ALL PRINCIPAL CITIES

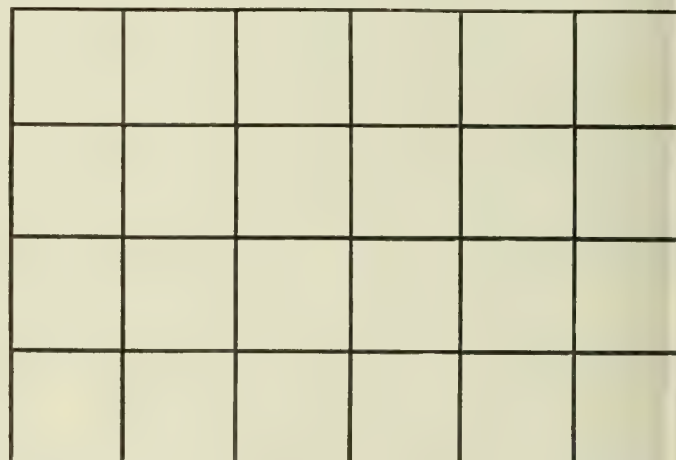
PRODUCTS. We are Manufacturers of, Dealers in, and Contractors for SANITARY METAL TILE WORK.

DESCRIPTION. Sanitary Metal Tile consists of a secret process of enamel on specially prepared non-corrosive zinc sheets, which are embossed in tile patterns with borders and friezes in artistic designs and colors.

ADAPTABILITY. Sanitary Metal Tile is a hygienic covering specially adapted for the walls of halls, vestibules, stores, kitchens, bathrooms, hospitals, lavatories, elevator shafts, yachts, private operating rooms, restaurants, markets, and all other interiors where a high-lustre tile surface is desirable. Where ceramic or clay tile is used as a wainscot, our tiling may be used for the upper walls and ceilings.



INTERLOCKING PLATES, 18 x 24 INCHES
Size of Tile, 3 x 6 Inches. (Patented)



PLATES, 18 x 24 INCHES
Size of Tile, 3 x 3 Inches

ADVANTAGES. Sanitary Metal Tile can be washed down with soap and water, or with any form of disinfectant without danger of injuring its surface. The advantage of this will be obvious.

Sanitary Metal Tile also recommends itself because of its durability and strength; no blow can break it after it is once set and it does not chip, craze, or crack. Dust, insects, or disease germs can find no lodgment since there are no cracks or crevices.

The tiling is as applicable to the ceiling as to the walls of a room, as it is very light and easily applied. Clay tiling because of its weight can not be used thus.

Sanitary Metal Tile colors are permanent, and though costing from one third to one half less than clay tiling it is in many respects a superior product.

INSTALLATION.

Sanitary Metal Tile can be applied to any smooth surface. It is set with a special cement which holds it perfectly solid to the surface it covers. No nails are used in applying it, consequently it makes a thoroughly solid, smooth wall. It can be applied in any building, regardless of its character or its construction. It can be applied to any curved surface or sharp angle, or can be made to fit any irregular design or shape.

COLORS.

Sanitary Metal Tile is made white or in any tint as may be desired, with suitable cap moulds, borders, and bases for completing the decoration of any room. All borders, cap moulds, and base moulds can be supplied in white or in any tint, and tints will be made up to order if desired.

SAMPLES.

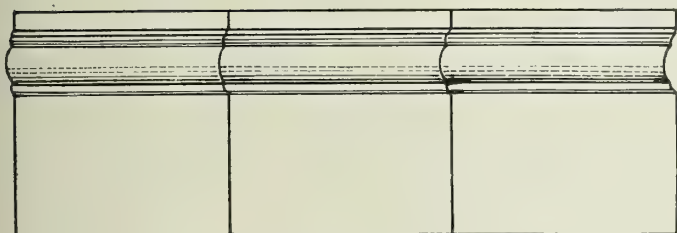
A sample of Sanitary Metal Tile will be mailed to any architect, together with catalogue, showing a variety of stock designs, sizes, colors, prices, and other information.

DESIGNS.

Stock designs include those most used and can be supplied at any time. But special designs and colorings will be made up when required. It doesn't matter what these designs or colors may be, we can supply them on sufficient notice.

COLOR COMBINATIONS.

Architects desiring to specify Sanitary Metal Tiles have a wide variety of color schemes and tint combinations at their disposal. White wall tiles, for example, can be combined with other colors and tints in schemes of superior beauty. Some of the most popular borders are known as the 5-inch Grecian Key, a beautiful Greek design; the 5-inch horn with a horn design, which is very attractive and effective. The Grecian Key and other designs are made with white or colored backgrounds and the embossed portions in contrasting colors; or under our patented transparent color system, the entire border can be colored in a manner to bring out the high and low lights so eagerly sought in French hand-modeled tile. A 7-inch wreath is supplied for high rooms and long walls where heavy relief is required. The base is 6-inch and there is a 2-inch cap mould, a $\frac{1}{2}$ -inch bead, $1\frac{1}{2}$ -inch key and a 3-inch flower, all supplied in a variety of colors and designs.



SIX-INCH BASE



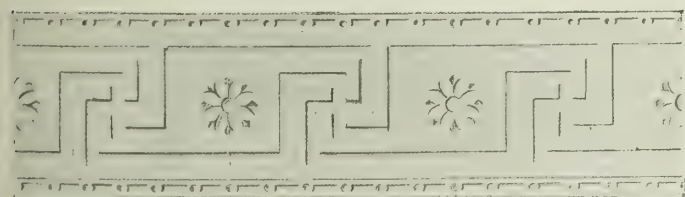
WREATH BORDER DESIGN

SIZE OF PLATES.

All field plates are 18 x 24 inches. One tile pattern is 3 x 3 inches, another is 2 x 6 inches, and a third is 3 x 6 inches. All borders are 18 inches long and bases are the same length, but the width of the borders varies. Architects can obtain plates to suit their requirements with colors and designs specially provided if desired.

PATENTS.

The products of this concern are fully protected by United States patents and no substitute should be accepted. Sanitary Metal Tile has demonstrated its reliability during years of use and architects can specify it in perfect confidence that the results will be satisfactory.



GRECIAN KEY BORDER DESIGN



FLOWER DESIGN

COST.

Sanitary Metal Tile will commend itself to builders because of its low cost. It is only about half as expensive as clay tile, and its durability makes it a profitable wall covering.

TERRITORY.

Our operations are unrestricted, covering the United States and Canada. A postal card will bring one of our salesmen with a large variety of samples for your inspection, no matter where you may be located.

DAVID E. KENNEDY, INC.

Cork Tiling for Floors, Stair Treads and Wainscoting

156 Fifth Avenue

NEW YORK, N. Y.

BRANCH OFFICES

CHICAGO, ILL.

ST. LOUIS, MO.

PHILADELPHIA, PA.

BOSTON, MASS.

PITTSBURGH, PA.

PRODUCTS.

CORK FLOOR TILING, SANITARY BASE, WAINSCOTING, STAIR-TREADS, WALL COVERING, BULLETIN BOARDS, etc.

UTILITY.

Cork Tiling is the ideal flooring for banks, libraries, hospitals, churches, stores, galleries, museums, restaurants, cafés, elevators, stair-treads, billiard rooms, kitchens, laundries, pantries; and for halls and bathrooms in hotels, apartment houses, clubs, and residences.

ADVANTAGES.

It is more durable than any other material—stone, metal, or concrete—being saved from abrasion by its elasticity and toughness. The kitchen of the Hotel Manhattan, Madison Avenue and 42d Street, New York, where a rubber tile floor wore through to the concrete in two years, was laid with cork tiling in place of rubber in July, 1906. At this writing (January, 1910) the cork shows not the slightest trace of wear. This room is in constant use twenty-four hours a day.

After the most thorough tests of every kind of material used for stair-treads, the Chicago and Northwestern Railroad Co. decided to use cork tiling on the stairs of its magnificent new station in Chicago. These stairs lead to the trains and are used by thousands of people daily. In these tests Cork Tiling far outwore every other kind of material—rubber tiling, metal, concrete, marble, etc.

Cork Tiling is sanitary, easily cleaned, soft, noiseless, elastic, non-slippery, non-inflammable, and artistic. Being non-absorbent and impervious to chemicals, liquids such as ink, grease, oil, etc., can be washed off without leaving a trace. The hose can be turned on it if desired, and it is more easily cleaned than glazed tiling or marble.

COLORS AND APPEARANCE.

Various shades from light oak to dark walnut are obtained. Its appearance is distinctive. Its delicately veined and mottled surface, different from that of any other material, is shown in the accompanying illustration (Fig. 1). While its rich browns will harmonize perfectly with any color scheme, it does not lack character. Each tile is laid separately and individually, hence the joints are a feature. The construction of the floor is obvious and it is therefore distinctly architectural.

SIZES.

Cork Tiles are made one half inch thick in the following standard sizes:

Squares: 3 x 3, 4 x 4, 4½ x 4½, 6 x 6, 8 x 8, 9 x 9, 12 x 12 inches.

Oblongs: 3 x 6, 4 x 8, 4½ x 9, 6 x 12, 9 x 18, 12 x 24, 9 x 36, 12 x 36 inches.

Strips: 3 x 18, 4 x 18, 4½ x 18, 6 x 18, 3 x 36, 4 x 36, 4½ x 36, 6 x 36, 9 x 36, 12 x 36 inches.

DESIGNS.

An unlimited number of designs can be obtained by combining different sizes and colors, including any of the parquetry or marble designs.

PRICE.

The price of Cork Tiling of standard grade is about seventy-five cents per square foot laid and finished. The wainscoting grade is about sixty-five cents per square foot. The cove base is about ninety cents per lineal foot, six inches high.

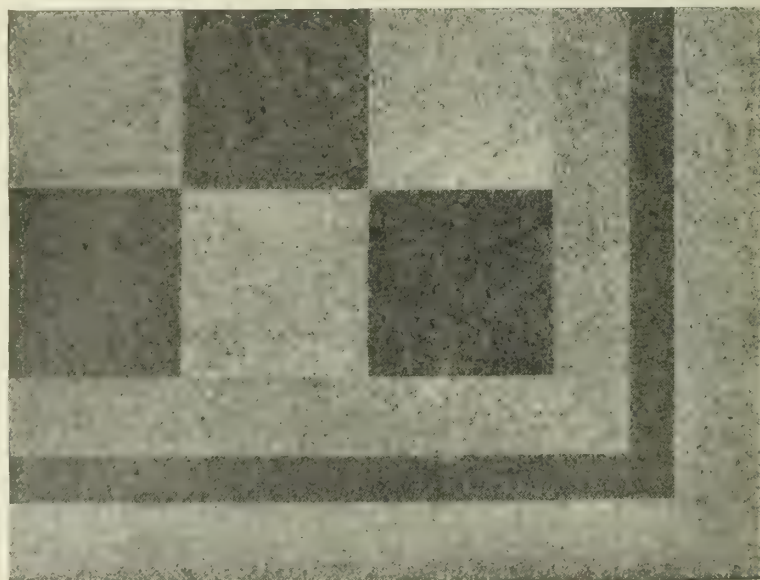


FIG. 1. CORK FLOOR TILING

SANITARY
COVE BASE.CORK TILE
STAIR-
TREADS.FLOOR SPECI-
FICATIONS.SPECIFICA-
TION FOR
BACKING.

REFERENCES.

We make a Cork Cove Base of any height desired, which being elastic can not crack or open at the joints. This base can be set against any smooth backing; wood, plaster, concrete, metal, etc. (Fig. 2.)

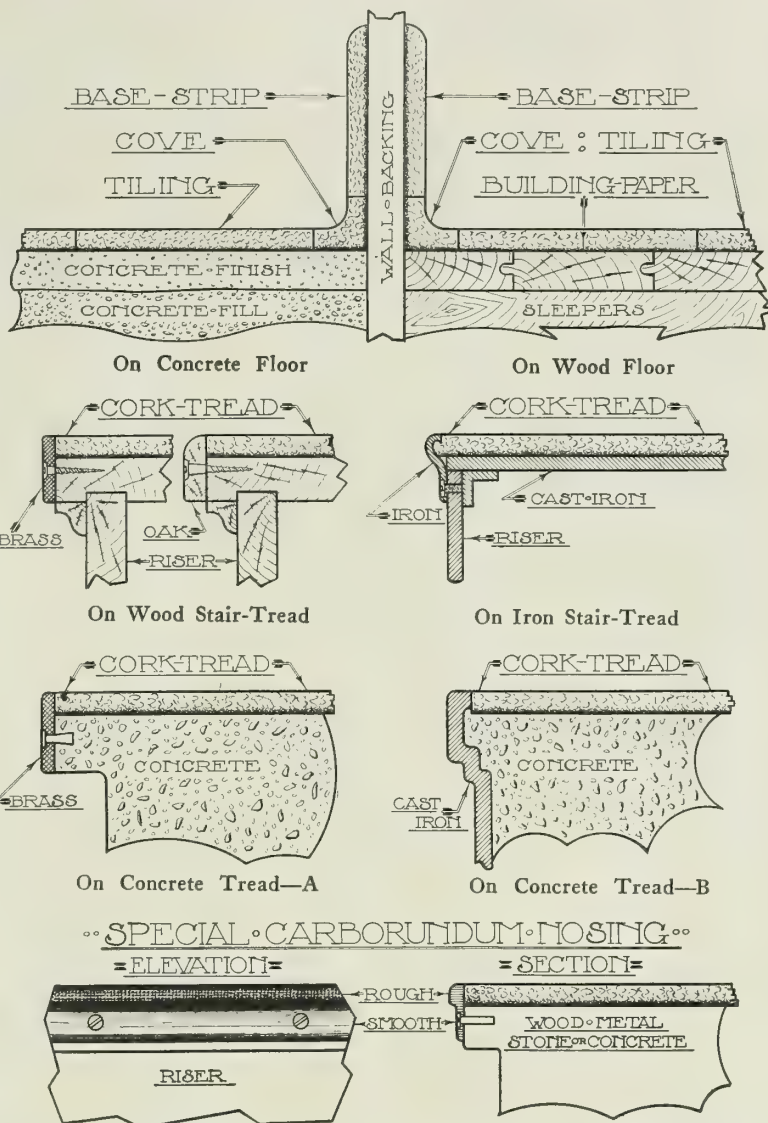
Cork Tiling makes a more durable stair-tread than granite or carborundum and a more agreeable and non-slippery tread than rubber or carpet, wet or dry. It presents a plain, flat surface; is soft, elastic, noiseless, and architectural in appearance. There are no grooves for the retention of filth and disease germs; dirt can be easily brushed off, which is impossible with grooved metal treads. The accompanying illustrations show the application of Cork Tile Treads on various backings with different kinds of nosings.

"Floors shall be of Cork Tiling. This cork tile shall be made of the finest quality of clear granulated cork compressed solid in closed moulds and thoroughly baked. It shall be free from all foreign substances and cement of any kind other than the natural gum of the cork. It shall be set with a special waterproof elastic cement, manufactured for this purpose, so applied as to seal hermetically and bind all joints. Thoroughly experienced men only shall be employed to lay this tiling."

If cove base is desired state height required.

NOTE—Our name and the trade-mark "Nonpareil Cork" can be added if desired.

Any smooth backing that exists or is most convenient to provide—concrete, wood, metal, stone, or tile. The backing should be finished one half inch below the floor level and in new construction can be furnished by us or by the builder. In case the cove base is to be set against plaster the plaster should be finished down to the floor.



NOTE—THE TILING IS LAID WITH A WATERPROOF CEMENT APPLIED WITH A BRUSH

FIG. 2. DETAILS OF COVE BASE AND STAIR-TREADS

BUILDING
CLUBS

Engineers' Club, New York
University Club, Chicago, Ill.
Union League Club, New York
Essex Co. Country Club, Orange, N. J.

BANKS

National City Bank, New York
Equitable Trust Co. New York
Canadian Bank of Commerce, Montreal
Knickerbocker Trust Co., New York
Emigrant Industrial Sav. Bank, New York
Fifth Avenue Bank, New York
Guardian Sav. & Trust Co., Cleveland
Liberty Nat'l. Bank, Pittsburgh, Pa.

HOTELS

Hotel Astor, New York
Hotel St. Regis, New York
Hotel Manhattan, New York
Hotel Knickerbocker, New York
Hotel Belmont, New York
Hotel Martinique, New York
Bellevue-Stratford, Philadelphia, Pa.

OFFICE BUILDINGS AND STORES

Gimbel Bros., New York
"The Fair" Store, Chicago, Ill.
R. H. Macy & Co., New York
New York Life Ins. Co., New York
Metropolitan Life Ins. Co., New York
Gorham Store, New York

ARCHITECT

Whitfield & King
Holabird & Roche
Peabody & Stewart
Building Committee

McKim, Mead & White
Heins & La Farge
Darling & Pearson
McKim, Mead & White
Raymond F. Almirall
Henry Rutgers Marshall
J. Milton Dyer
Carlton Strong

Clinton & Russell
Trowbridge & Livingston
Henry J. Hardenbergh
Trowbridge & Livingston
Warren & Wetmore
Henry J. Hardenbergh
G. W. & W. D. Hewitt

D. H. Burnham & Co.
Jenny, Mundie & Jensen
De Lemos & Cordes
McKim, Mead & White
N. LeBrun & Sons
McKim, Mead & White

BUILDING
LIBRARIES

New York Public Library, New York
Connecticut State Library, Hartford
Public Library, St. Louis, Mo.
Union Theological Seminary New York
Columbia University, New York
Albany Educational Bldg., Albany, N. Y.
Public Library, Springfield, Mass.

PUBLIC BUILDINGS

Pennsylvania R. R. Terminal, N. Y.
Several N. Y., N. H. & H. R. R. Stations
Johns Hopkins Hospital, Baltimore, Md.
Soldiers' Memorial Bldg., Pittsburg, Pa.
St. Paul's Church, Yonkers, N. Y.
St. Augustine School, Brooklyn, N. Y.
Hudson Co. Court House, Jersey City
Chicago & N.W. R.R. Station, Chicago, Ill.

RESIDENCES

John D. Rockefeller, New York
Thomas F. Ryan, New York
William K. Vanderbilt, Sr., New York
William K. Vanderbilt, Jr., New York
John Jacob Astor, New York
J. Ogden Armour, Lake Forest, Ill.
D. H. Burnham, Evanston, Ill.
Ernest Flagg, New York
Payne Whitney, New York
Frederick Widmann, St. Louis, Mo.
Roland R. Conklin, Huntington, L. I.

ARCHITECT

Carrère & Hastings
Donn Barber
Cass Gilbert
Allen & Collens
McKim, Mead & White
Palmer & Hornbostel
Boring & Tilton

McKim, Mead & White
Cass Gilbert
Cabot & Chandler
Palmer & Hornbostel
Sullivan Jones
Albert E. Parfitt
Hugh Roberts
Frost & Granger

Delano & Aldrich
Carrère & Hastings
Warren & Wetmore
McKim, Mead & White
Carrère & Hastings
Arthur Heun
D. H. Burnham & Co.
Ernest Flagg
McKim, Mead & White
Widmann & Walsh
Wilson Eyre

ASBESTOLITH MANUFACTURING COMPANY

Sanitary Fireproof Flooring

1 Madison Avenue (Metropolitan Tower)

NEW YORK, N. Y.

TELEPHONE, 3794 GRAMERCY

R. C. BURNSIDE, PRESIDENT

PRODUCTS.

"ASBESTOLITH" FLOORING, SANITARY BASE, WAINSCOTING, STAIRS, etc.

CHARACTER OF "ASBESTO- LITH."

"Asbestolith" is a remarkably light, warm and durable material for floors, sanitary base, wainscoting, trim, etc., and is absolutely fireproof. It is impervious to heat, cold, and dampness; is clean, sanitary, noiseless and elastic. It will neither chip, tear loose from its base, nor disintegrate; and when finished it presents a continuous fine-grained, smooth surface which never becomes slippery.

"Asbestolith" is easily laid while in a plastic condition on any surface, hardening quickly; and is ready for use in a few hours, making an excellent covering for old wood or cement floors.

FIRE TEST.

"Asbestolith" is approved by the Bureau of Buildings, New York, N. Y., as fireproof materials.

The following fire test, made at the testing laboratory of Columbia University, New York, N. Y., by Ira N. Woolson, M. E., speaks for itself:

Time, Min.	Thermometer, Degs. Fahr.	Differ- ence	Temp. of Furnace, Degs. Fahr.	Remarks
0	75		797	
1	75	0	806	
3	82	7	929	
5	96	21	1046	
6			1116	
10	140	65	1354	
11			1386	
15	166	91	1591	
16			1646	
20	180	105	1749	Began to warp
22			1769	between sup-
25	182	107	1749	ports, no
30	202	127	1759	cracks

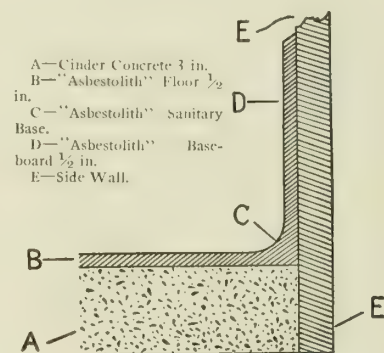


FIG. 1.
SECTION
SHOWING
"ASBESTOLITH"
FLOORING
LAID ON
CINDER,
CONCRETE,
AND CEMENT;
ALSO, WOOD
BACKING

SANITARY QUALITIES.

The method of laying and finishing the flooring hermetically seals the entire surface, making it impossible for germs or filth of any kind to obtain an entrance; and when laid in



FIG. 2. MARLBOROUGH-BLENHEIM HOTEL, ATLANTIC CITY, N. J.
Entire kitchen floor and base, including treads and risers of service stairway and the entire floor area of the arcade entrance, in panels all laid with "Asbestolith"

connection with our Sanitary Base, shown in detail in Fig. 1, it can be washed with cold or hot water or disinfectants. The smooth surface will not accumulate dust.

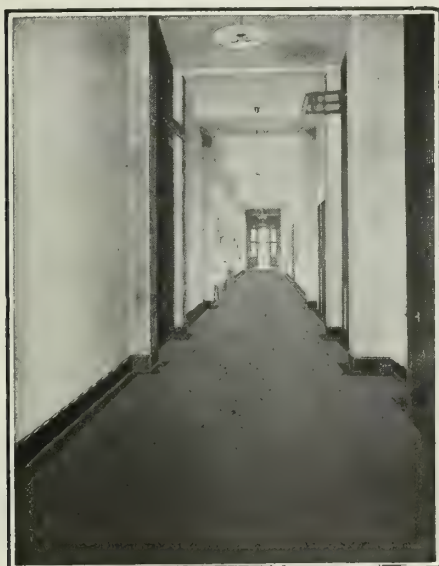


FIG. 3. CORRIDOR, KITCHEN BUILDING,
ST. LOUIS HOSPITAL

Floors, base, wainscoting, etc., of the entire group
laid with "Asbestolith"

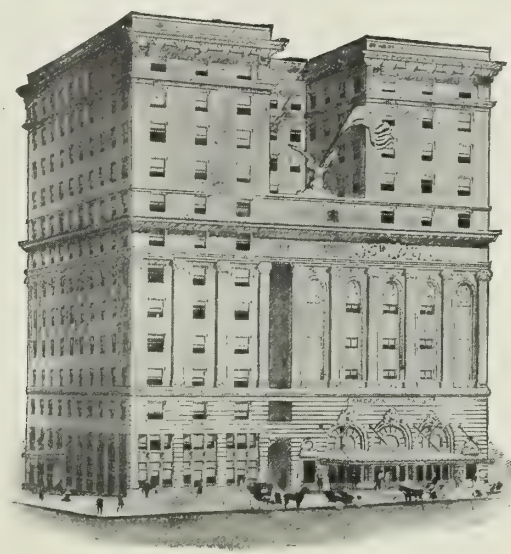


FIG. 4. AMERICAN THEATER, ST. LOUIS, MO.

F. C. BONSAKES, Architect

Solid weathered oak is used in place of plush,
and "Asbestolith" in place of carpets, making this
theater absolutely sanitary as well as reducing
danger of fire

COLORS AND WEIGHT.

It is made in various colors such as red, buff, slate, black, and green; and can be laid either with a solid color or with borders of another color, producing a very pleasing effect. Being comparatively light in weight, less than half the weight of marble, tiling, etc., it can be used on weak and unsupported upper structures where heavier material would be prohibited.

ADAPTABILITY.

"Asbestolith" is adapted for use in bathrooms, libraries, billiard-rooms, kitchens, churches, hospitals, theaters, factories, banks, stores, cafés, restaurants, hotels, and decks of vessels, and all places where noiselessness, safety, and resistance to wear are required.

REFERENCES.

We can refer to over 1,500 pieces of work, among the more prominent of which are:

BUILDING AND LOCATION

St. Luke's Hospital, New York, N. Y.
St. Louis General Hospital (8 buildings), St. Louis, Mo.
Roosevelt Hospital, New York, N. Y.
Duffy Hospital, Yonkers, N. Y.
Jersey City Hospital, Jersey City, N. J.
Fort Bayard Hospital, Fort Bayard, N. M.
Oswego Hospital, Oswego, N. Y.
Montefiore Home (Isolation Building), Brooklyn, N. Y.
Prince Albert Hospital, Sydney, N. S. W.
St. Patrick's Cathedral, Newark, N. J.
Albany Orphan Asylum, Albany, N. Y.
Union County Court House, Elizabeth, N. J.
House of Detention, Newark, N. J.
Carnegie Institute, Cold Spring Harbor, L. I.
St. George's Hotel, Brooklyn, N. Y.
Reisenweber Café, New York, N. Y.
Knickerbocker Trust Co., New York, N. Y.
Staats Zeitung Building, New York, N. Y.
Security Building, Bridgeport, Conn.
Stamford National Bank, Stamford, Conn.
Singer Building (Bourne addition), New York, N. Y.
Siegel-Cooper Store, New York, N. Y.
San Antonio Loan & Trust Building, San Antonio, Texas
American-Hawaiian S. S. Co., New York, N. Y.
Commercial Research Co., Tuckahoe, N. Y.

Hudson River Day Line S. S. Co., New York, N. Y.
United States Navy Yard, Brooklyn, N. Y.
General Electric Inspection Co., New York, N. Y.
Edison Waterside Station, New York, N. Y.
Southern Pacific R. R. Co., San Francisco, Cal.
Pennsylvania R. R. Co.
Baltimore & Ohio R. R. Co., Baltimore, Md.
Delaware, Lackawanna & Western R. R. Co.
Lehigh Valley R. R. Co.
W. K. Vanderbilt residence, New York, N. Y.
J. C. Green residence, Greenwich, Conn.
J. D. Crimmins' residences, New York, N. Y., and
Noroton, Conn.
George Eastman residence, Rochester, N. Y.
Harmon residence, Brooklyn, N. Y.
Miss A. Sands residence, 34th Street and Fifth Avenue,
New York, N. Y.
E. A. Quick residence, Yonkers, N. Y.
Oppenheim residence, New York, N. Y.
Lord & Hewlett, New York, N. Y.
James Reilly Gordon, New York, N. Y.
R. H. Robertson & Son, New York, N. Y.
Ernest Flagg, New York, N. Y.
Clement B. Brun, New York, N. Y.
Forstmann & Huffmann Co., New York, N. Y.

"Asbestolith" has been used in sixty-five buildings of the New York Fire Department.

THE THOMPSON-KIRKPATRICK CO.

MANUFACTURERS OF

“Imperial” Asbestos Fireproof and Sanitary Composition Flooring

1021-1023 Callowhill Street

PHILADELPHIA, PA.

PRODUCT.

We manufacture, lay and apply “IMPERIAL” ASBESTOS FIREPROOF and SANITARY COMPOSITION FLOORING.

DESCRIPTION.

This is a plastic Composition Flooring distinguished as a remarkably light, warm and durable material for floors, sanitary base, wainscoting, trim, etc.

This material is supplied in various colors such as light and dark red, gray, buff, slate, yellow, black, and green, and can be laid either in a solid color or combined with borders in panels of contrasting colors, producing a very pleasing effect. *It positively contains no sawdust.*

ADAPTABILITY

“Imperial” Asbestos Flooring is specially adapted for use in bath-rooms, billiard rooms, pantries, dining-rooms, kitchens, churches, garages, theaters, banks, stores, cafés, restaurants, decks of vessels, and all places where cleanliness, noiselessness, safety and resistance to wear are required.

When laid in connection with our Sanitary Base or Wainscoting it is particularly adapted for use in hospitals, being absolutely sanitary and germ-proof. It is but slightly affected by acids, alkalies or other corrosives, and if stained by such or by blood, etc., such stains can be easily removed. Repairs caused by accidents can be made at a nominal cost without injuring the appearance of the surface. It conforms to the requirements of all Building Laws and Fire Underwriters' Rules.

ADVANTAGES.

Our flooring is absolutely fire-proof, clean, sanitary and noiseless and will neither chip, tear lose from its base, nor disintegrate under any influence. When finished it presents a continuous fine-grained smooth surface which never becomes slippery. It has been successfully laid in hot,



CHILDREN'S WARD, SOUTH SIDE HOSPITAL, PITTSBURG, PA.
Showing “Imperial” Asbestos Flooring and Sanitary Base



FERRYBOAT “HAMMONTON,” PENNSYLVANIA R. R.
“Imperial” Asbestos Flooring laid on four wing decks, showing it will stand the most severe usage

cold, wet and dry locations, on wood, stone, concrete, cement and metals. This flooring will outlast all usual floors constructed of marble, tile, terrazzo, etc. It has sufficient elasticity to save it from abrasion and cracking under the hardest wear.

FACILITIES.

We are prepared to execute contracts to lay our flooring with despatch in all parts of the country.

CO-OPERATIVE
SERVICE AND
ESTIMATES.

Upon request, either exact or approximate prices will be quoted upon receipt of requirements or plans, and we shall be pleased to furnish architects with specifications for the preparation of underflooring (whether wood, concrete, or cement) for receiving "Imperial" Asbestos Composition Flooring, Base and Wainscoting.

Where combinations are desired color designs will be furnished and sample blocks showing surface and colors will be sent on application, together with full description.



SOUTH SIDE HOSPITAL (OLIVER MEMORIAL BUILDING ANNEX), PITTSBURG, PA.

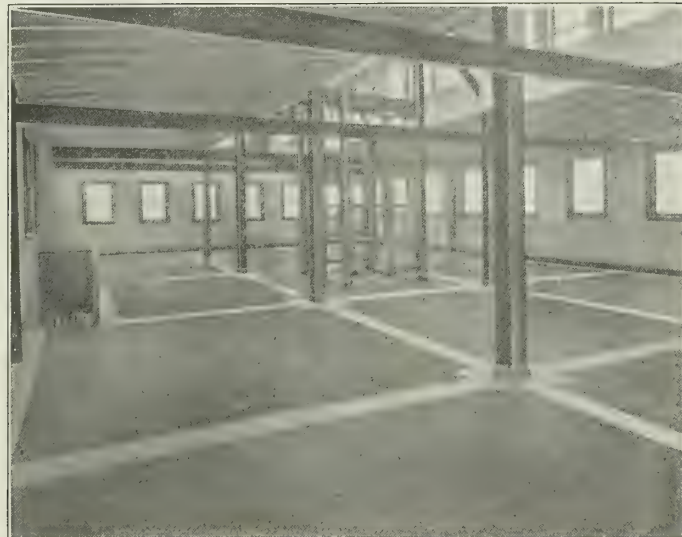
"Imperial" Asbestos Flooring and Sanitary Base (cove corners) laid throughout entire floor area of this building
JOSEPH L. NEAL, Architect



ST. FRANCIS HOSPITAL BUILDINGS, PITTSBURG, PA.

The floor area throughout, comprising over 125,000 square feet and over 20,000 lineal feet of sanitary base, is laid with "Imperial" Asbestos Flooring.

SIDNEY F. HECKERT, Architect



BELLE MEAD SWEETMAKERS' FACTORY BUILDING, SANITARY CANDY KITCHEN, TRENTON, N. J.

Floor area laid with "Imperial" Asbestos Flooring

W. W. SLACK, Architect

GUARANTEE.

We guarantee the quality of our material and all work performed by us.

REFERENCES.

A list of buildings in which our flooring has been laid and operations of different kinds done by us will be furnished upon request. We illustrate herewith a few of our lately executed contracts. We are privileged to refer to a large number of well-known architects.

WHITESTONE MARBLE COMPANY

Century Building
ATLANTA, GA.

BRANCH OFFICE
NEW YORK, N. Y., SAMUEL SPALDING, 34 West 28th Street

QUARRIES
WHITESTONE, GA.

PRODUCTS.

"WHITESTONE GRANITO" for TERRAZZO or VENETIAN FLOORING; also, for TILE and BUILDING BLOCKS.

TERRAZZO FLOORING.

Terrazzo or Venetian Flooring is a composition of Granito (marble chips) and cement, the proportion being 75 per cent Granito to 25 per cent of cement; this, after mixing, is spread upon a concrete foundation to the depth of from one to two inches and troweled to an even surface. The larger sizes of Granito are then spread on top and rolled in with an iron roller. When the flooring has set a finish is obtained by rubbing with emery blocks to a perfectly smooth surface.

ADVANTAGES.

The pure whiteness, fine grain, and firm texture of "Whitestone Granito" make the Terrazzo stain and germ proof and give a wearing quality unequaled. "Whitestone Granito" is as easily worked as the Italian Granito, to which it is superior in color, texture, and wearing quality, besides being much cheaper in price.



UNITED STATES GOVERNMENT POST OFFICE, ATLANTA, GA.

J. KNOX TAYLOR, Supervising Architect
"Whitestone Granito" used in this building

ADAPTABILITY.

"Whitestone Granito" is particularly adapted to public and office buildings, hospitals, banks, libraries, churches, theaters, lobbies, bath and toilet rooms, hallways, corridors, cafés, restaurants, laundries, kitchens, wards, and all places where cleanliness and resistance to wear are required.

This flooring can be applied by the average workman.

SIZES, PRICES, ETC.

"Whitestone Granito" is handled through automatic weighing machines and shipped in new jute sacks of 100 pounds each.

Seven to ten pounds are required to the square foot. Price, \$6.00 to \$7.50 per ton, f. o. b. Whitestone. Special discounts on large contracts.

Write for prices and freight rates; we have commodity rates to all points.

SAMPLES.

Samples of flooring in slabs will be furnished on request.

FACILITIES
AND
SHIPMENTS.

Our large crushing and sizing plant is the most complete in existence.

We keep constantly in our bins 300 to 400 tons of finished product, drawn from selected stock, thus insuring immediate shipment of all orders.

The location of our plant on the main line of the Knoxville Branch of the Louisville and Nashville Railroad, 70 miles north of Atlanta, gives us excellent facilities for shipping.

TERRITORY.

The recent reduction in freight rates has opened up the territory practically throughout the southern and eastern states and the western states to the Rocky Mountains.

INFRINGEMENTS.

"Whitestone Granito" is our proprietary brand and we will protect it against all infringements.

REFERENCES.

"Whitestone Granito" is being specified everywhere by prominent architects for Terrazzo or Venetian Flooring. The following are a few of the important buildings in which it has been exclusively used:

United States Government Post Office, Atlanta, Ga.
United States Government Post Office, Macon, Ga.
Delgado Memorial Hospital, New Orleans, La.
New Union Station, Chattanooga, Tenn.
New Court House Building, Shelby, N. C.
New Carnegie Library, Pelham, Ga.
St. Joseph's Orphan Home, St. Louis, Mo.
Charlotte Realty and Trust Building, Charlotte, N. C.
New Court House Building, Ellenville, Miss.
Furniture Manufacturers Exchange, Evansville, Ind.
St. Matthew's Evangelical Church, Louisville, Ky.
Bacon Building, Louisville, Ky.
Atherton Building, Louisville, Ky.
Sullivan Building, St. Louis, Mo.
Masonic Temple, Raleigh, N. C.
St. Joseph's Infirmary, Atlanta, Ga.

Realty Trust Building, Atlanta, Ga.
Bell Office Building, Montgomery, Ala.
New Court House Building, Baxley, Ga.
American Safe Deposit Co.'s Building, Pensacola, Fla.
Harrington & Pardee Hospital, Buffalo, N. Y.
New Court House Building, Laurel, Miss.
McClure Store and Office Building, Frankfort, Ky.
Feeble-Minded Institute, Frankfort, Ky.
Agricultural Hall, Iowa State College, Ames, Iowa
Hotel Monte Vista, Big Stone Gap, Va.
Gaiety Theater, Louisville, Ky.
Y. M. C. A. Building, Memphis, Tenn.
Masonic Temple, Greenwood, S. C.
Masonic Temple, Atlanta, Ga.
Masonic Temple, Jacksonville, Fla.



CHARLOTTE REALTY & TRUST BUILDING, CHARLOTTE, N. C.

FRANK P. MILBURN & Co., Architects, Washington, D. C.

Floored throughout with "Whitestone Granito" Terrazzo

WARREN BROTHERS COMPANY

MANUFACTURERS OF

"Puritan" Sanitary Flooring

59 Temple Place
BOSTON, MASS.

PRODUCTS.

"PURITAN" SANITARY FLOORING for Hospitals, Schools, Lavatories, Baths, Hotel Kitchens, Automobile Garages, Corridors, Bank Vault Floors, etc. We are also CONTRACTORS for ASPHALT FLOORS; WATERPROOFING; GRANOLITHIC WALKS and DRIVES; also, SLATE, TILE, ASPHALT, TAR, and GRAVEL ROOFING.

ADVANTAGES AND UTILITY.

The "Puritan" Sanitary Flooring is laid in a plastic monolithic mass, without joints, in much the same manner as Portland Cement, and will firmly adhere to a wood, concrete, or other base of which it becomes a part when set. It can not rupture, warp, crack or shrink and will last until the foundation fails.

OFFICIAL ENDORSE- MENT.

The "Puritan" Sanitary Flooring fulfills all requirements of the larger cities and the National Board of Fire Underwriters.



6,100 SQUARE FEET IN ONE ROOM, NATIONAL SOLDIERS' HOME, HAMPTON, VA.

J. C. and J. H. STEVENS, Architects

COST.

The cost of "Puritan" Sanitary Flooring ranges from twenty-five to fifty cents per square foot laid, dependent on quantity, location, and conditions.

REFERENCES.

BUILDING
Boston City Hospital
Brockton City Hospital
Harvard Medical School
New York Riding Club
Salvation Army Barracks
St. Barnabas Hospital
Wentworth Hospital
St. Alphonsus Seminary
Metropolitan Savings Bank
Malden High School
National Soldiers' Home
Museum of Fine Arts
Cincinnati Branch Hospital
St. Margaret's Hospital
Massachusetts Agricultural College
E. M. S. Insane Hospital
Mary Allen Hospital
Soldiers' Home Hospital

LOCATION
Boston, Mass.
Brockton, Mass.
Boston, Mass.
New York, N. Y.
Boston, Mass.
Portland, Me.
Dover, N. H.
Esopus, N. Y.
Baltimore, Md.
Malden, Mass.
Hampton, Va.
Boston, Mass.
Cincinnati, Ohio.
Spring Valley, Ill.
Amherst, Mass.
Bangor, Me.
Burlington, Vt.
Chelsea, Mass.

ARCHITECTS
Kendall, Taylor & Stevens
Kendall, Taylor & Stevens
Shepley, Rutan & Coolidge
Bradford Lee Gilbert
Brainerd & Leeds

Kendall, Taylor & Stevens
F. Joseph Untersee
Parker & Thomas
Cooper & Bailey
J. C. & J. H. Stevens
Guy Lowell
Samuel Hannaford & Sons
V. A. Matteson
Cooper & Bailey
J. C. & J. H. Stevens
Frank Lyman Austin
Clough & Wardner

There are over 250,000 square feet of flooring in the above buildings.

FAUNT LE ROY ELEVATOR COMPANY

Ornamental Iron Department

HOME OFFICES AND WORKS

BALTIMORE, MD.

BRANCHES IN ALL PRINCIPAL CITIES

PRODUCTS.

Manufacturers of ORNAMENTAL IRON and BRONZE BANK INTERIORS; ELEVATOR ENCLOSURES; MARQUISES; PORTE-COCHERES; ENTRANCE DOORS and GATES; INSCRIPTION TABLETS; MEDALLIONS; MAUSOLEUM DOORS; LAMP STANDARDS; RAILING and FENCING; IRON and WIRE WINDOW GUARDS; COLLAPSIBLE GATES; AREA GRATINGS; REGISTERS.

TERRITORY.

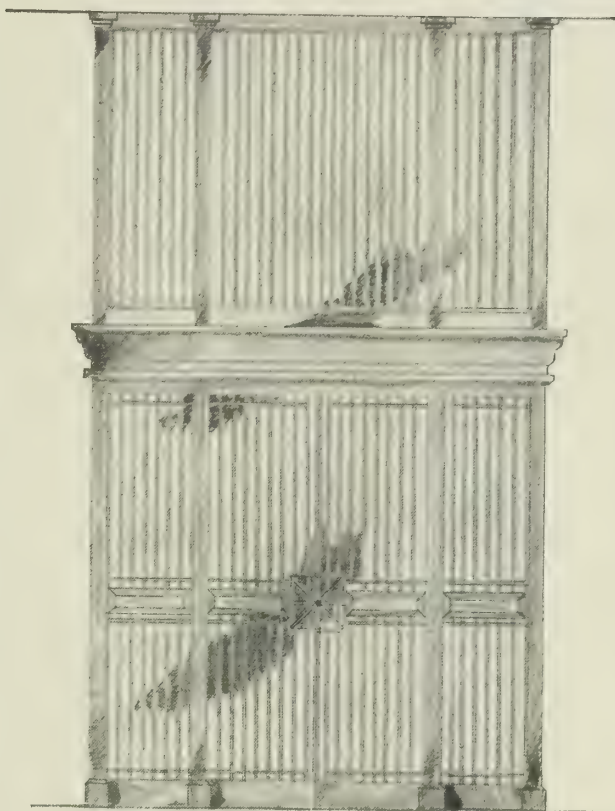
We furnish designs and prices for work installed or delivered in any part of the United States or Canada.

SPECIALTY.

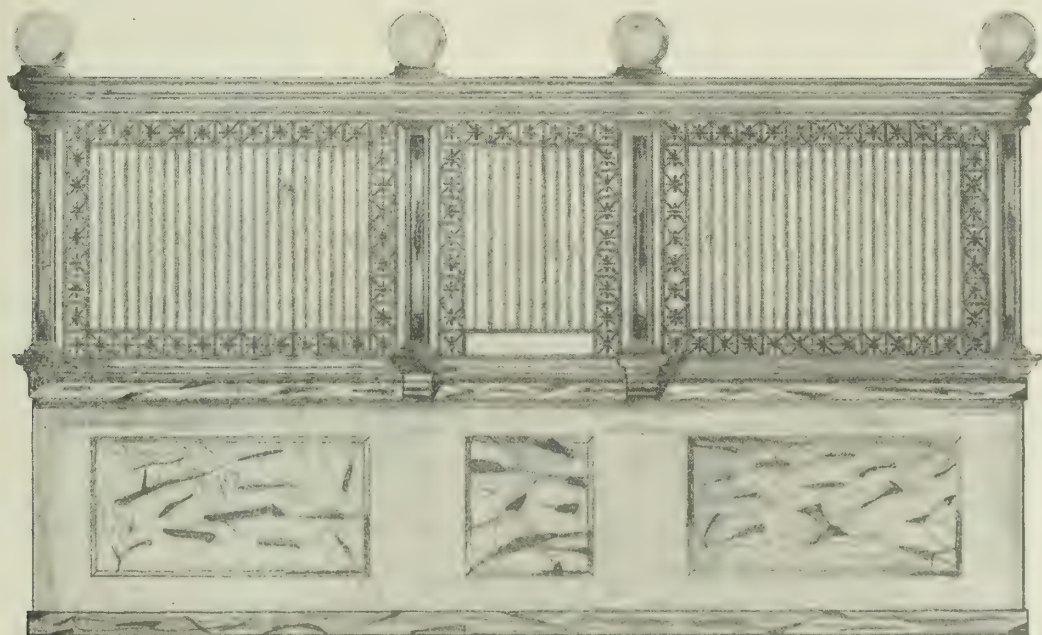
We make a feature of executing Architectural Commissions and offer the services of our designers in developing any desired scheme or treatment.

FACILITIES.

The latest improved automatic machinery greatly reduces our cost in manufacturing Window Guards and Screens and light Decorative Designs.



DESIGN L P L. IRON OR BRONZE ELEVATOR ENCLOSURE



DESIGN B B. BANK RAILING

ACME COLUMN COMPANY

MANUFACTURERS OF

"Acme" Patent Steel-Shell Concrete-Filled Columns

372-392 Greenpoint Avenue
BROOKLYN, N. Y.

TELEPHONE, 1531 GREENPOINT

18-24 South Seventh Street
PHILADELPHIA, PA.

TELEPHONES—BELL, WALNUT 6139
KEYSTONE, MAIN 6685

PRODUCTS.

"ACME" STEEL-SHELL CONCRETE-FILLED CELLAR COLUMNS; PIN, STANDARD and "ACME" FIREPROOF COLUMNS; CAST-IRON COLUMNS; CASTINGS for all purposes; VAULT LIGHTS; HOUSE WORK and MACHINERY CASTINGS.

DESCRIPTION.

"Acme" Columns are made of steel piping filled with the highest grade of concrete. They have cast-iron caps and bases, either loose or secured firmly to the steel shell by an approved method, also reinforced internally with steel pipe.

ADAPTABILITY.

The "Acme" Columns are used in churches, theaters, hotels, office buildings, schools, apartment houses, tenements, garages, factories, mills, storage and warehouses and private dwellings. They are adapted for all purposes where columns, brick or stone piers or any kind of support is required, and by reason of their small diameter "Acme" columns do not obstruct the light and give an increased floor area.

REINFORCED COLUMNS.

The "Acme" Reinforced Columns have an interior steel pipe column or columns, having an equal bearing. The load is thus equally distributed, and the space between the inner and outer shell is filled with a high grade of concrete.

FIREPROOF COLUMNS.

The "Acme" Fireproof Columns are what the name implies, and consist of an outer shell and the interior column, with an air space between.

FACILITIES.

Our equipment is unequaled by any other column company for producing and manufacturing columns and castings for all purposes.

Our workmen are all experienced and of long training on this class of work, and have been making these columns since they were first introduced six years ago.

TESTS.

The tests made on "Acme" Columns by the Watertown Arsenal and by Professor Woolson at Columbia University, New York, N. Y., are the basis on which the safe loads for Greater New York and Philadelphia, Pa. have been calculated, and are accepted as the standard by both of these cities and by others using them. They have also been approved for use in Boston, Mass. and Camden, N. J.



"ACME" STEEL-SHELL CONCRETE-FILLED COLUMNS,
WAREHOUSE OF SONE & FLEMING MFG. CO.
(STANDARD OIL CO.), BROOKLYN, N. Y.
Showing method of connecting Structural Steel Framing to
Columns

SAFE LOADS.

Tables 1 and 2 are the only approved and authorized safe loads for Steel-Shell Concrete-filled Columns for Greater New York. Table 3, the approved safe loads for the cities of Philadelphia, Pa. and Camden, N. J.

TABLE 1—"ACME" COLUMNS FOR GREATER NEW YORK

Outside Diameter at Shell in Inches		Approved Safe Load in Tons of 2,000 Lbs. on "ACME" Columns for Greater New York.													
		Free Height of Column in Feet													
		7	8	9	10	11	12	13	14	15	16	17	18	19	20
Light 5" Metal	3 1/2	7.6	7.0												
	4	9.5	9.0												
	4 1/2	11.8	11.2	10.7	10.2	9.6	9.1	8.6	8.1	7.6					
	5	13.8	13.3	12.8	12.3	11.8	11.3	10.8	10.3	9.8	9.3	8.8			
Heavy Sections—3/4" Metal	4	15.6	14.5	13.4	12.4	11.3	10.2	9.2							
	4 1/2	19.0	18.0	16.8	15.8	14.7	13.6	12.6	11.5	10.5					
	5	22.4	21.3	20.3	19.2	18.2	17.0	15.9	14.9	13.8	12.8				
	5 1/2	26.3	25.2	24.1	23.0	21.9	20.9	19.8	18.8	17.7	16.7	15.6	14.6		
	6 1/2	34.0	32.9	31.8	30.8	29.7	28.7	27.6	26.6	25.5	24.5	23.4	22.3	21.3	20.2
	7 1/2	42.1	41.0	39.9	38.8	37.7	36.6	35.6	34.5	33.5	32.4	31.4	30.3	29.3	28.2
	8 1/2	50.4	49.3	48.2	47.0	46.0	44.9	43.9	42.8	41.8	40.7	39.7	38.6	37.6	36.5
	9 1/2	59.4	58.3	57.2	56.0	55.0	53.9	52.9	51.8	50.8	49.7	48.7	47.6	46.6	45.5
	10 1/2	68.6	67.6	66.5	65.5	64.4	63.4	62.3	61.3	60.2	59.2	58.1	57.0	55.9	54.8
	12 1/2	88.3	87.2	86.0	84.9	83.8	82.7	81.7	80.6	79.6	78.5	77.5	76.4	75.4	74.3

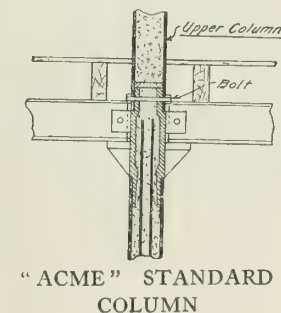
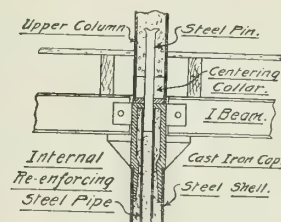
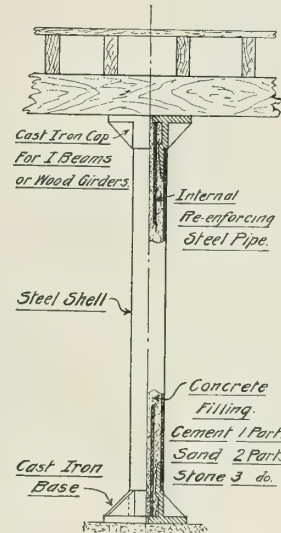
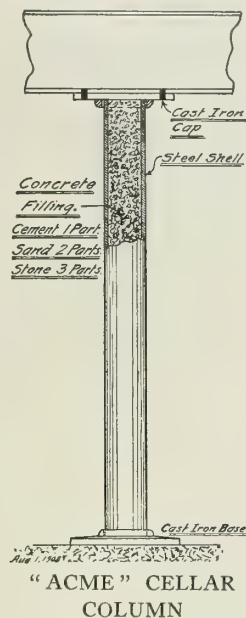
TABLE 2—"ACME" REINFORCED COLUMNS FOR GREATER NEW YORK

"Acme" Reinforced Steel-Shell Concrete-Filled Columns.															
Diameter of Column	Reinforcing Pipes	Approved Safe Load in Tons of 2,000 Lbs. for Greater New York													
		Free Height of Column in Feet													
		7'	8'	9'	10'	11'	12'	13'	14'	15'	16'	17'	18'	19'	20'
4 1/2"	4"	25.3	23.8	22.1	20.6	19.0	17.4	15.9	14.3	12.8					
5 1/2"	4 1/2"	40.3	38.2	35.9	33.8	31.6	29.5	27.4	25.3	23.2	21.2	19.1	17 1		
6 1/2"	5"	49.1	46.9	44.8	42.7	40.6	38.4	36.2	34.2	32.0	30.8	27 9	25.8	23.8	22.7
7 1/2"	5 1/2"	58.7	56.5	54.3	52.1	49.9	47.8	45.7	43.6	41.5	39.4	37 3	35.2	33.1	31 0
8 1/2"	6 1/2"	72.1	59.9	67.7	65.5	63.4	61.3	59.2	57.1	55.0	52.9	50.8	48.6	46.6	44.4
9 1/2"	6 1/2"	77.5	75.3	73.1	70.9	68.8	66.7	64.6	62.5	60.4	58.3	56.2	54 0	52.0	49.8
10 1/2"	8 1/2"	99.2	97.2	95.0	92.8	90.7	88.6	86.5	84.4	82.3	80.2	78.1	75.9	73.8	71 6
12 1/2"	9 1/2"	119.4	117.2	114.9	112.6	110.5	108.3	106.3	104.2	102.1	99.9	97.9	95.7	93.7	91.5

By our Method of Internal Reinforcing of Columns, these Safe Loads may also be Increased

TABLE 3—"ACME" COLUMNS FOR PHILADELPHIA, PA., AND CAMDEN, N. J.

Diameter of Column		Thickness of Shell	APPROVED SAFE LOAD IN TONS OF 2,000 LBS. ON "ACME" Columns for the Cities of Philadelphia, Pa., and Camden, N. J.																										
			Free Height of Column in Feet																										
			6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27					
3 1/2"	.25	13.2	11.8	11.0	9.9	9.0	8.1	7.2	6.6																				
4"	.25	16.6	15.3	14.3	13.0	11.9	10.9	10.1	9.1	8.5	7.8																		
4 1/2"	.25	20.7	19.5	18.2	17.0	16.4	14.5	13.3	12.4	11.5	10.8	9.9	9.3																
5"	.25	24.8	23.7	22.3	21.2	19.8	18.7	17.2	16.2	15.1	14.0	13.3	12.2	11.5															
5 1/2"	.25	30.9	29.5	28.1	26.7	25.3	24.0	22.6	21.3	19.9	18.8	17.7	16.7	15.6	14.7	13.8	13.1												
6 1/2"	.28	40.8	39.0	37.9	36.3	35.2	33.5	31.9	31.3	29.1	27.5	26.4	24.7	23.6	22.5	21.4	20.3	19.2	18.1	17.6									
7 1/2"	.30	51.7	51.0	49.5	48.3	46.2	44.0	43.4	41.4	40.0	38.6	36.5	35.1	33.8	32.4	31.0	29.6	28.2	26.9	25.5	24.8	24.1	22.7						
8 1/2"	.32	63.9	62.2	61.4	59.7	58.0	56.4	54.7	52.4	51.4	49.8	48.1	46.4	44.8	43.1	41.5	39.8	38.0	36.5	35.6	34.0	33.2	31.5						
9 1/2"	.34	77.0	76.0	75.0	73.0	72.0	70.0	69.0	67.0	65.0	63.0	61.0	59.0	58.0	56.0	54.0	52.0	51.0	49.0	47.0	46.0	44.0	43.0						
10 1/2"	.36	92.8	91.6	90.4	89.2	86.8	85.6	84.4	82.2	80.9	78.5	76.1	74.9	72.5	70.2	69.0	66.6	64.0	63.0	60.6	59.5	57.1	55.9						
12 1/2"	.37	115	113	112	111	110	108	106	105	103	102	100	97.8	96.3	94.9	92.0	90.5	87.6	86.1	84.6	81.7	80.3	77.2						



ANCHOR POST IRON WORKS

MANUFACTURERS OF

Iron Railings and Entrance Gates, Wire Fences and Anchor Posts

GENERAL OFFICES

165 Broadway
NEW YORK, N. Y.

BRANCH OFFICES

HARTFORD, CONN., 902 Main Street
NEWARK, N. J.

STAMFORD, CONN.
MINEOLA, L. I., N. Y., Jericho Turnpike

SHOPS
GARWOOD, N. J.

SALES AGENTS

BOSTON, MASS., W. A. SNOW IRON WORKS, 19 Portland Street
NEW HAVEN, CONN., EDWARD F. SMITH & Co., 256 State Street

BALTIMORE, MD., DUFUR & Co., 309 North Howard Street
CHICAGO, ILL., E. R. LONDON IRON & WIRE WORKS, 18 North May Street

PRODUCTS.

Manufacturers of IRON RAILINGS, ENTRANCE GATES, LAMPS, DOORS, GRILLES and ORNAMENTAL IRON WORK; GALVANIZED "ANCHOR" FENCE POSTS for use with all kinds and heights of fences; IRON and WIRE FENCES for all purposes, PIPE RAILINGS, TENNIS-COURT ENCLOSURES, EXPERT WIRE CONSTRUCTION for GAME and POULTRY ENCLOSURES, DOG KENNELS, PADDOCKS; UNCLIMBABLE NETTING FENCES for country places, parks, institutions, factories, mills and water companies. We also make IRON ARBORS, TRELLISES, WIRE ARCHES, FENCE STEPS, TURNSTILES, TREE, LAWN and FLOWER-BED GUARDS.

FACILITIES.

Our shops, situated at Garwood, N. J., on the Central Railroad of New Jersey, are equipped with special machinery for the manufacture of our products. We have every facility for handling large and small contracts at the lowest possible cost.

ESTIMATES.

We will give estimates for our products delivered and set complete in any part of the country. We employ a large force of experienced men who have been trained particularly to erect our work. Where we supply material only, we furnish full instructions and drawings so that our fences and gates can be placed in position by local mechanics.



GATEWAY, BAYSHORE, L. I.
From designs by CARL L. OTTO, Architect

ILLUSTRATIONS AND
PRICE-LISTS.

Catalogues showing railings, entrance gates, as well as wire fences and specialties, with complete price-lists, may be obtained upon application. Sample sections of railings, fences with posts, gates, etc., may be seen at our office and salesroom. In writing for estimates, send, if possible, a diagram giving dimensions, location of gates, ends and corners.

CO-OPERATIVE
SERVICE.

We are at all times ready to furnish the architect, contractor, or owner, with sketches and designs, and full information as to sizes and weights of material. If desired to do so, we will make our own surveys for grades and measurements, and take entire charge of the work.

IRON RAILINGS AND
ENTRANCE
GATES.

All of our products are made in our own shop by skilled workmen under our personal supervision. We give careful attention to the execution of architects' drawings, endeavoring to carry out the work in the spirit as well as the letter of the design. The iron railings shown in plates Nos. 429 and 432 are built on heavy cast-iron foundations set in the ground. We have built many miles of iron railings on private estates, as well as for some of the best known corporations, cemeteries, public institutions, parks and race-courses.

NOTABLE INSTALLATIONS
OF IRON RAILINGS AND
GATES.

Woodlawn Cemetery, Woodlawn, N. Y., 10,000 feet of railing, 7' high; two gateways 20' wide, 12' high.

Coney Island Jockey Club, Sheepshead Bay, L. I., 5,000 feet of railing, 6' 6" high.

Lowell Cemetery, Lowell, Mass., gateway, 19' wide, 14' high.

Louis Bossert, Bayshore, L. I., 1,000 feet of railing, 6' 6" high; elaborate gateway, 21' high.

Col. A. R. Kuser, Bernardsville, N. J., 1,700 feet of railing, 7' 6" high.

"Castle Gould," Port Washington, L. I., 2,000 feet of railing, 9' high.

N. F. Palmer, Port Chester, N. Y., 1,700 feet of railing, 8' high.

St. John's Cemetery, Brooklyn, N. Y., 6,800 feet of railing, 7' high.

Brookside Cemetery, Watertown, N. Y., gateway, 13' wide, 21' high; 1,600 feet of railing, 8' high.



PLATE 407. MAIN ENTRANCE GATE AND RAILING, WOODLAWN CEMETERY, WOODLAWN, N. Y.

From Designs by CHAS. W. LEAVITT, Landscape Architect

The driveway gates measure 20 feet from pier to pier and are 12 feet high. Height of railing, 7 feet; length over 10,000 feet

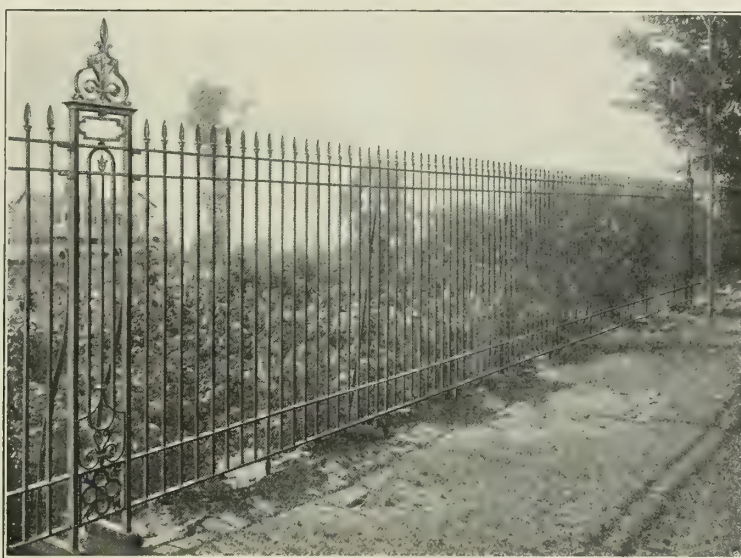


PLATE 429. RAILING AT FAIRCOURT, BERNARDSVILLE, N. J.

Height, 7½ feet; length 1,700 feet. The ornamental panel posts are set at distances of 40 feet



PLATE 432. IRON RAILING, PORT CHESTER, N. Y.

Height, 8 feet; length, 1,700 feet

"ANCHOR"
POSTS AND
WIRE
FENCES.

These posts are the product of over fifteen years' practical experience in the building of iron and wire fences. The post proper is a rigid bar of high carbon steel, galvanized to protect it against rust. The post is anchored in the ground by means of two stakes or blades of angle iron which are driven through sockets fastened to the base of the post.

ADVANTAGES.

This anchorage (see Plate 340) has a wide spread below the surface and holds the post so firmly in the ground that the strain of wires, stress of hard usage or action of frost can not throw them out of alignment. The posts are driven into the ground. No digging is required in setting them. Being galvanized, they will outlast wood or painted iron many times over.

WIRE.

Any form of wire or wire netting can be used with our "Anchor" Posts and a great variety of them is shown in our catalogue.

NOTABLE INSTALLATIONS
OF WIRE
FENCES.

Rosendale and Linden Cemeteries, Linden, N. J., 10,000 feet of netting fence, 5' high.

Ardsley Club, Ardsley-on-Hudson, N. Y., 1,000 feet of tennis fence.

O. H. P. Belmont, Hempstead, L. I., 5,000 feet of woven wire fence, 6' 10" high.

Thomas N. McCarter, Rumson, N. J., 22,000 feet of woven wire fence, 4' 6" high.

George R. Sheldon, Glen Cove, L. I., 4,000 feet of woven wire fence, 6' 10" high.

Howard Willets, White Plains, N. Y., 42,000 feet of lawn fence, 4' 2" high; 37,000 feet of farm fence, 4' high.

W. H. Macy, Harrison, N. Y., 36,500 feet of lawn fence, 4' high.

N. F. Palmer, Port Chester, N. Y., 5,300 feet of netting fence, 8' high.

Senator J. F. Dryden, Bernardsville, N. J., 8,600 feet of farm fence, 4' and 5' high.

Howard Gould, Port Washington, L. I., 32,000 feet of netting fence, 4', 6' and 8' high; 5,000 feet of poultry fence, 7' high.

John D. Rockefeller, Pocantico Hills, N. Y., 7,700 feet of netting fence, 6' and 7' high.



PLATE 303. WOVEN-WIRE FENCE, RUMSON ROAD, SEABRIGHT, N. J.

Height, 3 feet to 6 feet 6 inches. Price, erected complete in ordinary soil, 60 cents to \$1 per lineal foot for 200 feet or more



PLATE 319. WIRE NETTING FENCE, POCANTICO HILLS, N. Y.

Built in heights from 3 to 8 feet. Has very small mesh, making it practically unclimbable and giving complete protection. Price, set complete, 50 cents to \$1 per lineal foot, according to height and size of wire



PLATE 321. TENNIS-COURT BACK STOP, ARDSLEY CLUB, ARDSLEY, N. Y.

Built with large sized galvanized anchor posts and fine mesh netting reinforced with several horizontal wires. Heights, 8 and 10 feet

FENCES FOR
FACTORIES,
MILLS AND
INDUSTRIAL
PROPERTIES.

ADVANTAGES.

Plates Nos. 336, 340 and 425 show types of wire fence and iron railing built by us for factories, mills, reservoirs, race-tracks, public and private institutions.

These fences will outlast a board fence two or three times over. In first cost they compare favorably with a board fence of equal height while the maintenance charges are very much less.

The Wire Fences Nos. 336 and 340 are built on galvanized "Anchor" Posts which are absolutely rust-proof.

Post No. 425 is furnished either galvanized or painted, as desired.

The post bar is driven into the solid ground; little if any digging is required. It is held from opposite sides by the two anchor stakes which are driven through sockets clamped to the sides of the post.

These posts are quickly set and are so firmly held by the anchorage that they can not be shifted out of line by the action of frost or the stress of hard usage.

These fences are unclimbable, unbreakable, durable and attractive in appearance.

NOTABLE IN-
STALLATIONS,
IRON RAIL-
INGS AND
UNCLIMB-
ABLE WIRE
FENCES.

Algonquin Printing Co., Fall River, Mass., 950 feet of close-mesh fence, 7' high.

American Net & Twine Co., Anniston, Ala., 1,800 feet of wrought-iron railing, 7' high.

American Thread Co., Watuppa, Mass., 700 feet of chain-link fence, 7' high.

City of Columbia Water Works, Columbia, S. C., 2,900 feet of close-mesh fence, 8' high.

Consolidated Gas Co., New York, N. Y., 1,100 feet of wrought-iron railing, 8' high.

Corr Mfg. Co., Taunton, Mass., 1,800 feet of close-mesh fence, 7' high.

Crocker-Wheeler Co., Ampere, N. J., 3,200 feet of chain-link fence, 8' high.

Edison Co., Boston, Mass., 1,200 feet of wrought-iron railing, 8' 8" high.

Farr Alpaca Co., Holyoke, Mass., 1,150 feet of chain-link fence, 8' high.

Montreal Locomotive Works, Montreal, Canada, 1,700 feet of chain-link fence, 7' high.

Thomas Oakes & Company, Bloomfield, N. J., 1,200 feet of chain-link fence, 7' high.

Oakeville Company, Waterbury, Conn., 1,100 feet of chain-link fence, 7' high.

Plainfield Union Water Co., Plainfield, N. J., 1,900 feet of wrought-iron railing, 5' high.



PLATE 336. CHAIN-LINK WIRE FENCE, CROCKER WHEELER CO., AMPERE, N. J.

Height, 8 feet; length 3,500 feet. Netting $2\frac{1}{4}$ inch mesh. No. 6 wire. Built on galvanized "Anchor" Posts, with pipe top rail. Four stands of barbed wire above netting. Absolutely unclimbable and the strongest wire fence made. Furnished any height from 5 to 10 feet

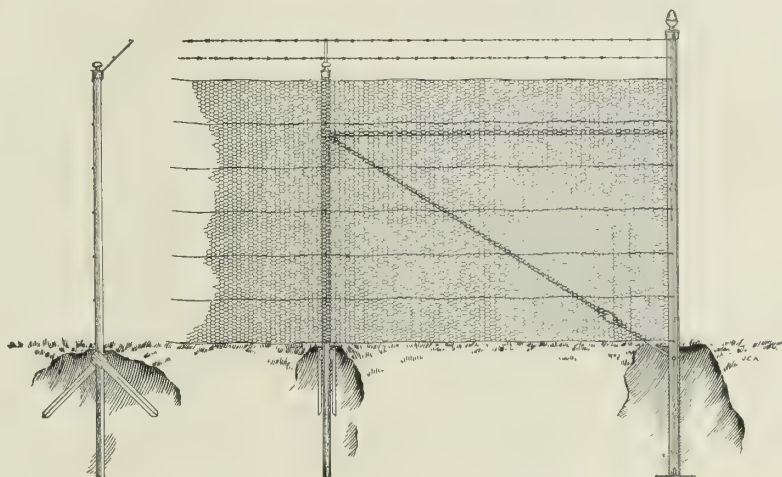


PLATE 340. CLOSE-MESH NETTING FENCE

Height, 5 to 10 feet. Netting $1\frac{1}{4}$ -inch mesh. No. 16 wire. Two or more barbed wires are attached to the diagonal arms of posts, preventing climbing. Built on galvanized "Anchor" Posts

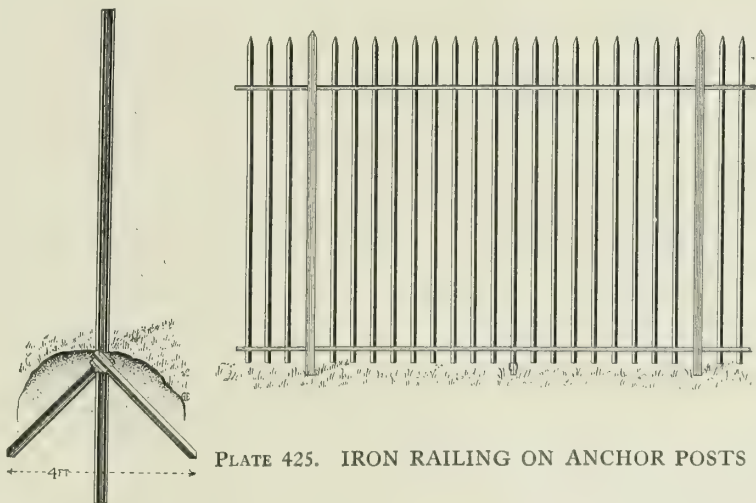


PLATE 425. IRON RAILING ON ANCHOR POSTS

Very strong and substantial. Anchor posts of 3 inch I-beam section are used, held securely by two large blades driven through socket at base of posts. Simplest railing in construction and easiest to set. Very little digging required in placing posts. Rails are heavy channel. Pickets are made in any sized bars desired. Built any height from 5 to 10 feet. Prices on application

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Manufacturers of ARCHITECTS BRONZE in Architectural and Ornamental forms as follows: FIREPROOF PRODUCTS, including DOORS, WINDOWS, SASHES and FRAMES, FLOORS, PARTITIONS, WALLS, CEILINGS, COLUMNS, PILASTERS, CAPITALS, GRILLES, BANK RAILINGS and PARTITIONS, BALUSTRADES and WAINSCOTING; also, STATUARY, BRACKETS, CHANDELIERS, MANTELS, PHONOGRAPH and MUSIC CABINETS, MIRROR and PICTURE FRAMES, illuminated and otherwise; FURNITURE, DIRECTORY FRAMES for office buildings, etc.; MEMORIAL and other TABLETS, DECORATIVE METAL LACE for bathrooms, hotel and theater lobbies; ORNAMENTAL FIRE and other SCREENS, LAMP SHADES and LAMPS, ELECTROLIERS, etc.; in fact, practically every article in metal which enters into the decoration of a home, business structure, boat or ship.

ARCHITECTS BRONZE.

Architects Bronze marks an epoch in the history of modern fireproof building construction and architectural ornamentation. It is a seamless, electrically-cast product, which is indestructible and absolutely fireproof, and constitutes the latest and most noteworthy achievement in electro-chemical science, creating a new industrial situation.

This product must not be confused in any way with the results of the ordinary processes of electro-plating. With Architects Bronze we cover any substance, whether of wood, plaster, concrete, composition, papier-maché or pulp, in any desired thickness, the metal retaining every detail of the model and adhering so closely to it that the two become practically homogeneous. If desired, the core can be removed after the metal has been cast, leaving the metal shell, which is an exact reproduction of the model employed. This is a valuable feature in connection with decorative and architectural effects in which lightness of weight is essential.

ILLUSTRATIONS.

Fig. 1 represents a common pine Door and Frame covered with Architects Bronze to a thickness of B. & S. Gauge about No. 22. Surface of the door has about $31\frac{1}{2}$ sq. ft., and the frame $48\frac{1}{2}$ sq. ft. There are about 36 lbs. of copper on the door and 48 lbs. on the frame. All finished in verd-antique.

Fig. 2 illustrates a model Bust in plaster, which was duplicated and finished in Architects Bronze, the finished article being shown in Fig. 3. Both samples are on exhibition at our showrooms.

FIREPROOF QUALITIES AND OTHER SALIENT ADVANTAGES.

We call special attention to the fireproof qualities of our product. The methods heretofore employed to render wood fireproof have been inefficient. Architects Bronze is seamless, being cast in one piece; there is no solder to melt; air can not enter between the metal and the wood, therefore there can be no combustion. Many samples of wood covered with Architects Bronze have been subjected to a forced draught fire of a furnace showing a temperature of more than two thousand degrees Fahrenheit, and afterwards removed practically uninjured. No other product for which fireproof claims are made can stand such a test.



FIG. 1. COMMON PINE DOOR AND FRAME COVERED WITH ARCHITECTS BRONZE

The great demand for fireproof materials, such as plain and ornamental iron, brass, copper and bronze, has made their adoption very expensive; wood is objectionable on account of shrinking, swelling, warping, twisting and combustibility; articles made of plaster and composition are fragile and look cheap.

Wood, cork, and other forms are now being covered with metal by sheathing and pressed metal processes, or by applying metal sheets with screws, nails and solder. No articles so constructed can be fireproof when exposed to a flame, on account of air being confined between the form and the sheathing, resulting in the combustion of the form employed.

The only solution of the problem is to resort to the use of cast metals. Architects Bronze is a seamless, electrically cast metal, of any desired thickness, on a core. The core may be of wood, cork, imitation wood, asbestos, plaster, fiber, paper, or any non-metallic or non-conducting material, and does away with expensive moulds without losing any advantage of the metal.

Our product withstands the elements as effectually as does ordinary cast bronze, the metal oxidizing and becoming more and more beautiful as time goes on.

Exhaustive fire tests of samples of wood covered with Architects Bronze have been made at Columbia University, by Prof. Ira H. Woolson, in the presence of the Commissioner of Buildings, the Hon. Edward S. Murphy, and his first deputy.

The opinion was freely expressed that this test of the fireproof qualities of Architects Bronze was one of the most satisfactory ever undertaken. We will be glad to furnish copies of this official test to all interested parties.

We solicit an opportunity to present estimates on your work.

All interested persons are invited to an inspection of our exhibition at the Metropolitan Building, New York, that they may become acquainted with the possibilities of Architects Bronze. The applications here seen are calculated to satisfy an exacting and cultivated judgment and to encourage taste for better things in architectural decorations and the builder's art.

The following is a partial list of well-known concerns that have specified Architects Bronze in recent installations:

The Bradley & Hubbard Mfg. Co., Manufacturers of art metal goods, Meriden, Conn.
Hedden & Co., Contractors, New York
Tracy & Swartwout, Architects, New York
Connecticut Savings Bank, New Haven, Conn.
Notman & Co., Electroliers, New York
Westervelt & Austin, Architects, New York
Childs Co., New York and Philadelphia

Charles Snell Allen, Decorator, New York
Grosvenor Atterbury, Architect, New York
Charles J. Hestér, Decorator, New York
Harry Balfe, Bureau of Immigration, Ellis Island, New York
Pittsburg Building Company, New York and Pittsburg
Puffer Manufacturing Co., Boston

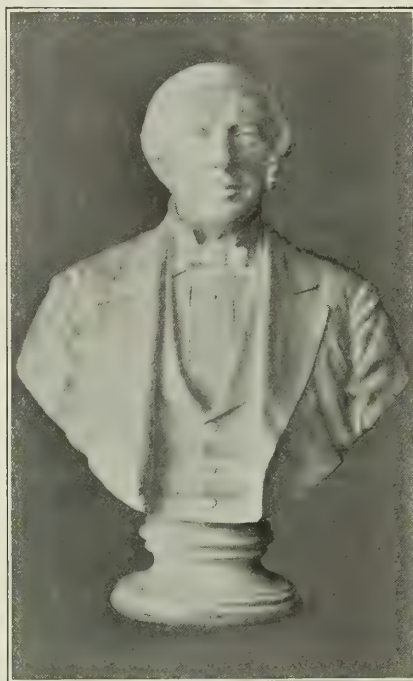


FIG. 2. MODEL BUST IN PLASTER

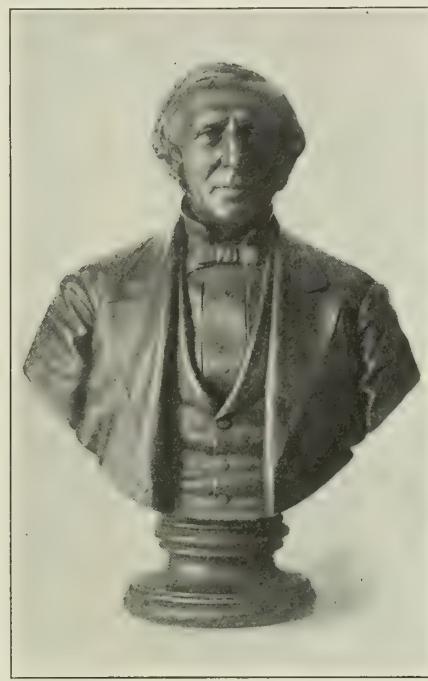


FIG. 3. THE FINISHED BUST IN ARCHITECTS BRONZE

FIRE TESTS.

ESTIMATES.

EXHIBITION.

REFERENCES.

THE WILLIAM BAYLEY COMPANY

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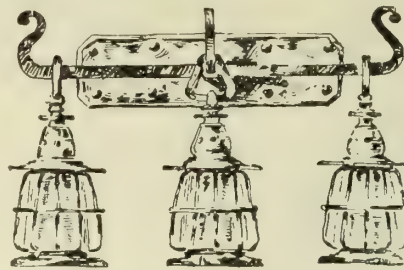


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SPECIALTY.

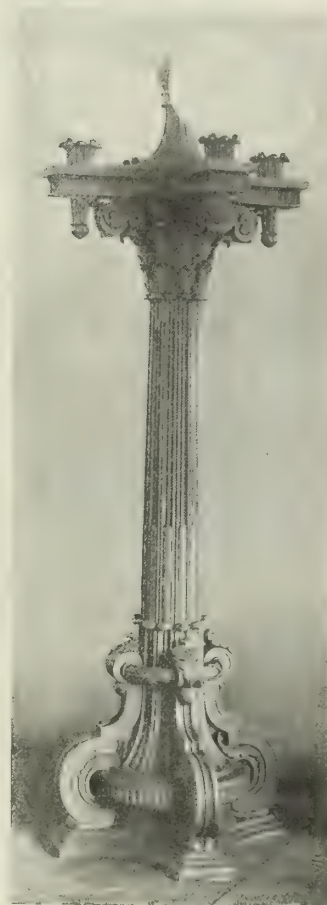
Fence and railing. We can refer those interested to prominent work in any part of the country. The entire railings of the great Manhattan Bridge, fifty car loads, are from our shops, as are thousands of feet on the Queensboro and the Williamsburgh and other prominent bridges, and in parks of the large cities.



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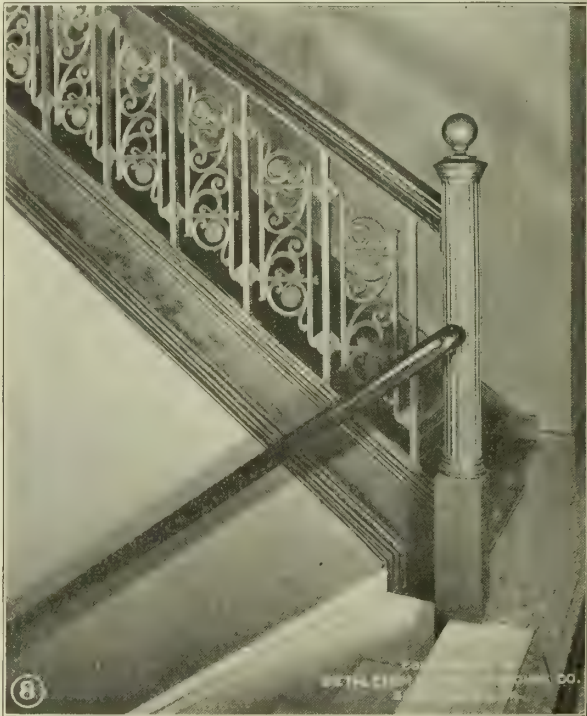
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RENWICK & ASPINWALL, Architects



STAIRWAY, HOTEL NAVARRE, 7TH AVENUE AT WEST 38TH STREET, NEW YORK, N. Y.
BARNEY & CHAPMAN, Architects

REFERENCES. The list below gives some of the buildings in which our work is installed:

BUILDING	LOCATION	ARCHITECTS
Brooklyn Institute of Arts Brunswick Building	Eastern Parkway, Brooklyn, N. Y. 5th Avenue and 26th Street, New York, N. Y.	McKim, Mead & White J. B. Snooks
Johnston Building Rogers, Peet & Co.	1170 Broadway, New York, N. Y. Broadway and 32nd Street, New York, N. Y.	Schickel & Ditmars H. J. Hardenbergh
Hoffman Building	5th Avenue and 17th Street, New York, N. Y.	York & Sawyer
Windsor Arcade	5th Avenue and 46th Street, New York, N. Y.	Charles I. Berg
Hotel Navarre	7th Avenue and 38th Street, New York, N. Y.	Barney & Chapman
French Hospital The Mansfield Russell & Erwin Building	450 West 34th Street, New York, N. Y. 12 West 44th Street, New York, N. Y. Walker and Lafayette Streets, New York, N. Y.	Welch, Smith & Provost Renwick & Aspinwall Howells & Stokes
Knickerbocker Hotel	Broadway and 42nd Street, New York, N. Y.	Marvin & Davis
Hotel Seneca Rensselaer Polytechnic Institute Weidner Memorial Home Y. M. C. A. Building	Rochester, N. Y. Troy, N. Y. Philadelphia, Pa. Washington, D. C.	Eisenwein & Johnson Lawlor & Haase Horace Trumbauer Harding & Upman



STAIRWAY, ALLENTOWN NATIONAL BANK,
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JACOBY & WEISHAMPEL, Architects



SPIRAL STAIRWAY, "GERMAN HEROLD," 22
NORTH WILLIAM STREET, NEW YORK, N. Y.
LOUIS KORN, Architect



COLONIAL STAIRWAY, HAHNEMAN HOSPITAL,
15TH STREET, NEAR RACE STREET,
PHILADELPHIA, PA.
HORACE TRUMBAUER, Architect



STORE FRONT, ROGERS, PEET & CO., BROADWAY
AT 32D STREET, NEW YORK, N. Y.
H. J. HARDENBERGH, Architect

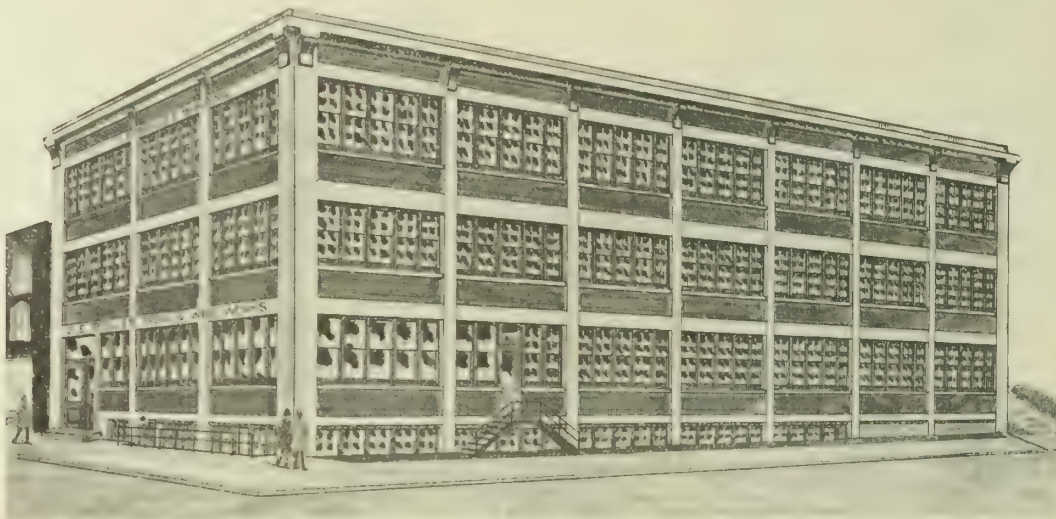
J. E. BOLLES IRON AND WIRE WORKS

Fourth Avenue and Porter Street
DETROIT, MICH.

PRODUCTS.

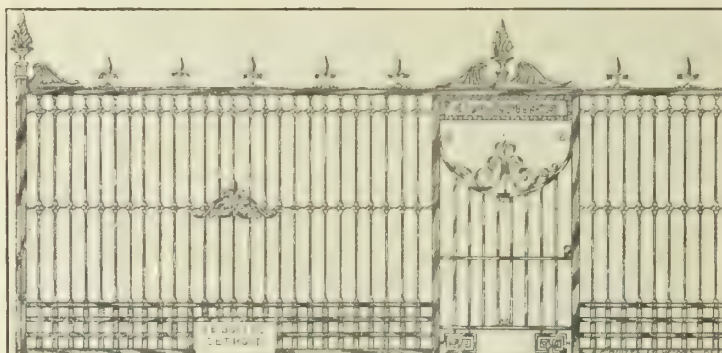
We manufacture PLAIN and ORNAMENTAL METAL WORK of every description, including BANK and OFFICE FIXTURES, ELEVATOR ENCLOSURES and CARS, STAIR and BALCONY WORK, MAUSOLEUMS, MEMORIAL TABLETS, DOORS, IRON FENCES, FIRE-ESCAPES, and LAWN FURNITURE, including all classes of plain and decorative work for exterior and interior use in BRASS, BRONZE, IRON, and STEEL, and in all the popular finishes, as well as several finishes exclusively our own.

WIRE WORK, such as BANK CAGES, OFFICE RAILINGS and PARTITIONS, ELEVATOR ENCLOSURES, ASYLUM GUARDS and CAGES, WINDOW SCREENS, WIRE SIGNS, FENCES, etc.



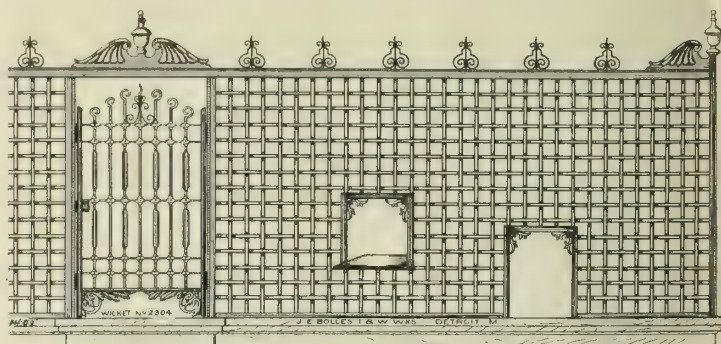
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Five departments; 41,400 square feet of floor space



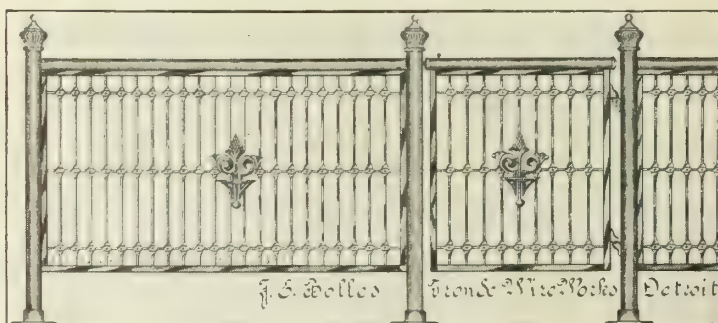
NO. 1505. DESK OR COUNTER RAILING

A very attractive design of moderate cost



NO. 1403. DESK OR COUNTER RAILING

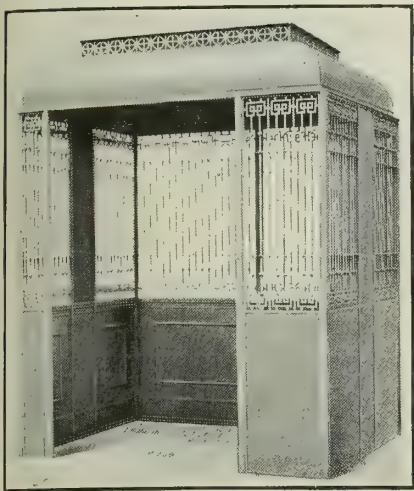
Making a substantial fixture, neat in appearance and low in price



NO. 4205. FLOOR RAILING



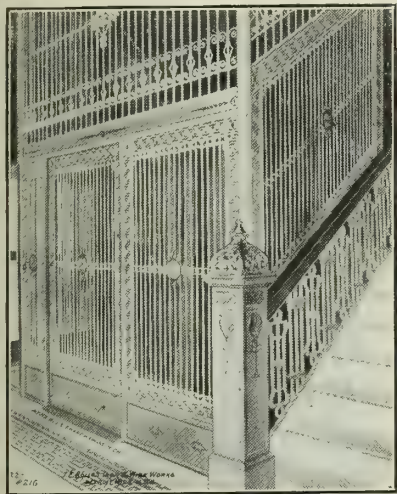
NO. 3904. BALCONY RAILING



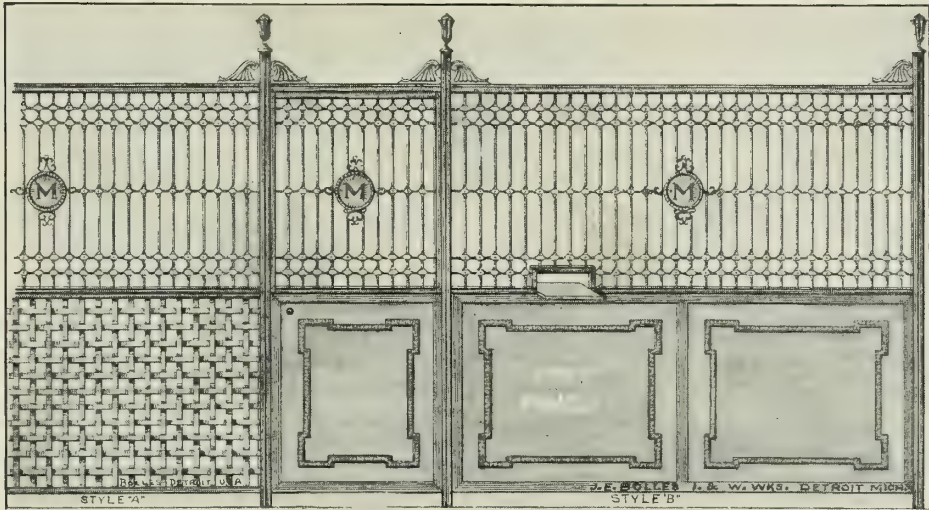
NO. 259. ELEVATOR CAR
A fine design of moderate cost



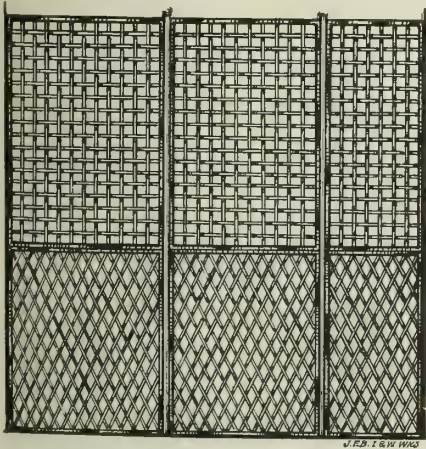
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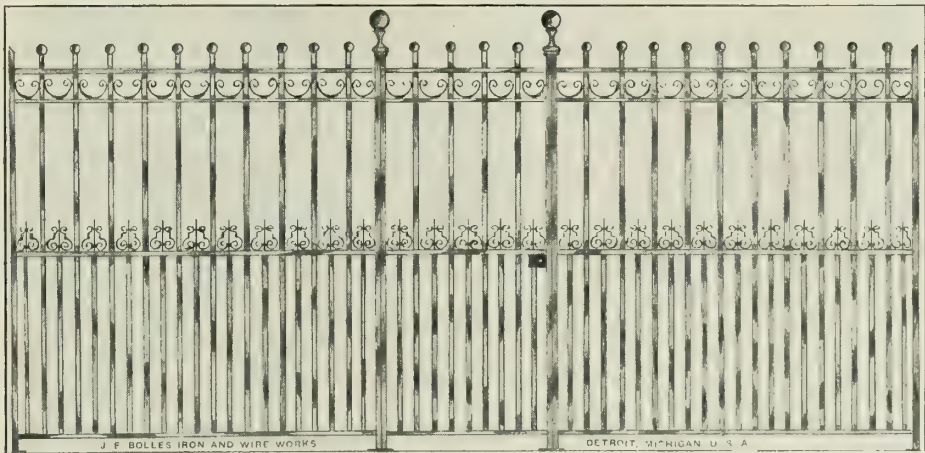
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Substantial work at low cost



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WIRE-CLOTH.

The method of measuring the mesh of wire-cloth is illustrated in the cuts herewith and will be of material value to architects and engineers in specifying this commodity.

MESH.

The term mesh in wire-cloth denotes the number of openings per lineal inch, measured from center to center of the wire, as shown on the illustration (Fig. 1) which represents three meshes per lineal inch, No. 13 gauge wire.

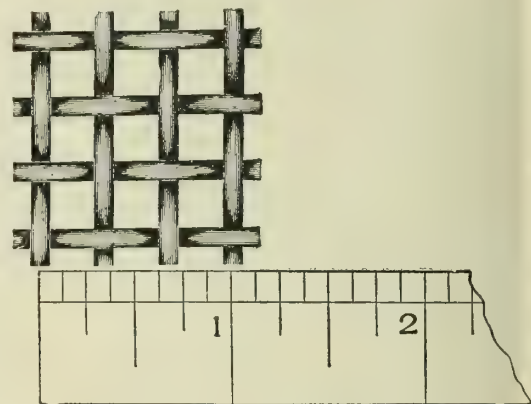


FIG. 1. METHOD OF MEASURING THE MESH OF WIRE-CLOTH

Showing three meshes per lineal inch, No. 13 Gauge wire

SPACE.

This term denotes the actual size of openings or space between the wires, and is generally applied to screen cloth listed on pages 26 to 30 of our No. 5-X catalogue as shown herewith (see Fig. 2) which represents a $\frac{3}{8}$ -inch space between wires, No. 11 gauge.

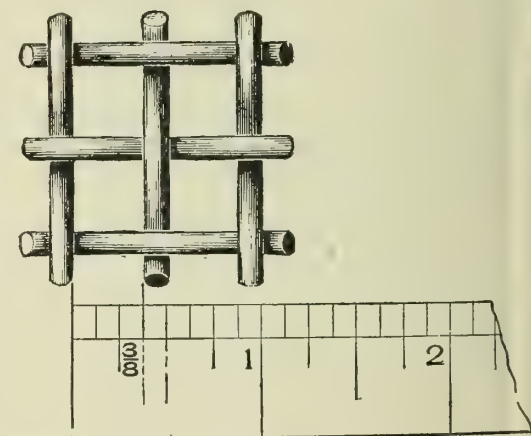


FIG. 2. METHOD OF MEASURING SPACE OF WIRE-CLOTH

Showing $\frac{3}{8}$ -inch space between wires, No. 11 Gauge wire

GAUGE.

In stating the gauge, size or number of wire wanted, it is well to adhere to the gauges adopted by the Wire-Cloth Manufacturers, which are the Washburn & Moen gauge for all Steel and Iron Wire-Cloth, and the Old England gauge for Brass and Copper Wire-Cloth. There being a number of other gauges used, however, by the different tradesmen, it is advisable to mention the decimal and then there is no possibility of a mistake. Thus: No. 10, .1350.

MATERIAL.

Made from steel (galvanized before and after weaving), brass, copper, bronze, and aluminum wire.

WIRE
GUARDS.

Wire Guards for windows in houses, factories, churches and for numerous other purposes, made in various meshes, gauges of wire and style of frames, are painted any desired color, or galvanized after being made, which adds approximately 5 cents per pound.

PRICE-LIST
AND
DETAIL OF
ROUND
FRAME.

PRICE-LIST OF WIRE GUARDS WITH ROUND IRON FRAMES, CONTAINING NOT LESS THAN NINE SQUARE FEET					
Mesh inch	Wire No.	Per square foot	Mesh inch	Wire No.	Per square foot
$\frac{3}{4}$	15	\$0.35	$1\frac{1}{4}$	10	\$0.50
$\frac{3}{8}$	14	.40	$1\frac{1}{2}$	12	.30
$\frac{3}{8}$	13	.45	$1\frac{1}{2}$	11	.35
$\frac{3}{8}$	12	.50	$1\frac{1}{2}$	10	.40
1	14	.35	$1\frac{1}{2}$	9	.45
1	13	.40	2	11	.25
1	12	.45	2	10	.30
1	11	.50	2	9	.35
$1\frac{1}{4}$	13	.35	2	8	.40
$1\frac{1}{4}$	12	.40	2	7	.45
$1\frac{1}{4}$	11	.45	2	6	.50

Discount approximate 50 per cent

PRICE-LIST
AND
DETAIL OF
CHANNEL
FRAME.

PRICE-LIST OF WIRE GUARDS WITH CHANNEL IRON FRAMES, CONTAINING NOT LESS THAN NINE SQUARE FEET							
Diamond Mesh inch	Wire No.	Frame inch	Per square foot	Diamond Mesh inch	Wire No.	Frame inch	Per square foot
$\frac{3}{4}$	15	$\frac{3}{4}$	\$0.50	$1\frac{1}{4}$	10	$\frac{3}{4}$	\$0.60
$\frac{3}{4}$	14	$\frac{3}{4}$	.55	$1\frac{1}{2}$	12	$\frac{3}{4}$	.40
$\frac{3}{4}$	13	$\frac{3}{4}$	.60	$1\frac{1}{2}$	11	$\frac{3}{4}$	.45
$\frac{3}{4}$	12	$\frac{3}{4}$	.65	$1\frac{1}{2}$	10	$\frac{3}{4}$	.50
1	14	$\frac{3}{4}$	.45	$1\frac{1}{2}$	9	$\frac{3}{4}$	.55
1	13	$\frac{3}{4}$	.50	2	11	1	.35
1	12	$\frac{3}{4}$	.55	2	10	1	.40
1	11	$\frac{3}{4}$	.60	2	9	1	.45
$1\frac{1}{4}$	13	$\frac{3}{4}$	.45	2	8	1	.50
$1\frac{1}{4}$	12	$\frac{3}{4}$	.50	2	7	1	.55
$1\frac{1}{4}$	11	$\frac{3}{4}$	.55	2	6	1	.60

Discount approximate 50 per cent

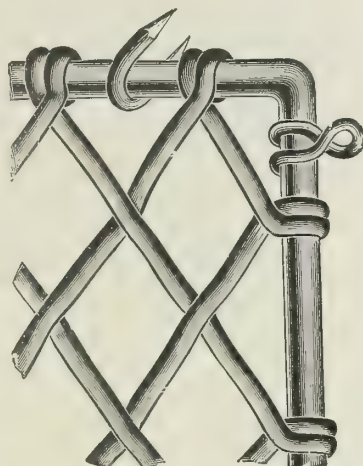


FIG. 3. NO. 257, WIRE GUARD WITH ROUND IRON FRAME

Cut shows method of fastening wire to the frame of round iron guards

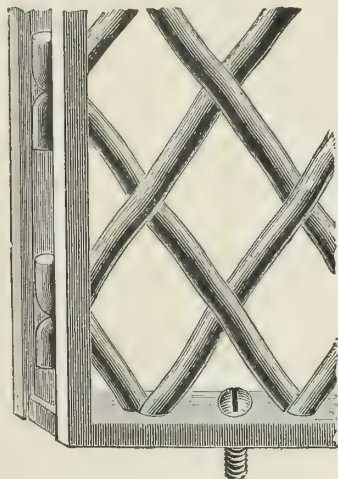


FIG. 4. NO. 261, WIRE GUARD WITH CHANNEL IRON FRAME

ESTIMATES.

As the price of Guards depends largely upon the quantity and size, we prefer to quote on specifications.

FACILITIES.

We have facilities for furnishing our goods promptly. We ship to all parts of the United States, as well as to Mexico and other foreign countries.

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DOORS AND RAILINGS. Our doors and railings are suitable for residences as well as office buildings, and are made only from special or architects' drawings.

MEMORIAL AND INSCRIPTION TABLETS. We have an increasing demand for our Memorial and Inscription Tablets. Our own designs are the results of the efforts of our best artists. We fill orders for these, however, from special designs as well as designs by architects, or from our large stock of type patterns.

ILLUSTRATIONS. The accompanying illustrations will give an idea of the character of work executed by us.

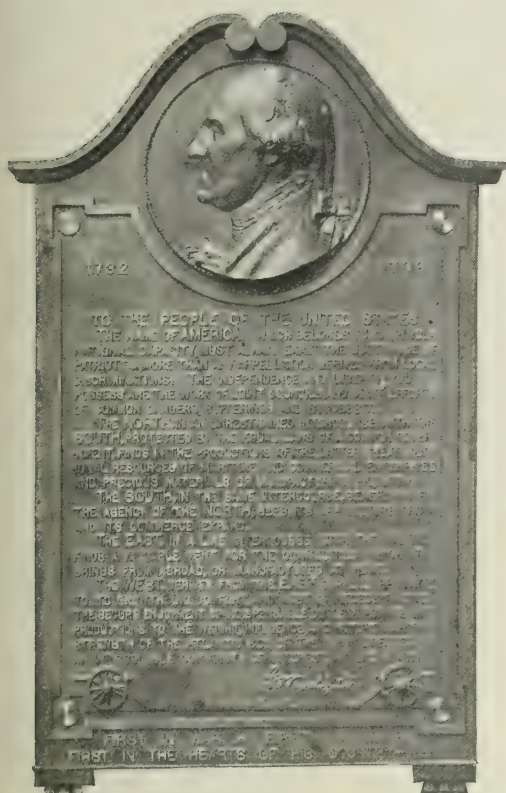
FACILITIES. Our manufacturing facilities are of the best, enabling us to fill orders of any size. There is no limitation to our territory.

CO-OPERATION. We will gladly co-operate with any architect on special designs in our general line of work.

REFERENCES. Our work has been specified by many of the leading architects, including those named in the following list; also, by all of the noted sculptors:

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Cope & Stewardson, Architects, Philadelphia, Pa.
Frank Miles Day & Bro., Architects, Philadelphia, Pa.
James H. Windrim, Architect, Philadelphia, Pa.
Furness & Evans, Architects, Philadelphia, Pa.
Hutton Addison, Architect, Philadelphia, Pa.
William L. Plack, Architect, Philadelphia, Pa.
Wilson, Harris & Richards, Architects, Philadelphia, Pa.

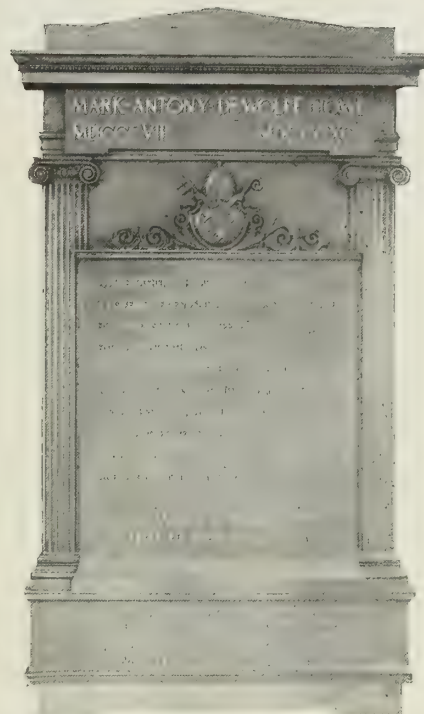
Henry D. Dagit, Architect, Philadelphia, Pa.
Schickel & Ditmar, Architects, New York, N. Y.
Brite & Bacon, Architects, New York, N. Y.
Albert R. Ross, Architect, New York, N. Y.
Charles Barton Keen, Architect, Philadelphia, Pa.
Wilson Eyre, Architect, Philadelphia, Pa.
Thomas, Churchman & Molitor, Architects, Philadelphia, Pa.



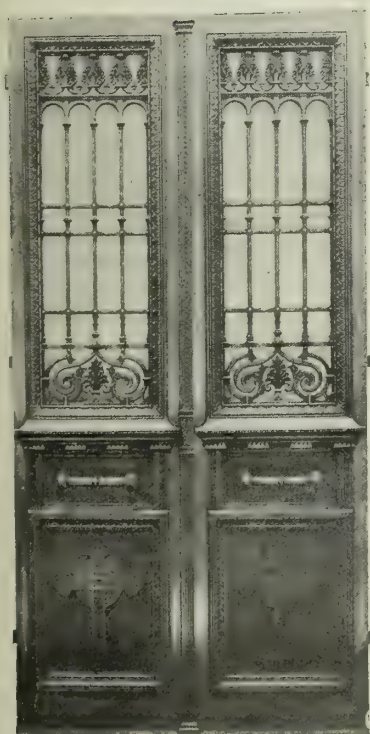
TABLET IN ESTABLISHMENT OF JOHN WANAMAKER, PHILADELPHIA, PA.



LANTERN FOR PUBLIC BUILDINGS.



TABLET IN ST. LUKE'S CHURCH, PHILADELPHIA, PA.
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CHATTANOOGA, TENN.

PRODUCTS.

Manufacturers of all kinds of ORNAMENTAL IRON and WIRE WORK, ARCHITECTURAL SHEET-METAL WORK, CORNICES, SKYLIGHTS, VENTILATORS, FINIALS, METAL CEILINGS, METAL SHINGLES, SHEET-IRON ROOFING and SIDING, "O. G." GUTTERS, CONDUCTOR PIPE, etc.; BANK and OFFICE RAILINGS, IRON STAIRWAYS for interior and exterior use; FIRE-ESCAPES, MARQUISES, AWNINGS, BALCONY RAILINGS, IRON and WIRE WINDOW GUARDS, ELEVATOR CABS and ENCLOSURES, etc. In fact, we are in a position to furnish promptly everything included in the list of Metal Building Materials.

FIRE-ESCAPES.

The illustration shows a very substantial and plain fire-escape; nevertheless it is one of the most popular designs ever put on the market and it does not cost a fortune. We have furnished a great number of these throughout the South. Owing to their simple construction they can easily be adapted to fit any and every condition. Write for prices and special information.

THE
CHATTANOOGA
LINE
TRADE-MARK

MARQUISES.

We are prepared to execute work from architects' designs and details and to submit working drawings. Special designs for all purposes upon request.

SKYLIGHTS.

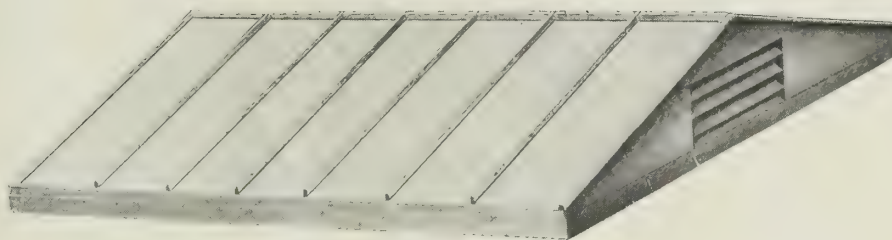
While we manufacture all kinds of Sheet-Metal Work, such as Galvanized Cornices, Finials, Crestings, Ridging, Ventilators, etc., we make Skylight Work our specialty. Our Skylights are so constructed that it is absolutely impossible for them to leak. They are made of patent leveled galvanized iron, and will not rust.

The illustrations show two out of seven of our regular stock designs, the sizes ranging from nine square feet up to any size desired. If none of our stock designs will fill your requirements we are prepared to make special designs promptly and reasonably.

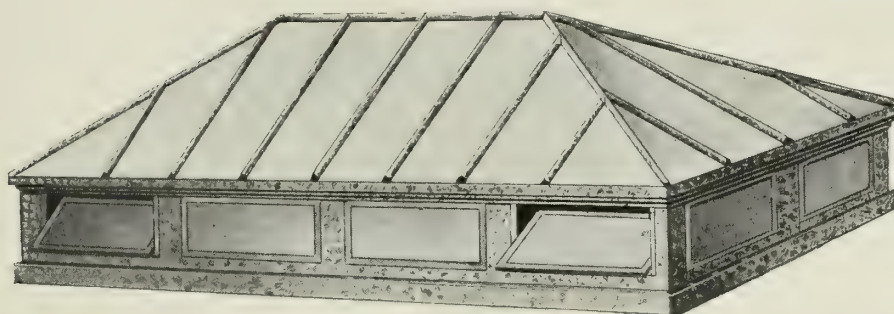
In order to fully realize the numerous sizes and styles we carry you should have our regular illustrated catalogue showing our complete line of Skylights. It will be mailed to you for the asking.



IRON FIRE-ESCAPE



DOUBLE-PITCH SKYLIGHT WITH VENTILATOR IN EACH END



HIPPED TURRET SKYLIGHT WITH STATIONARY OR MOVABLE LOUVER VENTILATORS IN SIDE AND END

PRICES.

Our goods are usually sold upon inquiry from customers who furnish us with plans and specifications to figure from, or with a letter stating their wants. Our prices are based on first-class workmanship and good material, and are invariably as low as possible.

CO-OPERATIVE SERVICE.

We manufacture these products, not only in stock designs, but also from architects' special designs and drawings. Write us about your requirements and we will make you careful and complete estimates. Our draughting department is prepared to work out any kind of design to suit individual tastes, and we take pleasure in offering its services free of charge.

FACILITIES.

Our factory is one of the most modern of its kind, being equipped with the latest and best machinery throughout. We have skilled workmen in every department, supervised by experts. Our shipping facilities are unsurpassed, as our central southern location means quick delivery by all railroads.

CHESAPEAKE IRON WORKS

MANUFACTURERS OF
Structural Iron and Steel
Bayard and Severn Streets
BALTIMORE, MD.

TELEPHONES—C. & P., GILMOR 295
Md., HENRIETTA 20

CABLE ADDRESS: "CHES.-IRON"
WESTERN UNION CODE

WORKS

BUSH STREET AND B. & O. R. R.

WASHINGTON, D. C., 1333 G Street, N. W.

BRANCH OFFICES

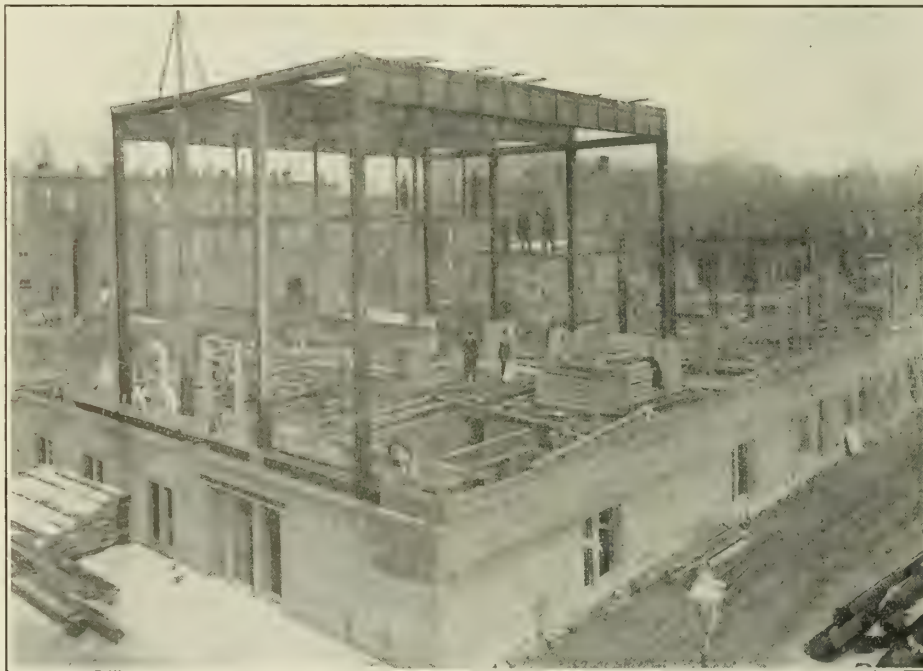
CHARLOTTE, N. C., 1000 Realty Building

PRODUCTS.

STRUCTURAL STEEL and CAST-IRON WORK of every description, including STEEL and CAST-IRON COLUMNS, POST CAPS and SHOES, BEAM-BOX GIRDERS, PLATE GIRDERS, ROOF TRUSSES, STEEL MOTOR SUPPORTS, TENSION-LINE TOWERS for support of Electric Wires, LIGHT BRIDGES, STEEL-DOME FRAMING.

FACILITIES.

Our natural market is the South, as we have very advantageous water and rail rates; as a consequence, a large percentage of our business has been secured from that section of the country, and we solicit inquiries from architects, builders and owners. We have a fully equipped structural shop with all modern appliances, and are enabled to execute work promptly, as we have a large stock of structural material always on hand for this purpose.



Y. M. C. A. BUILDING (COLORED BRANCH), WASHINGTON, D. C.

CO-OPERATIVE SERVICE.

We are in position to furnish steel structures of every description, providing our own drawings and specifications when required. We have a thoroughly capable engineering department, and are in a position to supply architects with engineering services, as well as to execute the work from designs supplied us.

REFERENCES.

The following are a few representative buildings for which we have supplied structural work:

Winter and Faris Building, Washington, D. C.
Immaculate Conception School, Washington, D. C.
Roanoke Fibre Board Co., Roanoke Rapids, N. C.
Eight-Room School Building, Mt. Pleasant, Washington, D. C.

Y. M. C. A. Building (Colored Branch), Washington, D. C.
Library for Howard University, Washington, D. C.
First National Bank, Hagerstown, Md.
Livery Stable for the Potomac Milling & Ice Co., Keyser, W. Va.

CHESAPEAKE IRON WORKS

MANUFACTURERS OF

Architectural and Ornamental Cast and Wrought Iron

Bayard and Severn Streets

BALTIMORE, MD.

TELEPHONES—C. & P., GILMOR 295
Md., HENRIETTA 20

CABLE ADDRESS: "CHES.-IRON"
WESTERN UNION CODE

WORKS

BUSH STREET AND B. & O. R. R.

BRANCH OFFICES

WASHINGTON, D. C., 1333 G Street, N. W.

CHARLOTTE, N. C., 1000 Realty Building

PRODUCTS.

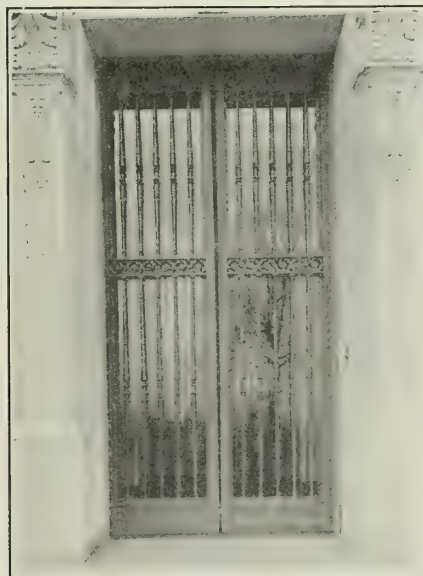
ARCHITECTURAL and ORNAMENTAL CAST and WROUGHT IRON, including STAIRWAYS, ELEVATOR ENCLOSURES, BALCONIES, GRILLES, ENTRANCE ARCHES, GATES, RAILINGS, FENCES, BANK SCREENS, PLAIN and ORNAMENTAL DOORS, MARQUISES, LAMP-POSTS, LANTERNS, FIRE SHUTTER and DOOR FIXTURES, STORE FRONTS, WINDOW GUARDS, AREA GRATINGS, Plain and Illuminating CELLAR DOORS, JOIST HANGERS, JOIST ANCHORS, STIRRUPS, BRASS and IRON PIPE RAILING, FIRE-ESCAPES.

FACILITIES.

Our efforts have been directed to the Southern market, owing to our locality, which enables us to ship via water and rail, thereby securing low freight rates, and the fact that we have studied the special requirements of our customers in that particular locality. We have facilities for undertaking work of magnitude, but the smallest orders are executed with the utmost care.



MARQUISE, HOTEL HARRIS
WASHINGTON, D. C.
A. B. MULLETT & Co., Architects



SLIDING GRILLE DOORS, GEOPHYSICAL LABORATORY, CARNEGIE INSTITUTE, WASHINGTON, D. C.
WOOD, DONN & DEMING, Architects

CO-OPERATIVE SERVICE.

We are prepared to execute work from our own and architects' designs for every character of building.

We have a well-equipped drafting department, and are in position to supply estimates, special designs and details whenever called upon to do so.

REFERENCES.

The following is a partial list of buildings which we have supplied with Ornamental Iron Work:

State Normal School, Harrisonburg, Va.
Talmuh Torah Society Building, Baltimore, Md.
Enoch Pratt Library, Branch No. 12, Baltimore, Md.

Wardman Apartment House, Washington, D. C.
Standard Oil Company Building, Baltimore, Md.

THE FERROSTEEL COMPANY

Craftsmen in Cast Bronze, Brass, Iron and Wrought Steel
CLEVELAND, OHIO

PRODUCTS.

REGISTERS, VENTILATORS, SCREENS, GRILLES, BANK RAILINGS, TABLETS, SIGNS, SEPARATE BRONZE LETTERS, FIGURES, DOORS, GATES, MEDALLIONS, NEWEL POSTS, BALUSTRADES, MONUMENTAL BRONZE WORK, FOUNTAINS, SUN-DIALS, FRIEZES, CAPITALS, and BRACKETS.

DESIGNS.

In addition to stock designs, we manufacture special designs in strict accordance to architects' and engineers' drawings.

FACILITIES.

We can fill all ordinary specifications for registers, ventilators, screens, and grilles in any of our well-known designs from regular stock in either iron, steel, brass or bronze.

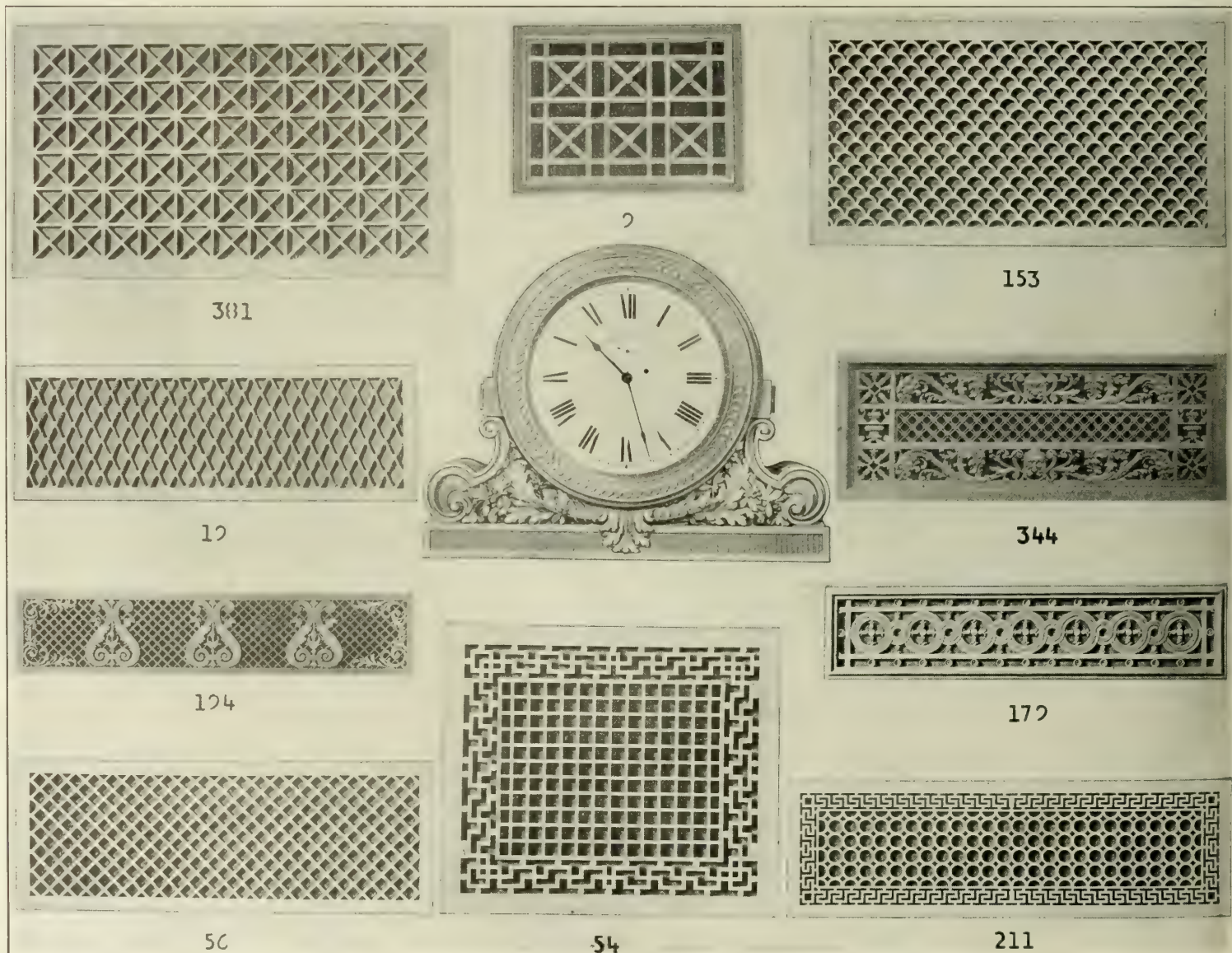
TERRITORY.

We execute orders in any part of the United States or Canada.

PRICES AND CO-OPERATIVE SERVICE.

Our stock goods sold subject to regular discounts. Estimates promptly and cheerfully furnished architects and engineers for either special designs or regular stock, upon receipt of data.

Catalogues, showing lists or sizes and tables of extreme dimensions, sent on application.



A FEW EXAMPLES OF OUR PRODUCTS

THE HENRY-BONNARD BRONZE COMPANY

Architectural Bronze and Iron Work of Every Description

MAIN OFFICE, FOUNDRY AND WORKS

MT. VERNON, N. Y.

NEW YORK OFFICE, 49 Wall Street

PRODUCTS.

Manufacturers of ORNAMENTAL BRONZE and IRON WORK of every description and of the highest standard for private and public buildings, comprising:

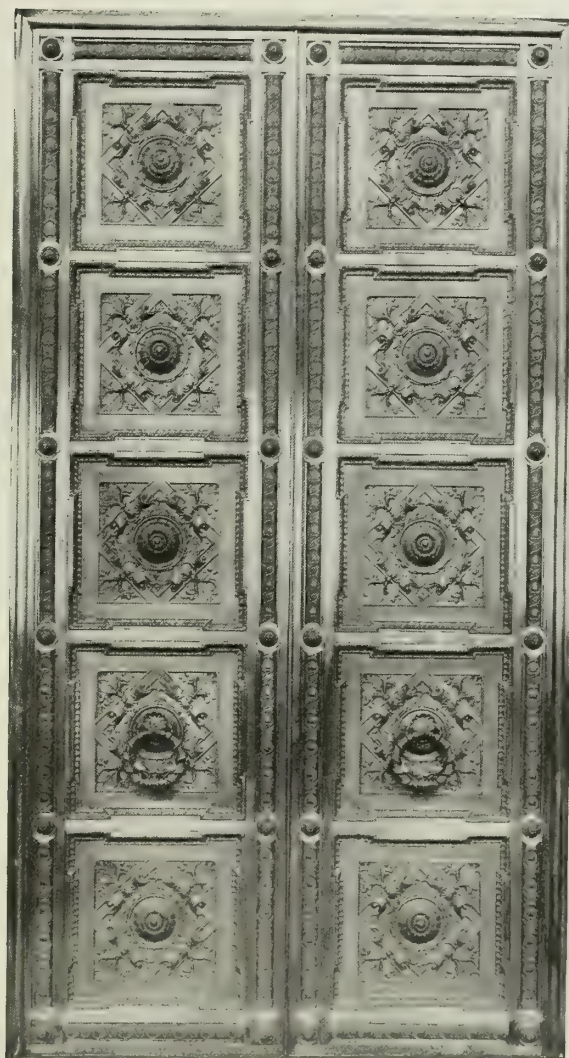
ELEVATOR ENCLOSURES, ELEVATOR CARS, STAIRWAYS, BALUSTRADES and RAILINGS, ENTRANCES, GATES and DOORS, MARQUISES, LAMP STANDARDS and ELECTROLIERS, BANK-COUNTER SCREENS, STORE FRONTS, WINDOW FRAMES and SASH, FENCES, GRILLES, MAUSOLEUM DOORS, MEMORIAL TABLETS and SIGNS, MONUMENTAL WORK, ART in BRONZE and WROUGHT IRON, BRONZE STATUARY and FIGURES.

FACILITIES.

With a new and modern plant, equipped with the latest type of machinery and tools, we are enabled to execute contracts of any size in any part of the United States and Canada.

REFERENCE.

NOTE—The bronze work for the New York Public Library, Fifth Avenue and 40th to 42d Streets, New York City, Carrère and Hastings, Architects (the largest contract in this line ever awarded), is being executed by THE HENRY-BONNARD BRONZE COMPANY.



BRONZE DOOR—NEW YORK PUBLIC LIBRARY
CARRÈRE & HASTINGS, Architects

J. W. FISKE IRON WORKS

Manufacturers of Ornamental Iron, Brass and Bronze Work

56-58 Park Place

NEW YORK, N. Y.

PRODUCTS.

ORNAMENTAL IRON, BRASS and BRONZE WORK of every description, including FOUNTAINS, DRINKING FOUNTAINS, SANITARY DRINKING FOUNTAINS, AQUARIA, VASES, SUN-DIALS; STATUARY, embracing Animal Figures, as Deer, Dogs, Lions, etc.; SETTEES, PARK BENCHES, TREE GUARDS, LAWN ROLLERS, TURNSTILES, BRONZE TABLETS, RAILINGS, ENTRANCE GATES, GRILLES, MARQUISES, IRON ENTRANCE DOORS; FIRE-ESCAPES, WINDOW and DOOR GUARDS, LIGHTNING-RODS, WEATHER-VANES, LAMP STANDARDS, LAMPS, LAMP BRACKETS, UMBRELLA STANDS, STABLE FITTINGS, COW-BARN FITTINGS, HITCHING-POSTS, IRON STREET-SIGN POSTS, FIRE-IRON STANDS, ANDIRONS.

SPECIAL WORK.

We also make to order, in Wrought or Cast Iron, anything in our line from architects' special designs.

FINISHES.

Stock goods are furnished in all finishes.



DRINKING FOUNTAIN FOR MAN, HORSE AND DOG
One of our popular designs



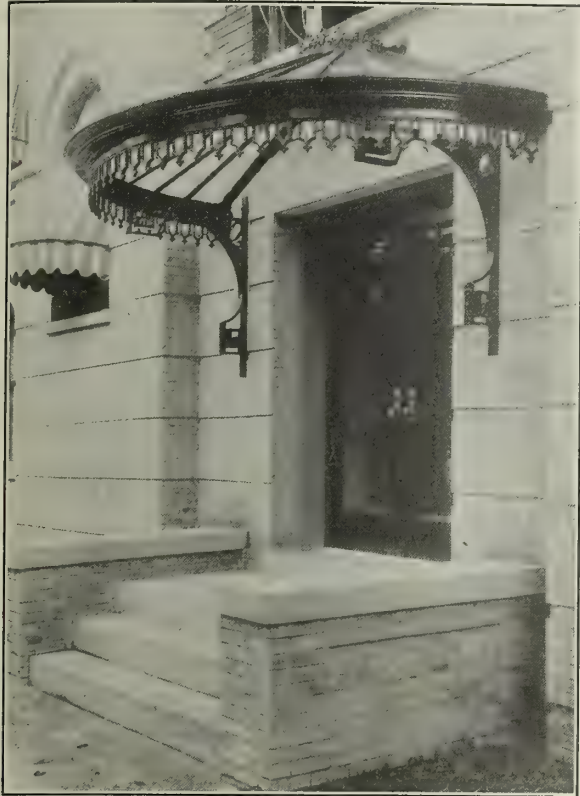
INTERIOR OF AN UP-TO-DATE STABLE
ERNEST WOODYATT, Architect



ENTRANCE GATES WITH LAMPS, ESTATE OF F. G. BOURNE,
OAKDALE, L. I. ERNEST FLAGG, Architect



VASES AT ENTRANCE TO THE "DAKOTA"
72D STREET WEST, NEW YORK, N. Y.



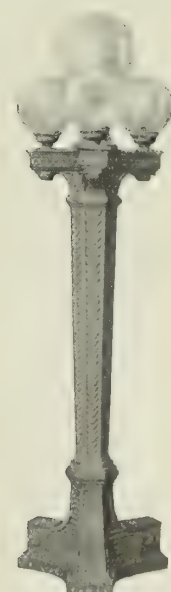
ORNAMENTAL IRON MARQUEE
Designed by EDWIN A. QUICK & SONS, Architects



LAMPS AND BRACKETS AT ENTRANCE TO
BOROUGH HALL, ST. GEORGE, S. I.
CARRÈRE & HASTINGS, Architects



PARK FOUNTAIN ERECTED AT KINGSTON, ONT., AND
PARKERSBURG, W. VA.
One of our larger and more expensive Fountains. Our own design



ELECTRIC LIGHT STANDARD
A specialty. One of many artistic
designs

FLOUR CITY ORNAMENTAL IRON WORKS

Ornamental Iron and Bronze
MINNEAPOLIS, MINN.

PAID UP CAPITAL, \$250,000



NEW PLANT OF FLOUR CITY ORNAMENTAL IRON WORKS

BRANCH OFFICES
ST. LOUIS, MO.
CHICAGO, ILL.
NEW ORLEANS, LA.
KANSAS CITY, MO.
SAN FRANCISCO, CAL.

BRANCH OFFICES
SEATTLE, WASH.
DAYTON, OHIO
DULUTH, MINN.
WINNIPEG, CAN.
VANCOUVER, B. C.

PRODUCTS.

Manufacturers of ORNAMENTAL IRON and BRONZE WORK, including the following which are our specialties: STAIRS, ELEVATOR CARS and ENCLOSURES, MARQUISES, STORE FRONTS, TABLETS, GRILLES, LAMPS, GATES, FENCES, and RAILINGS.

FACILITIES.

We have one of the best equipped plants in the West, and employ a large corps of skilled mechanics, modelers, designers, and engineers. We have excellent facilities not only for manufacturing but for devising and originating designs and methods of construction.

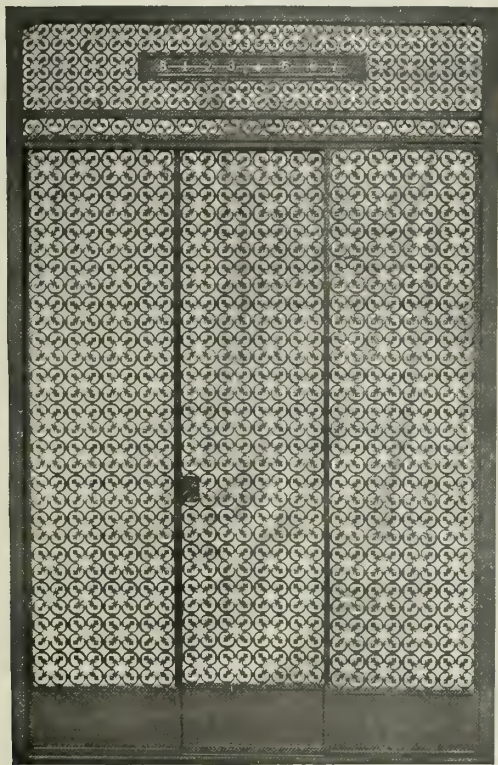
RECENT WORK.

The following is a partial list of the more prominent buildings in which our work may be seen:

BUILDING	LOCATION	ARCHITECT
First National Bank	Minneapolis, Minn.	Robert W. Gibson
Franklin Building	Seattle, Wash.	E. W. Houghton
Raymuth Apartment	St. Louis, Mo.	Geo. W. Hellmuth
Scarritt Building	Kansas City, Mo.	Root & Siemens
University of Minnesota, Main Bldg.	Minneapolis, Minn.	C. H. Johnston
Arcade Building	Seattle, Wash.	Saunders & Lawton
Municipal Building	Washington, D. C.	Cope & Stewardson
Filtration Plant	Pittsburg, Pa.	Rutan & Russell
Ely-Walker Building	St. Louis, Mo.	Eames & Young
Palace Clothing House	Minneapolis, Minn.	F. B. & L. L. Long
Supreme Court Building	Springfield, Ill.	W. Carby's Zimmerman
State Savings Bank	Butte, Mont.	Link & Haire
Capper Building	Topeka, Kan.	Holland & Squires
McDougal & Southwick Building	Seattle, Wash.	James M. Corner
Corbett Building	Portland, Ore.	Whidden & Lewis
Darke Building	Regina, Can.	Darling & Pearson
Baldwin Building	Portland, Ore.	Whidden & Lewis
Standard Furniture Co. Building	Seattle, Wash.	A. W. Gould
L. S. Donaldson Building	Minneapolis, Minn.	Kees & Colburn
Columbus Public Library	Columbus, Ohio	Albert Randolph Ross
Minnesota State Capitol	St. Paul, Minn.	Cass Gilbert
Northwestern National Bank	Minneapolis, Minn.	Kees & Colburn
Ouray Building	Washington, D. C.	Townsend, Steinle & Haskell
Odd Fellows Building	Honolulu, H. I.	O. G. Traphagen
Security Bank Building	Minneapolis, Minn.	F. B. & L. L. Long
Sinton Hotel	Cincinnati, Ohio	Frank M. Andrews
Stoneleigh Court Apartment House	Washington, D. C.	J. G. Hill
United States Mint	Denver, Colo.	James Knox Taylor
Pardrige & Blackwell Building	Detroit, Mich.	Field, Hinchman & Smith
Syndicate Trust Building	St. Louis, Mo.	H. F. Roach
Emporium Building	San Francisco, Cal.	Albert Pissis
Sellwood Building	Duluth, Minn.	W. A. Hunt
Columbia Theater	St. Louis, Mo.	Barnett, Haynes & Barnett
Grain Exchange	Winnipeg, Can.	Darling & Pearson
United States Senate Office Building	Washington, D. C.	Carrère & Hastings
United States Treasury Building	Washington, D. C.	James Knox Taylor
United States Post Office	Los Angeles, Cal.	James Knox Taylor
United States Custom House	San Francisco, Cal.	Eames & Young
Exchange National Bank	Colorado Springs, Colo.	Shepley, Rutan & Coolidge
Hotel Radisson	Minneapolis, Minn.	Long, Lamoreaux & Long
Henry Building	Seattle, Wash.	Howell & Stokes
Mechanics' American National Bank Building	St. Louis, Mo.	Mauran & Russell
Gresham Apartments	Richmond, Va.	Caneal & Johnston
Old National Bank Building	Spokane, Wash.	D. H. B.

ILLUSTRATIONS.

The illustrations given below are intended to convey an idea of the character of ornamental iron and bronze executed by us.



ELEVATOR ENCLOSURE, EXCHANGE NATIONAL BANK, COLORADO SPRINGS, COLO.

SHEPLEY, RUTAN & COOLIDGE, Architects



BRACKET LAMP, CROMBIE BUILDING, MINNEAPOLIS, MINN.

KEES & COLBURN, Architects



CAST-IRON TRANSOM PANEL OVER MAIN ENTRANCE HENRY BUILDING, SEATTLE, WASH.

HOWELLS & STOKES, Architects

THE GORHAM CO ARCHITECTURAL BRONZE

GORHAM BUILDING

Fifth Avenue at Thirty-Sixth Street

NEW YORK, N. Y.

BRANCH OFFICES

CHICAGO, 131 Wabash Avenue

ST. LOUIS, 1401 Pierce Building

SAN FRANCISCO, 1103 Broadway, Oakland

MAIN OFFICES, FOUNDRIES AND PLANT

ELMWOOD STATION

PROVIDENCE, R. I.

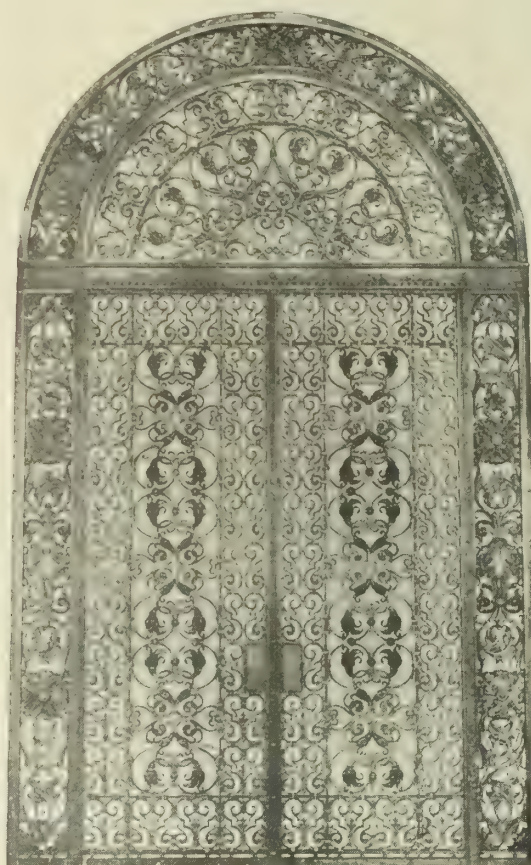
PRODUCTS.

We are manufacturers of BRONZE WORK of every description, ART, DECORATIVE, ARCHITECTURAL, MONUMENTAL, SCULPTURAL, and COLOSSAL, and include a range of objects from the most delicate art handling to the largest and most extensive works that can be produced in BRONZE, BRASS, GERMAN SILVER, or the ALLOYS. Our more strictly Architectural Work includes DOORS, WINDOWS, SCREENS, GRILLES, RAILINGS, MAUSOLEUM DOORS and MORTUARY WORK, TABLETS, SIGNS, FOUNTAINS, DIALS, ENCLOSURES, STAIRS, LAMPS, BANK WORK, etc., etc.



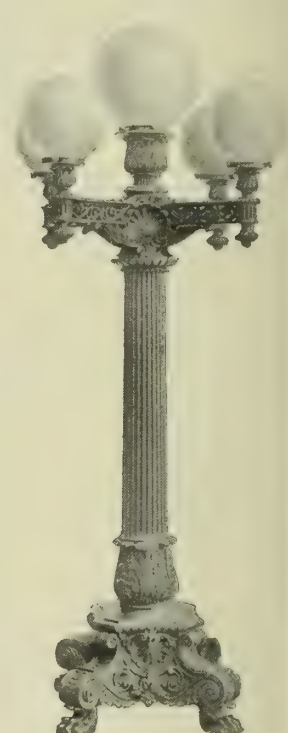
ASTOR LAMP
STANDARD,
LONGACRE SQUARE,
NEW YORK, N. Y.

H. WALLEN, Architect



MAIN ENTRANCE GATES, COLT-MORGAN
MEMORIAL

BENJAMIN W. MORRIS, Architect

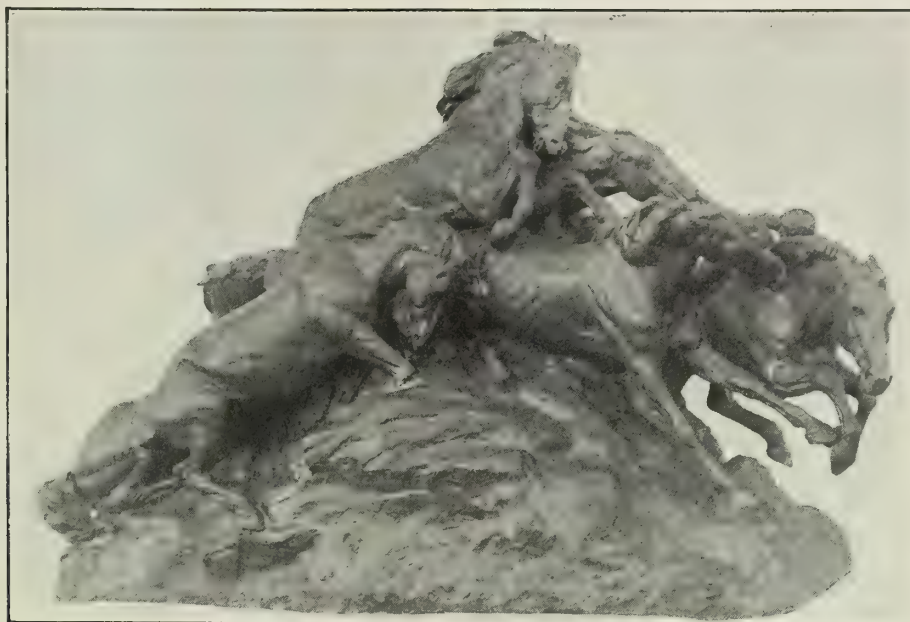


BRONZE ELECTROLIER
TROWBRIDGE & LIVINGSTONE,
Architects

FACILITIES.

The facilities of the Company for producing Bronze are unequalled; our foundries and shops are equipped to handle work of every character. This equipment, combined with our control of various patents and processes, gives us advantages that are exceptional and unique.

We can cast (by patent process), in "healthy" metal, Ornamental Bronze having "undercut" sections at the price of ordinary "flat" ornament; thus offering to the designer possibilities that have heretofore been considered prohibitive.



BRONZE GROUP, "MARES OF DIOMEDES"
GUTZON BORGLUM, Sculptor

A STANDARD
OF CON-
STRUCTION.

TRADE-
MARKS.

THE GORHAM
STAMP.

CO-OPERATIVE
SERVICE.

REFERENCES.

Gorham Standard Monumental Construction, Gorham Standard Architectural Construction, and Gorham Standard Commercial Construction offer classifications in Architectural Bronze that assure a specifically graded handling as to construction and cost that is adapted to works of varied character and is the practical solution of this troublesome point.



GORHAM STANDARD
MONUMENTAL



GORHAM STANDARD
ARCHITECTURAL



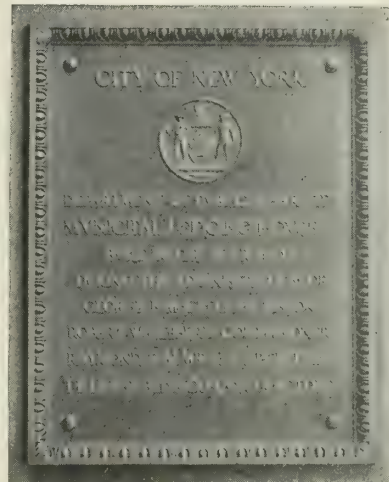
GORHAM STANDARD
COMMERCIAL

Bronze work bearing any of the above stamps may be known to have a specific handling of the first class that is distinctive as to workmanship and material and that assures the Architect and Owner of a well-defined value.

The services of our Directing Architect and a corps of specialists are at the disposal of Architects and prospective purchasers. Requests for information, designs or estimates will receive prompt attention.

Our commissions include some of the most noted examples of American Bronze production of recent years, and we number among our patrons the greatest names in the Nation's Art and Architecture.

Among our more recent orders for Architectural Bronze we name a few of the more prominent:



BRONZE TABLET
R. F. ALMIRALL, Architect
ARCHITECT

BUILDING
Cleveland Post Office
New York Public Library Approaches
Colt-Morgan Memorial
Emigrants' Industrial Savings Bank
First National Bank
Municipal Building
United States Naval Academy, Doors
School of Mines Building of Pittsburg
Spreckels Residence
Virginia Bank & Trust Co.
City National Bank
Rockefeller Temple and Fountain
Second National Bank
Entrance Gates University City
Wanamaker Mausoleum
Atlanta Post Office
Russell Sage Mausoleum

LOCATION
Cleveland, Ohio
New York, N. Y.
Hartford, Conn.
New York, N. Y.
Youngstown, Ohio
Trenton, N. J.
Annapolis, Md.
Pittsburg, Pa.
San Francisco, Cal.
Norfolk, Va.
Knoxville, Tenn.
Pocantico Hills, N. Y.
Hoboken, N. J.
St. Louis, Mo.
Philadelphia, Pa.
Atlanta, Ga.
Troy, N. Y.

ARCHITECT
Arnold W. Brunner
Carrère & Hastings
Benjamin W. Morris
Raymond F. Almirall
Albert Kahn
Spencer Roberts
Ernest Flagg
Palmer & Hornbostel
Reed Brothers
Wyatt & Nolting and Taylor & Hepburn
Mowbray & Uffinger
Wm. W. Bosworth
Max J. Beyer
Eames & Young
Jas. T. Windrim
James Knox Taylor
H. Q. French

HEATH-JOHNSON COMPANY

INCORPORATED 1904

Manufacturers of Ornamental Iron and Bronze

GENERAL OFFICES AND WORKS

Ontario and Franklin Streets

CHICAGO, ILL.

TELEPHONE, NORTH 1764

PRODUCTS. ORNAMENTAL IRON and BRONZE WORK, including the following which are our specialties: ELEVATOR ENCLOSURES, ELEVATOR CABS, STAIRS, BALUSTRADES, STORE FRONTS, GRILLES, LAMPS, GATES, BRASS and IRON RAILINGS, THEATER RAILS, TABLETS, SIGNS, CANOPIES, BRONZE BANK SCREENS, ELECTROLIERS, BRONZE DOORS.

FACILITIES. Our works are complete in every respect, including Foundry, Plating, Finishing, Designing and Modeling Departments, under one roof, which enables us to give personal supervision to all the work.

ILLUSTRATIONS. The illustrations shown on the following three pages are intended to convey an idea of the character of work executed by us.

ESTIMATES. We will be pleased to furnish estimates upon any class of goods in our line and upon any size contracts.

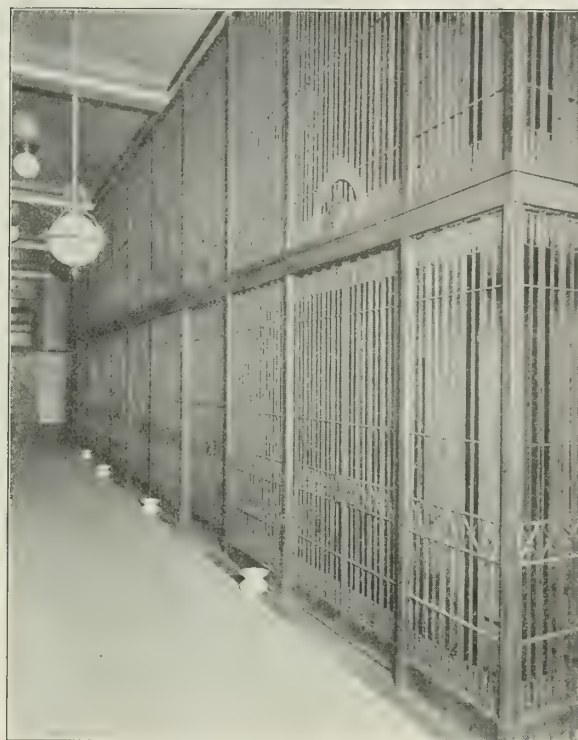
TERRITORY. We will execute contracts in any part of the United States and Canada.

REFERENCES. The following is a partial list of our recent work and we refer to any of the architects mentioned:

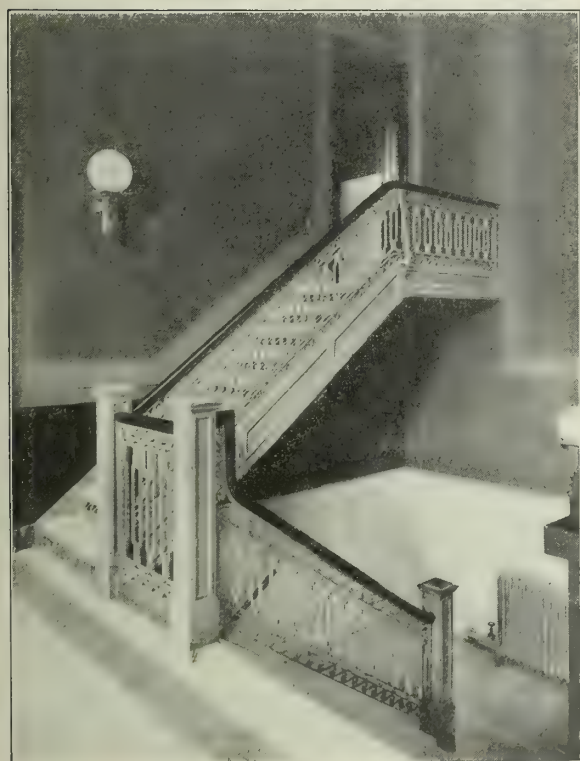
BANKS	LOCATION	ARCHITECT
Chicago City Bank	Chicago, Ill.	Worthmann & Steinbach
Des Moines National Bank	Des Moines, Iowa	Liebbe, Nourse & Rasmussen
The National Bank of the Republic	Chicago, Ill.	Weary & Alford Co.
Fresno National Bank	Fresno, Cal.	Weary & Alford Co.
German American Trust & Savings Bank	Indianapolis, Ind.	Weary & Alford Co.
Exchange National Bank	Atchison, Kan.	Weary & Alford Co.
Trevett-Mattis Bank	Champaign, Ill.	C. M. Lewis
People's Bank	Belvidere, Ill.	Wollaeger Mfg. Co.
Everett National Bank	Everett, Wash.	Wollaeger Mfg. Co.
National Bank of Commerce	Pittsburg, Kan.	Wollaeger Mfg. Co.
Second National Bank	Danville, Ill.	Liese & Ludwick
State Savings Bank	Butte, Mont.	Weary & Alford Co.
Home National Bank	Elgin, Ill.	Wollaeger Mfg. Co.
Evanston State Bank	Evanston, Ill.	Phillips, Rogers & Woodyatt
Will County National Bank	Joliet, Ill.	Julian Barnes
First National Bank of Englewood	Chicago, Ill.	Julian Barnes
Lumberman's National Bank	Portland, Ore.	John Vogt & Co.
MERCANTILE BLDGS., THEATERS AND HOSPITALS		
The Railway Terminal Co., Warehouse	Chicago, Ill.	Nimmons & Fellows
Arthur Dixon Building Co.	Chicago, Ill.	Nimmons & Fellows
W. M. Hoyt Co.	Chicago, Ill.	Nimmons & Fellows
James A. Patten	Chicago, Ill.	H. B. Wheelock
Midland Building	Kansas City, Mo.	D. H. Burnham & Co.
Commonwealth Edison Co. (three buildings)	Chicago, Ill.	Shepley, Rutan & Coolidge
Werner Bros. Warehouse	Chicago, Ill.	George S. Kingsley
Cort Theater	Chicago, Ill.	J. E. O. Pridmore
College Theater	Chicago, Ill.	J. E. O. Pridmore
Kuntz-Remmler Building	Chicago, Ill.	W. J. Brinkman
Municipal Court Building	Chicago, Ill.	Jenney, Mundie & Jensen
Kesner Building	Chicago, Ill.	Jenney, Mundie & Jensen
Baum Building	Danville, Ill.	Jenney, Mundie & Jensen
Hirsh Wickwire Building	Chicago, Ill.	Jenney, Mundie & Jensen
Presbyterian Hospital	Chicago, Ill.	Shepley, Rutan & Coolidge
Automobile Club	Chicago, Ill.	Marshall & Fox
Ginn & Co. Building	Chicago, Ill.	Howard VanDoren Shaw
Evanston Public Library	Evanston, Ill.	Phillips, Rogers & Woodyatt
Augustana Hospital	Chicago, Ill.	L. G. Hallberg
Michael Reese Hospital	Chicago, Ill.	Richard E. Schmidt, Garden & Martin
Alexian Bros. Hospital	Chicago, Ill.	Richard E. Schmidt, Garden & Martin
Correspondence Schools	Chicago, Ill.	Pond & Pond
Crane-Cretche Building	Chicago, Ill.	Pond & Pond
RESIDENCES		
R. T. Crane, Jr.	Chicago, Ill.	Shepley, Rutan & Coolidge
J. Ogden Armour	Lake Forest, Ill.	Arthur Heun
Harold F. McCormick	Lake Forest, Ill.	Charles A. Platt
Mark S. Willing	Lake Forest, Ill.	Frost & Granger



BRONZE ENTRANCE, FIRST NATIONAL BANK OF
ENGLEWOOD, ILL.
JULIAN BARNES, Architect



ELEVATOR ENCLOSURES, MUNICIPAL COURT
BUILDING, CHICAGO, ILL.
JENNEY, MUNDIE & JENSEN, Architects



IRON STAIRS, EVANSTON (ILL.) STATE BANK
PHILLIPS, ROGERS & WOODYATT, Architects



BRONZE TABLET
D. H. BURNHAM & Co., Architects



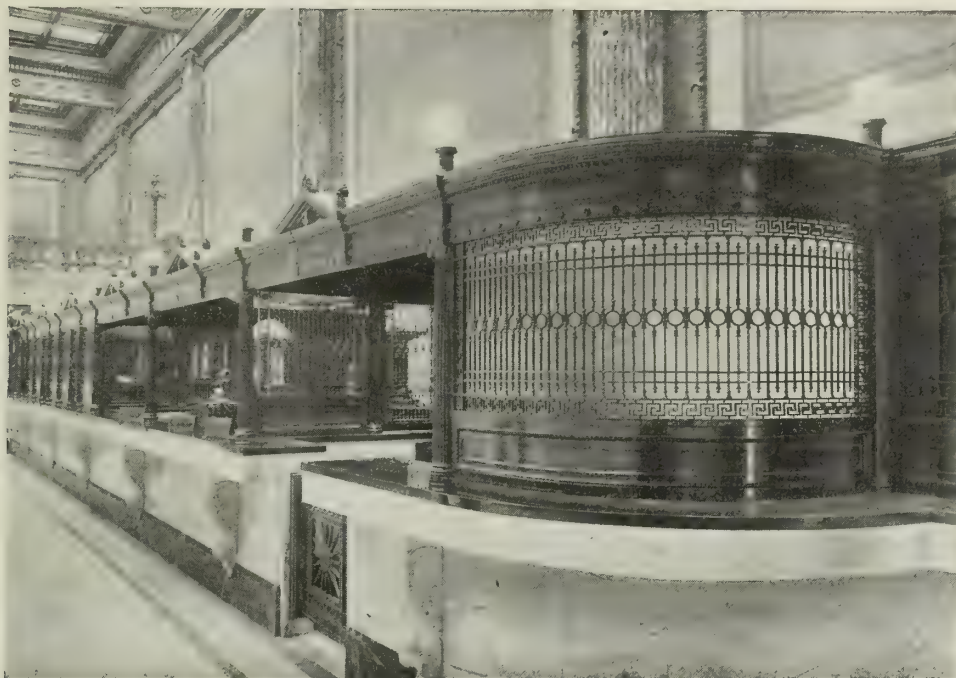
HEATH-JOHNSON COMPANY MODELING ROOM



BRONZE ELECTROLIER, FIRST NATIONAL BANK OF
ENGLEWOOD, ILL.
JULIAN BARNES, Architect



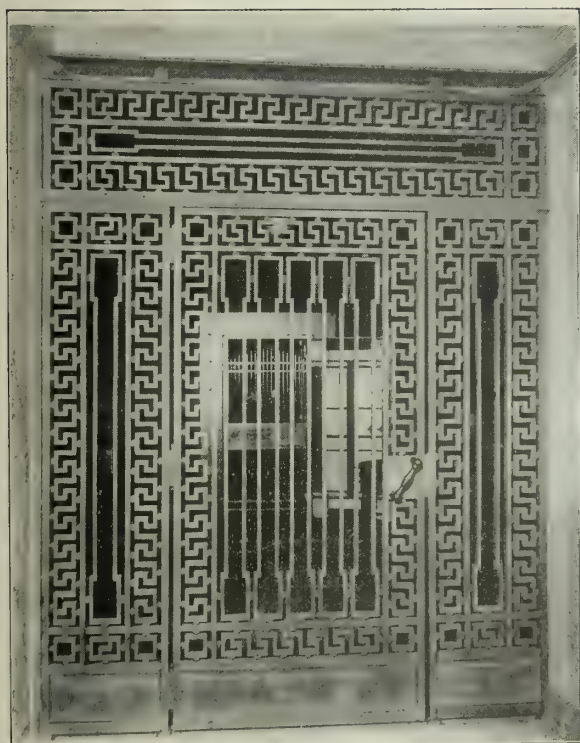
BRONZE RADIATOR GRILLE
JENNEY, MUNDIE & JENSEN, Architects



BRONZE COUNTER SCREEN, FIRST NATIONAL BANK OF ENGLEWOOD, ILL.
JULIAN BARNES, Architect



SIGN
D. H. BURNHAM & Co., Architects



SAFE DEPOSIT RAIL, EVANSTON (ILL.) STATE BANK
PHILLIPS, ROGERS & WOODYATT, Architects



COLLEGE THEATER CANOPY
J. E. O. PRIDMORE, Architect

HECLA IRON WORKS

Iron, Steel and Bronze Work

OFFICE AND WORKS

118 North 11th Street

BROOKLYN, N. Y.

TELEPHONE, 490 GREENPOINT

FOUNDED 1876

PRODUCTS.

BRONZE, IRON or STEEL STAIRS; ELEVATOR ENCLOSURES and CARS; FRONT WORK for Buildings; BANK COUNTER SCREENS; MARQUISES; DOORS; GATES; FENCES; RAILINGS; GRILLES; LAMP STANDARDS and BRACKETS; TABLETS; FIREPROOF WINDOW FRAMES and SASHES; "ALLBALL" and "HECLA" ELEVATOR DOOR HANGERS; PATENTED ELEVATOR DOOR LATCHES; and all ARCHITECTURAL and ORNAMENTAL WORK in these metals for Buildings, Grounds or Estates.

SPECIAL WORK.

When in doubt where to get special work done send to the HECLA IRON WORKS.

FACILITIES.

Our Works cover an actual operating area of four acres and are equipped with tools and appliances to enable us to meet the latest and largest demands and to make our special products. We aim to obtain the best results as to completeness and to be on time. We employ only experts and skilled men in our departments for designing, constructing and draughting, modeling, pattern making, moulding and casting, heavy, light and ornamental blacksmithing, drop forging, fitting, grille and wire work, grinding and polishing, sand-blasting, galvano-bronze deposition, electroplating and finishing and Bower Barffing. We also have heavy draw benches and furnaces for making tubes and special shapes.

CONTRACTS.

We contract for delivery and erection, or for delivery only, in any part of the United States, Canada, South America, Europe and South Africa.

ESTIMATES.

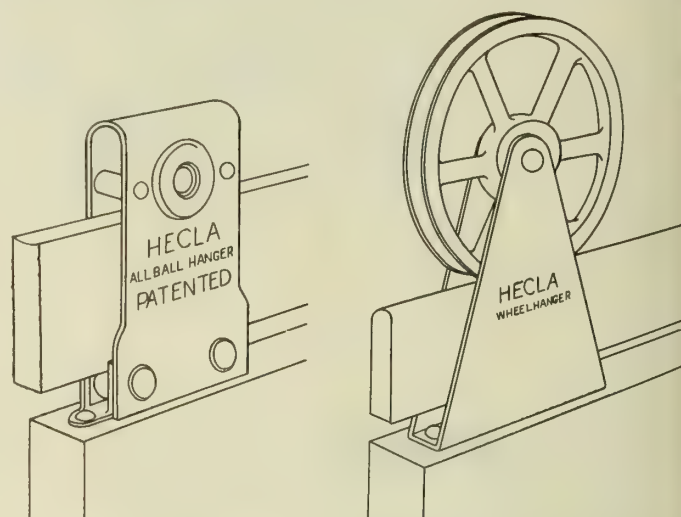
We submit proposals based on our estimates from architects' or engineers' drawings and specifications and their requirements.

MODELS.

In our Studio we retain artists of experience in architectural work. When not convenient to inspect models we photograph them to scale and submit copies for approval or for changes to be made as required.

DESIGNS.

We do not issue catalogues as our work is too varied. We send, on request, special designs or photographs of work made by us.



ALLBALL HANGER

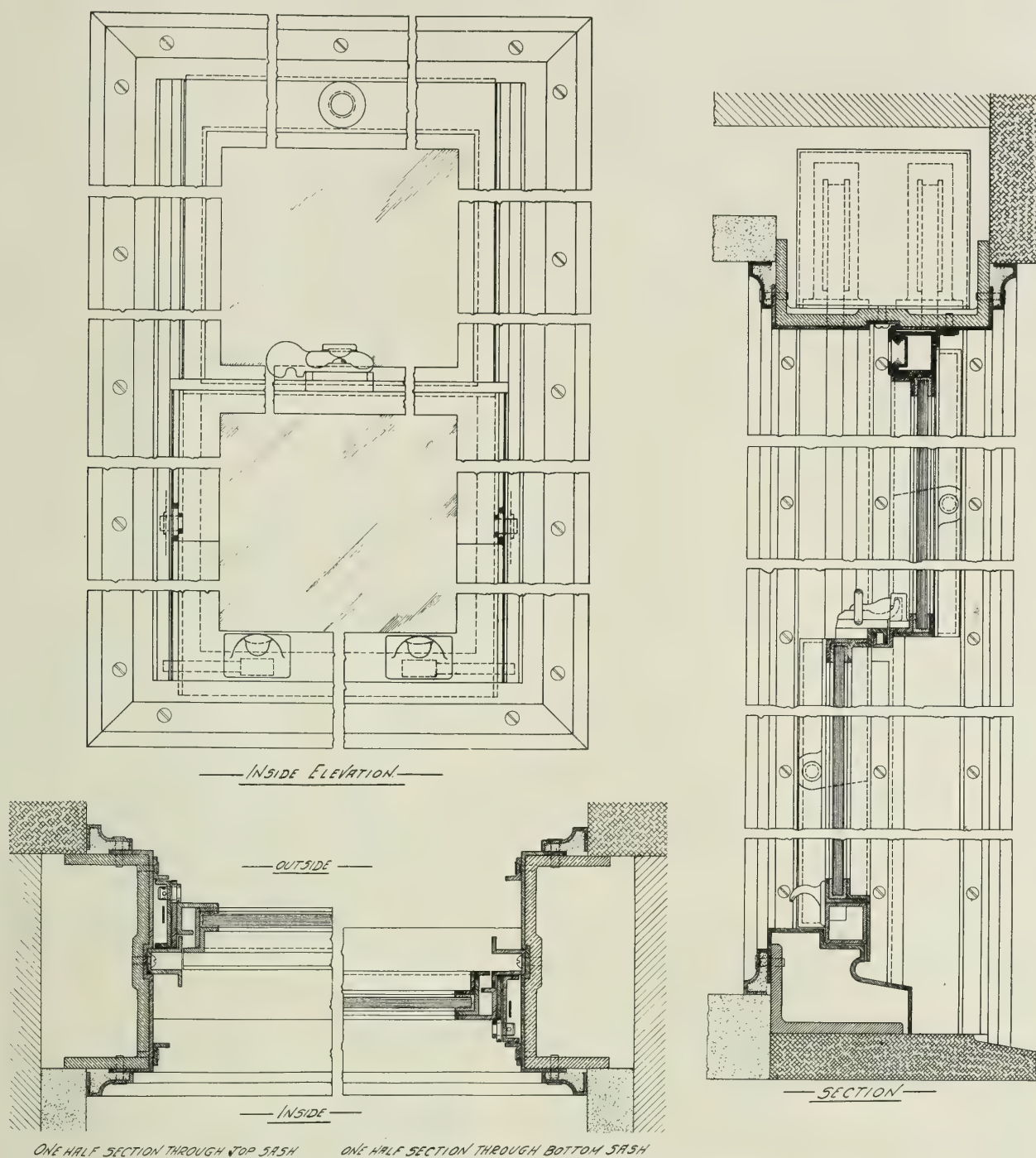
WHEEL HANGER

These Hangers are used on Elevator Doors and Sliding Gates



IRON ELEVATOR DOORS

Cold Rolled Steel, Painted Finish. Used in bedroom hallways, Addition to Hotel Astor, New York, N. Y.



"HECLA" FIREPROOF WINDOW, WITH SLIDE AND REVERSIBLE SASH

We make Windows of other designs in Bronze and Iron

REFERENCES.

We have furnished work for the latest buildings, including:

BUILDING	LOCATION	BUILDING	LOCATION
Metropolitan Life Tower	New York, N. Y.	Phoenix Hotel	Buenos Ayres, South America
Singer Tower	New York, N. Y.	Barney Barnato Building	Johannesburg, South Africa
Pennsylvania Railroad Terminal	New York, N. Y.	First National Bank of Oakland	Oakland, Cal.
New Grand Central Station and Office Building	New York, N. Y.	Flood Building	San Francisco, Cal.
City Investing Building	New York, N. Y.	R. A. Long Building	Kansas City, Mo.
Fifth Avenue Building (Old Fifth Avenue Hotel site)	New York, N. Y.	Dime Savings Bank	Brooklyn, N. Y.
Hotel Astor Addition and Extension	New York, N. Y.	National Shawmut Bank	Boston, Mass.
National City Bank Building	New York, N. Y.	Traders' National Bank	Toronto, Canada
New Girard Trust Building	Philadelphia, Pa.	Bank of Montreal	Montreal, Canada
		New Museum of Fine Arts	Boston, Mass.
		New Orleans Court House	New Orleans, La.

ESTABLISHED 1827

WM. H. JACKSON COMPANY

Artisans in All Metals

29 East 17th Street, Union Square North
NEW YORK, N. Y.163 Michigan Avenue
CHICAGO, ILL.

TELEPHONE CONNECTION

FACTORIES AND SHOPS: NEW YORK, N. Y., 229-39 West 28th Street

PRODUCTS.

Manufacturers of ENTRANCE GATES, ENTRANCE DOORS, STAIR RAILINGS, MARQUISES, GRILLES, LAMPS, FENCES, BANK COUNTERS, AIR-TIGHT and DUST-PROOF WINDOWS, and MEMORIAL TABLETS; also, MANTELS in WOOD, BRICK, TILE, and MARBLE; FIREPLACES, FIRE SETS, ANDIRONS, FENDERS, FIRE SCREENS, WOOD HOLDERS, HOB GRATES, Patent DOVETAIL WALL TILES, TILES for Fireplaces, Wainscoting, Floors, and ART CERAMIC MOSAICS.

Architects' designs are carefully executed.

PATENT
DOVETAIL
WALL
TILES.

We guarantee all walls permanent when set without Patent Dovetail Tiles. They are 6 inches by 6 inches. They may also be used for broken courses. They are also made in 6-inch by 3-inch size. They are obtainable in dull and bright glaze finishes. See illustration.



PATENT DOVETAIL TILES (REVERSE SIDE) 6" x 6"

We show in our warerooms a large assortment of English, French and Italian Marble and Stone Mantels; also, Wood Mantels in styles to suit any Period. Also Fireplaces, Andirons, Fenders and all Fireplace Fittings.



BRONZE LAMP, ENTRANCE TO QUEENSBORO BRIDGE, NEW YORK, N. Y.



FRENCH (IMPORTED) MARBLE MANTEL WITH COVE IRON FACING AND LINING, FRENCH GOLD ANDIRONS, FIRE SET AND STAND

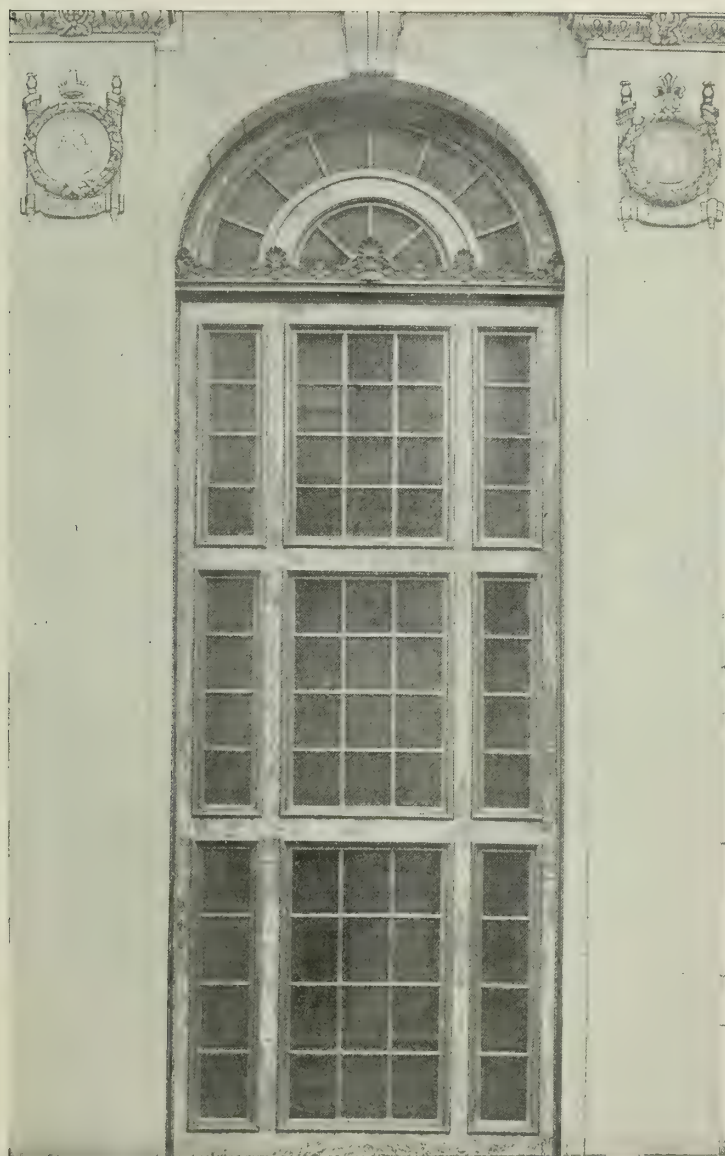
AIR-TIGHT
DUST-PROOF
WINDOW.

We have designed, patented and perfected an absolutely air-tight and dust-proof Window that meets the most exacting demands of architects and builders. This window is not an experiment, its successful use has proven its efficiency. It is simple in construction, can not get out of order and is always locked when closed. Its use eliminates weather-strips and all devices of complicated hardware.

These Windows are made in bronze, iron or wood, strongly built and easily installed. Their cost is no greater than other windows which are not air-tight and dust-proof.

CO-OPERATIVE
SERVICE.

Send us your plans and specifications and we will be pleased to submit to you typical details of our window, shown in connection with the adjoining work, accompanied with our estimates.



WINDOW IN FIRST NATIONAL BANK BUILDING, BOSTON, MASS.
R. CLIPSTON STURGIS, Architect



DETAIL OF AIR-TIGHT, DUST-
PROOF MULLION WINDOW,
MORGAN LIBRARY, NEW
YORK, N. Y.
McKIM, MEAD & WHITE, Architects



DETAIL OF AIR-TIGHT, DUST-
PROOF WINDOW, WALTER'S
ART GALLERY, BALTI-
MORE, MD.
DELANO & ALDRICH, Architects

E. R. LANDON IRON AND WIRE WORKS

OFFICE AND WORKS

18 North May Street

CHICAGO, ILL.

TELEPHONE, HAYMARKET 585

ESTABLISHED 1899

PRODUCTS.

Manufacturers of a general line of ORNAMENTAL IRON and WIRE WORK, including ELEVATOR CABS and ENCLOSURES, FOLDING GATES, FIRE-ESCAPES, IRON and WIRE WINDOW GUARDS, IRON DOORS and SHUTTERS, GRILLE WORK, LIGHT STRUCTURAL IRON WORK, IRON and WIRE FENCES, WIRE SIGNS, STABLE FIXTURES, WIRE CLOTH, and sundry Special Work. We are also Agents for the Anchor Post Iron Works of New York, N. Y.

WINDOW GUARDS.

We make Iron and Wire Window Guards for schools, factories, hospitals, churches, asylums, and all buildings where protection is necessary.



ORNAMENTAL IRON ENTRANCE GATES

FACILITIES.

Our large manufacturing building is completely equipped with the most modern machinery obtainable, all motor-driven, which, together with a staff of high-class mechanics, enables us to produce strictly high-grade work at the lowest possible cost.

FINISHES.

We are prepared to electroplate our products in the various modern finishes, such as bronze, copper or brass, either bright or oxidized.

ESTIMATES.

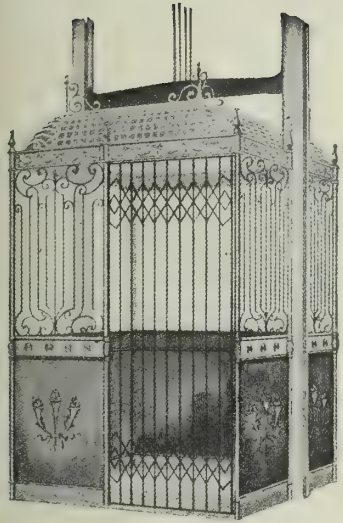
We will promptly furnish estimates for the cost of anything in our line.

TERRITORY.

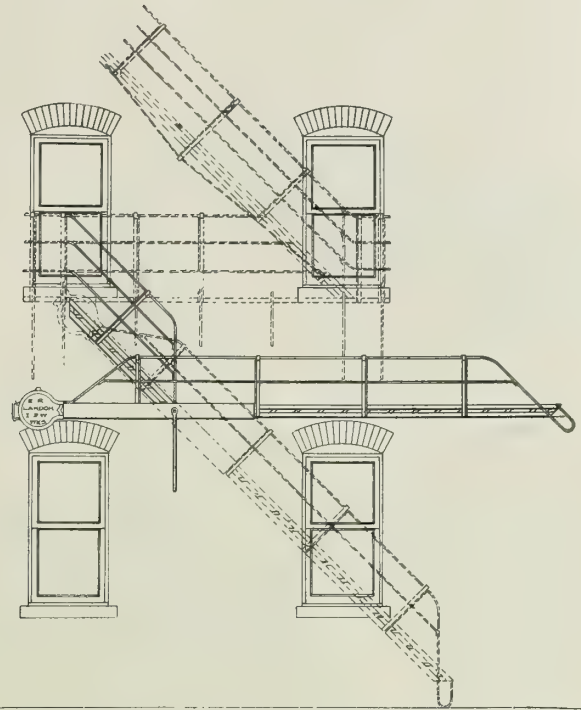
The operations of this firm cover the entire United States.

CORRESPONDENCE.

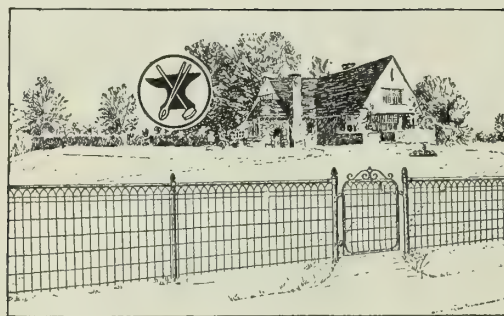
We invite correspondence regarding our products, and all inquiries will receive prompt and courteous attention.



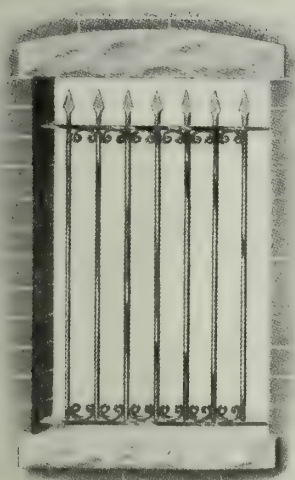
ELEVATOR CAB



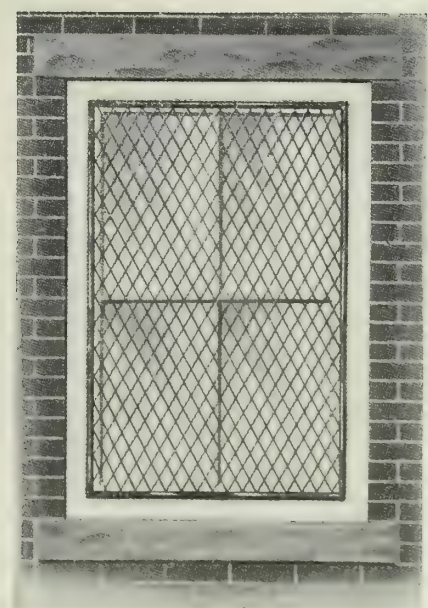
FIRE-ESCAPES WITH ICE-PROOF STEPS AND BALCONIES



WIRE FENCE



IRON WINDOW GUARD



WIRE WINDOW GUARD

LASAR-LETZIG MFG. CO.

Ornamental Metal Work

FACTORY AND OFFICES

Sixteenth and O'Fallon Streets

ST. LOUIS, MO.

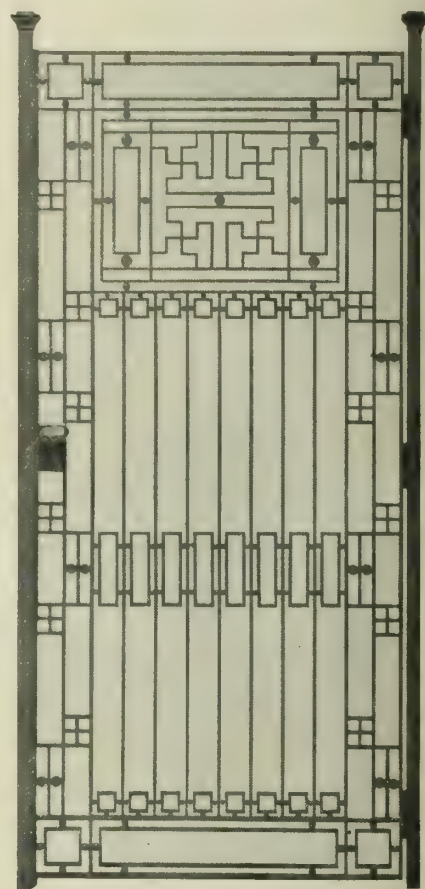
BRANCH OFFICE AND SHOWROOMS
1301 WRIGHT BUILDING
ST. LOUIS, MO.

PRODUCTS.

ORNAMENTAL IRON, BRASS and BRONZE WORK; ELEVATOR CARS and ENCLOSURES; BANK RAILINGS; GATES and GRILLES, for Public Buildings, and Residences; MARQUEES; STORE FRONTS; BRONZE TABLETS; LAMPS; TUBE RAILINGS; MESH IRON WORK of every description; BRONZE LETTERS; DOOR KNOCKERS, etc.



ELEVATOR CAB



WROUGHT-IRON GATE

ELEVATOR ENCLOSURES.

We claim that our Elevator Enclosures are of high order, and unsurpassed in quality of metal or thoroughness of work and architectural fitness of design.

SPECIAL FEATURES.

We have the sole right to use, manufacture and sell the "Connell" two thirds door device where large openings are required in passenger elevator enclosures, especially for department stores.

GRILLES AND GATES.

The Grilles and Gates manufactured by us are of the best metal obtainable for the purpose, and wrought in highly artistic designs in accordance with architects' requirements.

ADVANTAGES.

The chief advantage of all our work is that the component parts are so perfectly fitted together and tested before shipping that any ordinary workman can put the parts together.

ASSISTANCE TO ARCHITECTS.

We are at all times ready to assist the architect and make designs from his rough sketch or suggestion.

TERRITORY.

We are prepared to furnish any branch of our work for shipment all over the world.

CORRESPONDENCE INVITED.

Correspondence respectfully invited, and replies will be prompt and explicit.



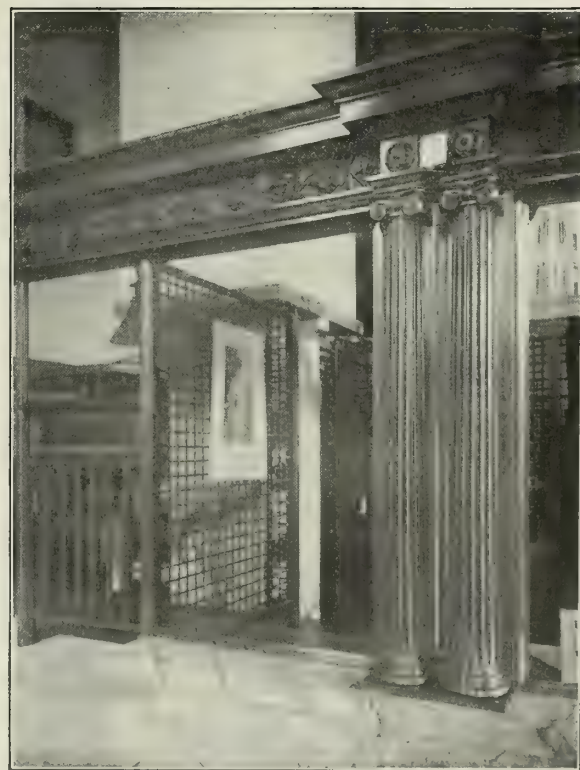
WROUGHT-IRON AND GLASS ELEVATOR FRONT



ELEVATOR CAB



BANK OR COUNTING-ROOM ENCLOSURE

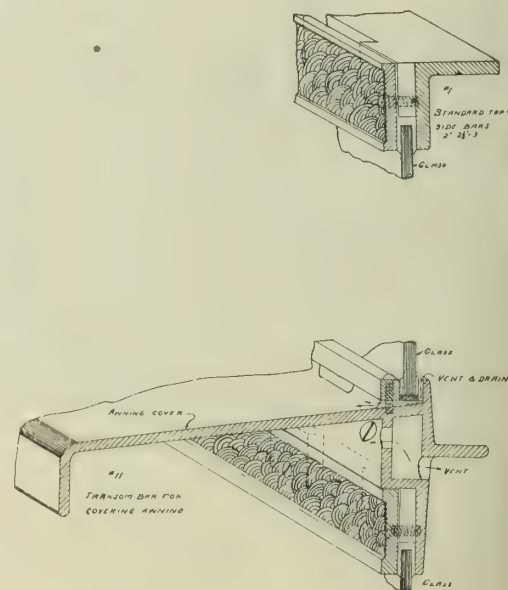


DETAIL OF BRONZE BANK COUNTER SCREEN

Architectural and Ornamental Iron, and Patented Cast-Iron Store Front Construction
AURORA, ILL.

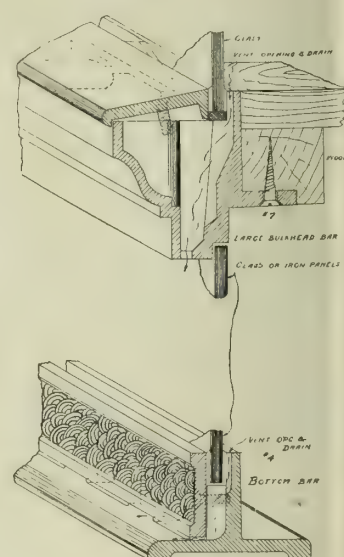
We manufacture PATENTED CAST-IRON STORE FRONTS; GENERAL ARCHITECTURAL and ORNAMENTAL WROUGHT and CAST IRON WORK; ENTRANCES, STAIRS, RAILING, FENCES, GRILLES, FIRE-ESCAPES, MARQUISES, CAST-IRON WINDOW FRAMES, SASH, DOORS, etc.

Our window construction is built entirely of cast-iron. It provides for ample ventilation, eliminating the frosting of the window in winter. The moisture is carried off without the use of a gutter, as shown in the accompanying section of our one-piece bulkhead bar. It allows the glass to be set from the outside, so that if a glass should break it will not be necessary to tear out the entire show-window enclosure to set new glass. It can also be made so that the glass can be set from inside. All bars, except transom and bulkhead bar, are made in 2", 2½" and 3" face, (bulkhead bar 3" and 4" face); and all rabbets for glass are ample ½" wide by ¾" deep.



The price of LOVE BROTHERS, INC., Patent Framing ranges from 80 cents to \$2.00 per linear foot. We shall be pleased to furnish estimates upon receipt of detail drawings.

Will furnish details and large illustrated catalogue upon request.



We will fill orders anywhere. As these fronts are erected in our shops before being shipped we can assure their fitting perfectly.

Furnish LOVE BROTHERS, INC., Aurora, Ill.,
Patent Store Front of this building as per numbers
given on plans.

STORE-FRONT SECTIONS



BOLEY BUILDING, KANSAS CITY, MO. LOUIS CURTISS, Architect

Cast-Iron Fronts and all Ornamental Iron Work, including one-piece Cast-Iron Doors, for this building furnished by us

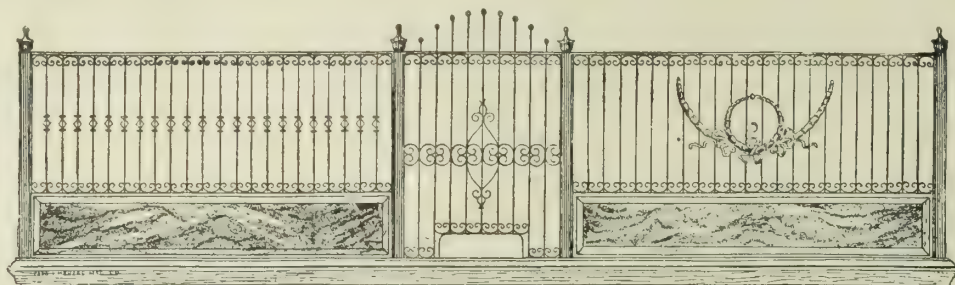
THE FRED J. MEYERS MANUFACTURING CO.

Ornamental Wire, Iron, Steel, Brass and Bronze Work
HAMILTON, OHIO

CABLE ADDRESS, "WIREWORKS"

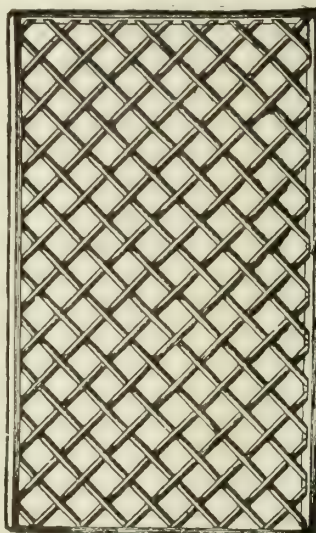
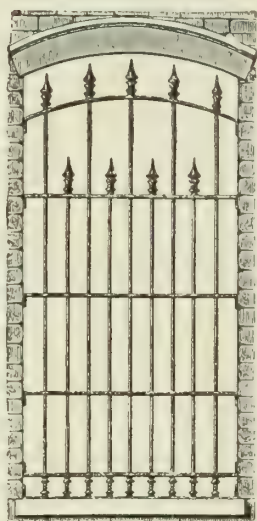
PRODUCTS.

Manufacturers of ORNAMENTAL WIRE, IRON, STEEL, BRASS and BRONZE WORK; BANK and OFFICE RAILINGS; WIRE and IRON WINDOW GUARDS; STABLE FITTINGS; IRON VAULT LIGHTS; WROUGHT-STEEL GRILLES; ELEVATOR CARS and ENCLOSURES; IRON FENCING, STAIRS and RAILINGS.



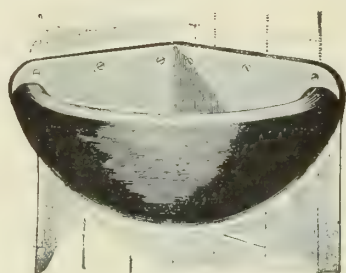
BANK AND OFFICE RAILING

Made of upright bars of Iron, Brass or Bronze, in any finish. Admits free and unobstructed circulation of air and light and is a sure protection. This railing will last a business lifetime.

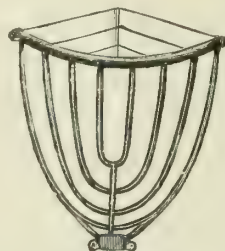


WIRE AND IRON WINDOW GUARDS

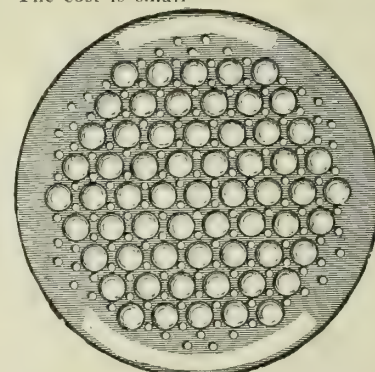
Are a protection against breakage of glass; also, prevent burglary. The cost is small



CAST-IRON MANGER



CAST-IRON HAY RACK

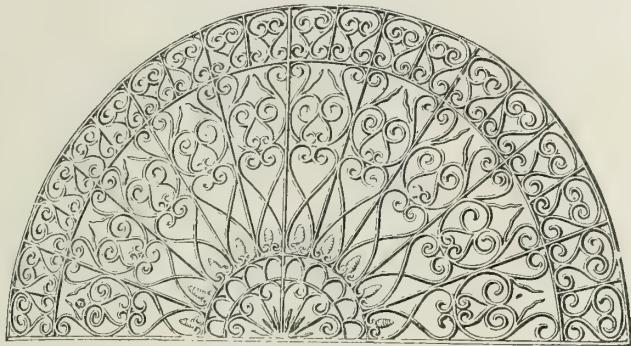


IRON VAULT AND SIDEWALK LIGHT

Made of Iron, with Glass Lights

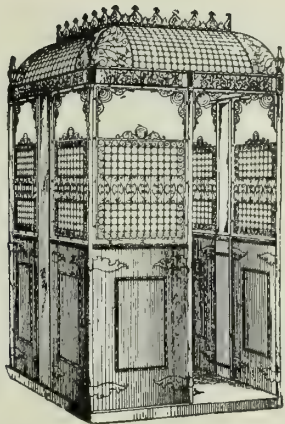
STABLE FITTINGS.

We make a complete line of Stable Fittings, including Wire and Iron Stall Guards, Hay Racks and Mangers, Cast-Iron Salt Dishes, Soap Dishes, Sponge Racks, Hitching Rings, Gutters and Cesspools, and Brackets of all kinds.



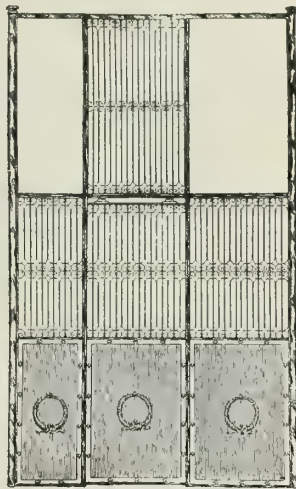
WROUGHT-STEEL GRILLES

Used as a protection and as an ornament for transoms



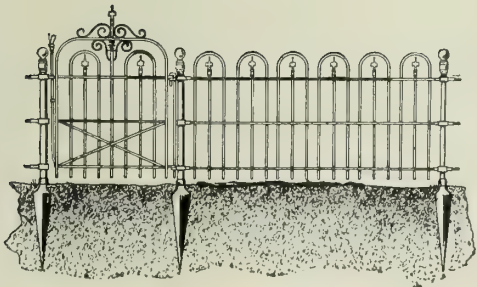
ELEVATOR CAR

Lower part of car is made of Steel Plates with fancy wreaths and ornaments; upper part of Quarter-Twist Steel and Scrolls and with Beveled Plate Glass Mirrors on each side of car



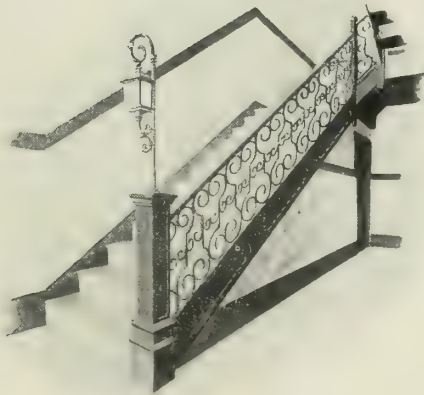
ELEVATOR ENCLOSURE

Lower part is made of Steel Plate, ornamented with fancy wreaths; upper part of Square or Flat Steel



ORNAMENTAL IRON FENCING

Upper portion made of Wrought-Iron and foundations of Cast-Iron



IRON STAIRS AND RAILING

A handsome, inexpensive design made in any finish. Cast-Iron Stringers, Wrought Hand-Forged Railing, and Cast-Iron Newels. Stairs of Marble, Slate or Iron. Electric Lamp may be omitted

MIDLAND METAL COMPANY, Inc.

MANUFACTURERS OF

Ornamental Iron, Bronze, and Electroplated Work

Twenty-First and Jefferson Streets

PHILADELPHIA, PA.

PRODUCTS.

ORNAMENTAL IRON, BRASS and BRONZE WORK, BANK SCREENS, ENTRANCE GATES, STAIRWAYS, BALCONIES, GRILLES and RAILINGS, MARQUISES, LAMPS, SPECIAL HARDWARE, ELECTROPLATING, BRASS and BRONZE CASTINGS, BRONZE and IRON DOORS, MEMORIAL TABLETS, ALTAR RAILS, GENERAL DECORATIVE METAL WORK in BRONZE, WROUGHT and CAST IRON, for Banks, Churches, Theaters, and Public Buildings.



BRONZE BANKING SCREEN, EIGHTH NATIONAL BANK, PHILADELPHIA, PA.
GEORGE U. REHFUSS, Architect

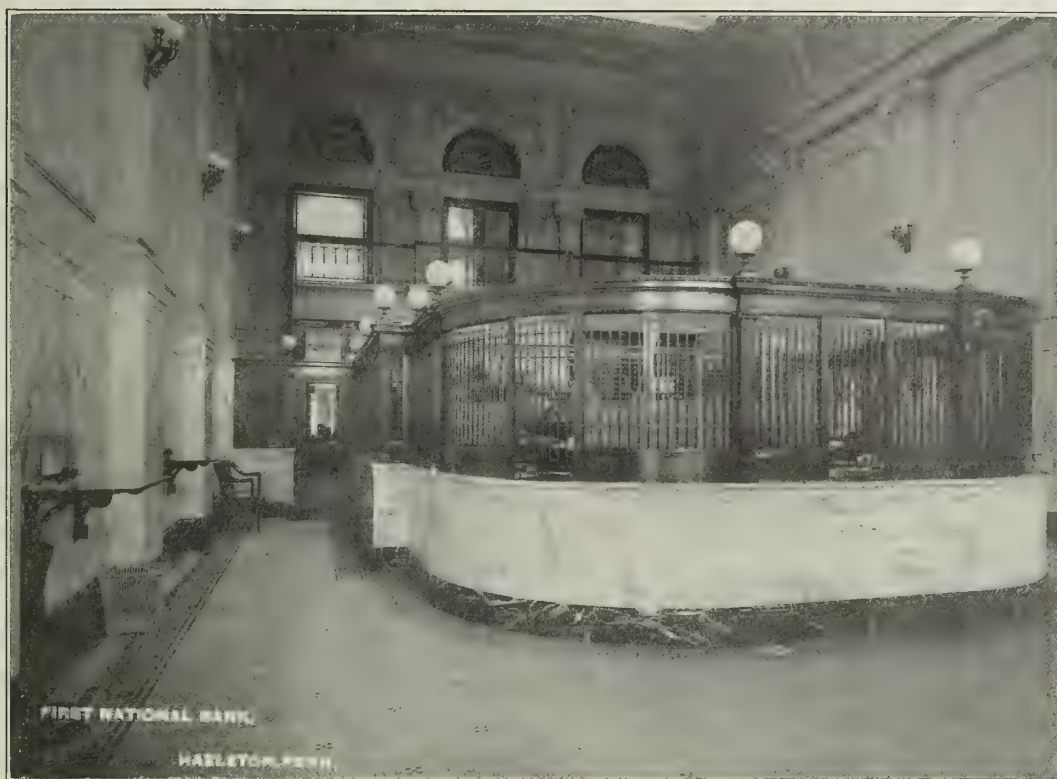


MARQUISE, KUGLER'S RESTAURANT, PHILADELPHIA, PA.
RALPH E. WHITE, Architect

REFERENCES.

Our work may be found in the following representative buildings:

NAME	LOCATION	ARCHITECT
Keith's Theater	Philadelphia, Pa.	A. E. Westover
Marlborough-Blenheim Hotel	Atlantic City, N. J.	Price & McLanahan
Wyoming Valley Trust Company	Wilkes-Barre, Pa.	Mowbray & Uffinger
Union National Bank	Wilmington, Del.	John D. Thompson, Jr.
Eighth National Bank	Philadelphia, Pa.	Geo. U. Rehfuß
Philadelphia National Bank	Philadelphia, Pa.	
Kugler's Restaurant	Philadelphia, Pa.	Ralph E. White
Land Title & Trust Company	Philadelphia, Pa.	Horace Trumbauer
Franklin Trust Company	Philadelphia, Pa.	
First National Bank	Philadelphia, Pa.	
National Bank of Coatesville	Hazleton, Pa.	
Irem Temple	Coatesville, Pa.	Milligan & Webber
Philadelphia Opera House	Wilkes-Barre, Pa.	Watson & Huckel
People's Savings & Trust Co.	Philadelphia, Pa.	Olds & Puckey
Camden Free Library	Hazleton, Pa.	Oscar Hammerstein
Philadelphia Electric Company	Camden, N. J.	H. H. King
St. Clement's Church	Philadelphia, Pa.	Hale & Morse
First National Bank	Philadelphia, Pa.	John T. Windrim
Central National Bank	Bluefield, W. Va.	Horace Wells Sellers
	Wilmington, Del.	Baker & Dallett
		Baker & Dallett



BRONZE BANKING SCREEN, FIRST NATIONAL BANK, HAZLETON, PA.
MILLIGAN & WEBBER, Architects



STATUARY CAST BRONZE FRONT WINDOWS, SASH
AND FACIA, WYOMING VALLEY TRUST CO.,
WILKES-BARRE, PA.
MOWBRAY & UFFINGER, Architects



DETAIL OF BRONZE WORK OF BANKING SCREEN,
PHILADELPHIA NATIONAL BANK,
PHILADELPHIA, PA.

ILLUSTRATIONS.

The accompanying illustrations show specimens of work recently erected by us. Inquiries solicited at all times.

JOHN PIRKL IRON WORKS

MAIN OFFICE

240-246 North 10th Street
BROOKLYN, N. Y.

TELEPHONE, GREENPOINT 2300,
2301,
2302

WORKS

BROOKLYN, N. Y.
240-246, 235-243 NORTH 10TH STREET
274-284 UNION AVENUE

THE JOHN PIRKL FOUNDRY CO., Astoria, L. I., Orchard and Boulevard Streets

PRODUCTS.

We manufacture and erect STRUCTURAL and ORNAMENTAL IRON WORK for Buildings, including STAIRS, STAIR RAILINGS, ELEVATOR ENCLOSURES, ENTRANCE and VESTIBULE DOORS, ENTRANCE GATES, DOOR GRILLES, STORE FRONTS, MARQUISES, RAILINGS, FENCES, LAMPS, LANTERNS, LAMP POSTS, PORTE-COCHERES, CANDELABRA, BALCONIES, WINDOW GUARDS, BANK ENCLOSURES, STEEL WAINSCOTING, STEEL LOCKERS, BOOKCASES, WARDROBES, etc.

FACILITIES.

All departments are fitted with the most up-to-date machinery, including an Oxy-Acetylene Welding Plant.

The Structural Plant covers 21,000 square feet, the Ornamental 22,500 square feet, and the Foundry and Pattern Shop 38,000 square feet of floor area.

SERVICES.

We maintain a force of competent engineers and skilled draftsmen for the preparation of shop and detail drawings, and are prepared to submit designs and estimates of steel structures as well as artistic designs for ornamental work.

MODELING.

In the Pattern and Modeling department we employ skilled artists for the execution of the work in clay, wax, plaster and wood.

TERRITORY.

While we manufacture principally for Greater New York, we have executed work for buildings in other parts of the United States.

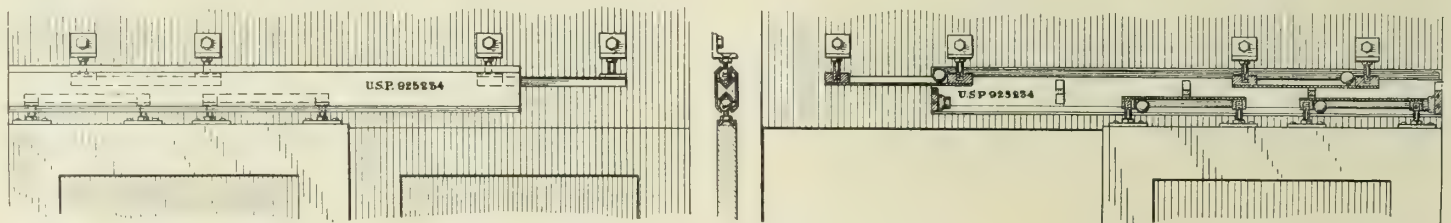


Side View

Front View

CARYATIDS

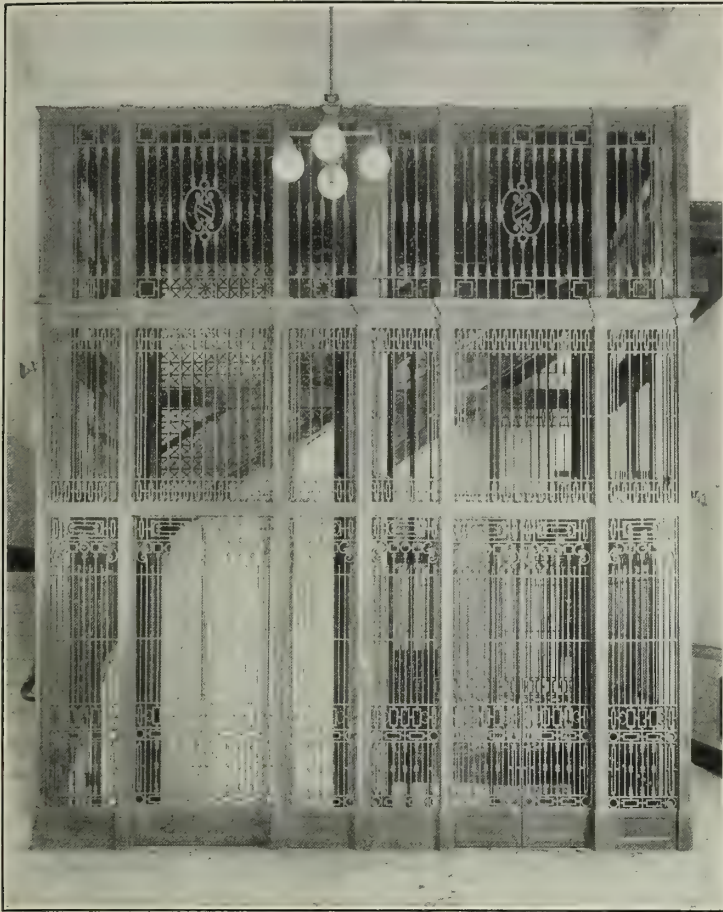
Models and Castings made by the John Pirkel Foundry Co.



SLIDING DOOR HANGER

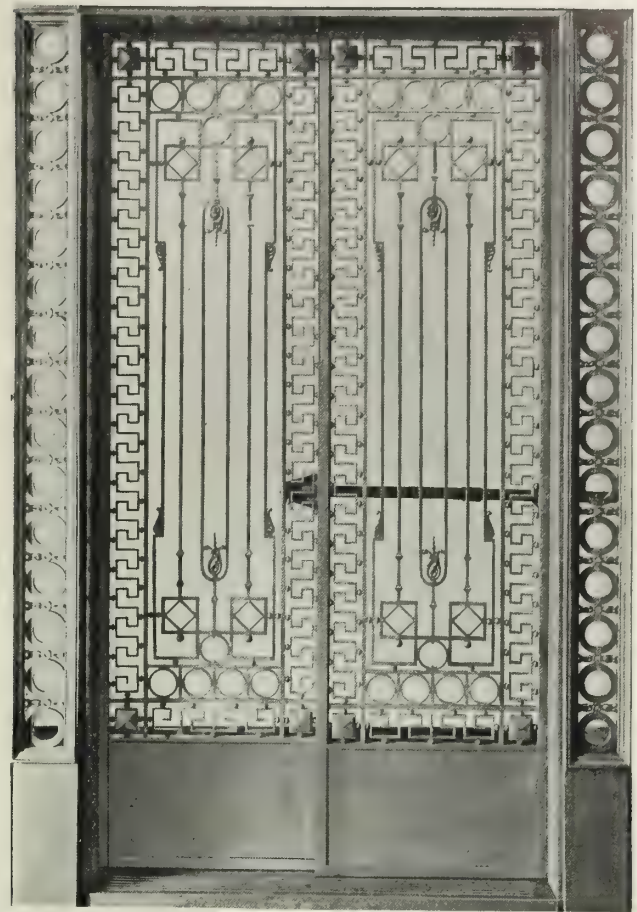
SLIDING DOOR HANGER.

Our Ball-Bearing Sliding Door Hanger (illustrated) used in connection with Elevator Enclosures is specially designed for durability, ease of running and quietness of operation.



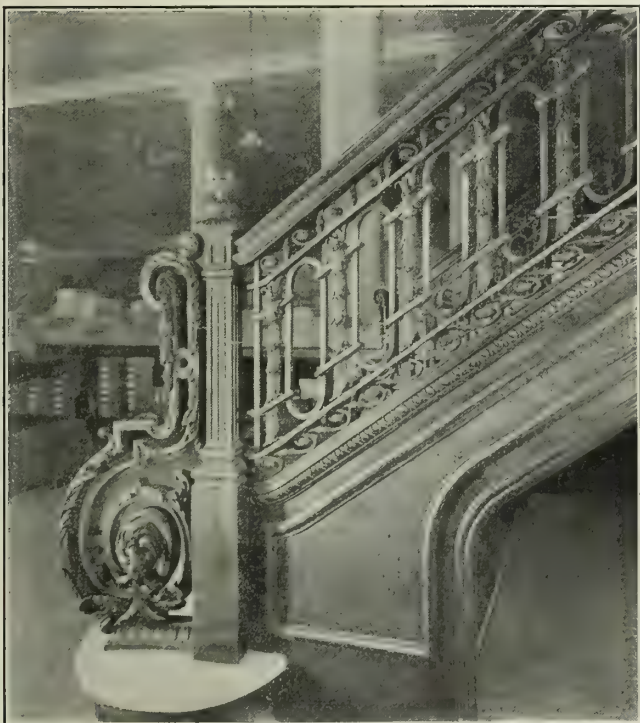
WROUGHT AND CAST IRON ELEVATOR FRONT, GOELET GARAGE, NEW YORK, N. Y.

F. M. ANDREWS and MAYNICKE & FRANKE, Architects



WROUGHT AND CAST IRON ELEVATOR FRONT, AMERICAN NATIONAL BANK, PENSACOLA, FLA.

J. E. R. CARPENTER, Architect



STAIRS, CONSTABLE BUILDING, 111 FIFTH AVENUE, NEW YORK, N. Y.

DITMARS & BRITE, Architects



STEEL BOOK CLOSET, FOR PUBLIC SCHOOLS, NEW YORK, N. Y.

C. B. J. SNYDER, Architect

EXHIBIT.

We maintain a permanent Exhibit, Space 59, at the Building Trades Exhibit Hall, 32 East 33rd Street, New York, N. Y.

WILLIAM R. PITT COMPOSITE IRON WORKS

MANUFACTURERS OF

The "Pitt-Bostwick" Patent Folding Gates and Guards and Architectural and Ornamental Metal Work

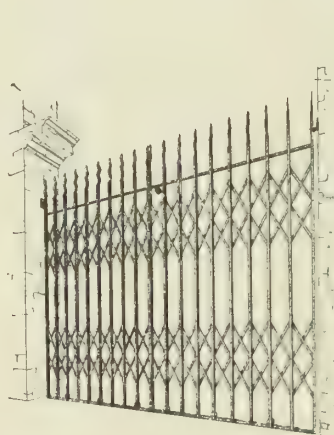
OFFICE AND FACTORY

A 136-138 West Twenty-Fourth Street
NEW YORK, N. Y.

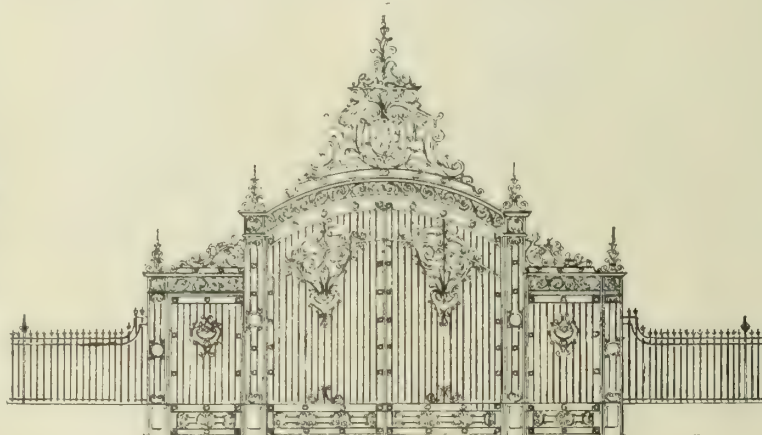
TELEPHONE, 3100 CHELSEA

PRODUCTS.

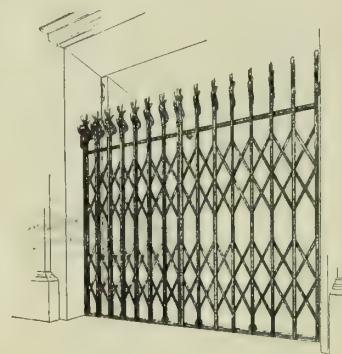
We are manufacturers of the "BOSTWICK" FOLDING GATES, "PITT-BOSTWICK" FOLDING GATES and GUARDS in Steel, Iron, Brass and Bronze; also, RAILINGS, DRIVEWAY and ENTRANCE GATES, Iron and Glass ENTRANCE and VESTIBULE DOORS, MARQUISES, WINDOW GRILLES and GUARDS, ELEVATOR GATES and GUARDS, BANK and OFFICE RAILINGS, and all ORNAMENTAL and ARTISTIC WROUGHT WORK in Iron, Brass and Bronze.



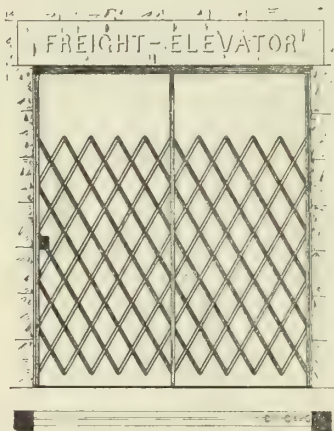
NO. 1262. "PITT-BOSTWICK" FOLDING VESTIBULE GATE
With Stiffening Bars and Lifting Bottom Tracks



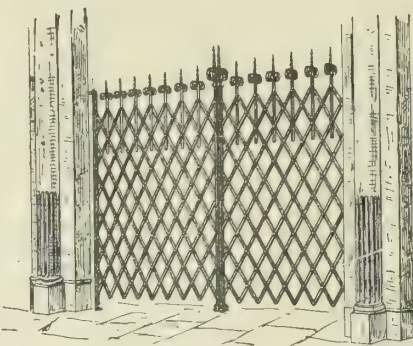
ORNAMENTAL DRIVEWAY GATE



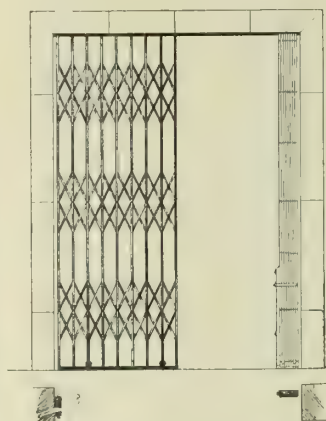
NO. 1259. "PITT-BOSTWICK" FOLDING VESTIBULE GATE
With Stiffening Bars and Lifting Bottom Tracks



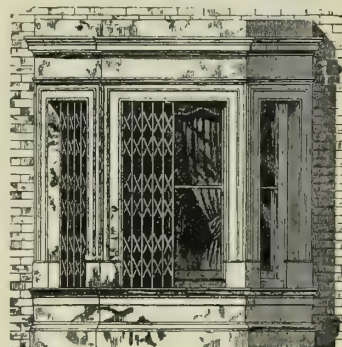
NO. 1300. "PITT" FOLDING ELEVATOR GATE



NO. 1254. "PITT" FOLDING VESTIBULE GATE
No Tracks are required with this Gate



NO. 1284. "PITT-BOSTWICK" FOLDING VESTIBULE AND WINDOW GATE
With Stationary Top and Lifting Bottom Tracks



NO. 1267. "PITT-BOSTWICK" STEEL FOLDING WINDOW GUARD
With Top and Bottom Tracks

PRICES.

Designs and estimates will be furnished on application.

GUARANTEE.

We guarantee the workmanship and material in all our products.

THE SNEAD & CO. IRON WORKS

Architectural Iron and Bronze

JERSEY CITY, N. J.

CABLE ADDRESS, "SNEAD, JERSEY CITY"

OFFICE AND FACTORY
FOOT OF PINE STREET

PRODUCTS.

Makers of ARCHITECTURAL IRON and BRONZE WORK generally, and some of the lighter kinds of STRUCTURAL STEEL WORK: STAIRWAYS, ELEVATOR SCREENS, ELEVATOR CABS (of high-class special design), STORE FRONTS, LAMP-POSTS, LANTERNS, GATES, MARQUEES, etc., and LIBRARY BOOKSTACKS.



ELECTRO-BRONZE STAIRWAY AND ELEVATOR ENCLOSURE, CITY HALL, NEWARK, N. J.
MOWBRAY & UFFINGER, and J. H. & W. C. ELY, Associate Architects

FOUNDED
IN 1850.

This concern was founded in Louisville, Ky., in 1850, by Chas. S. Snead, who was one of the pioneers of architectural iron work in this country. It has been located since 1901 in Jersey City, N. J.

THE WM. F. REMPPIS COMPANY

MANUFACTURERS OF

Architectural and Ornamental Wrought and Cast Iron Work

READING, PA.

PHILADELPHIA OFFICES AND STUDIO
1506 SANSOM STREET

SOUTHERN OFFICE
BALTIMORE, MD., Builders Exchange

PRODUCTS.

ARCHITECTURAL and ORNAMENTAL WROUGHT and CAST IRON WORK, GENERAL STRUCTURAL and BUILDING IRON WORK, IRON STAIRS, ELEVATOR ENCLOSURES, GATES and FENCING, RAILINGS, MARQUISES, BANK ENCLOSURES, FIRE-ESCAPES, GRILLES, LAMPS and LAMP POSTS; also, ELECTROPLATING in COPPER, BRASS and BRONZE.

ILLUSTRATIONS.

The accompanying illustrations will convey an idea of the beautiful and artistic quality of our work.

FACILITIES.

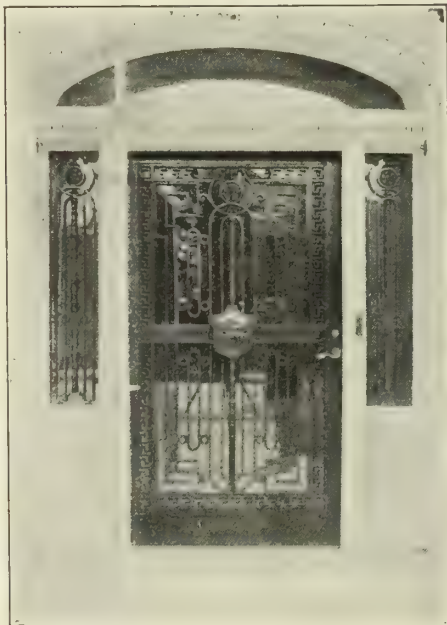
Our plant is modern in every respect, and we are prepared to execute orders of any magnitude, with the utmost promptness.

CO-OPERATIVE SERVICE.

THE WM. F. REMPPIS COMPANY is at all times ready to furnish the architect, contractor or owner with complete estimates for all classes of work, and to submit special designs upon request.

We have recently erected a building at 1506 Sansom Street, Philadelphia, where our Philadelphia offices, as well as draughting and modeling rooms for special work, are located.

For the convenience of our many out-of-town clients we have fitted up commodious quarters, equipped with writing materials, 'phones, stenographer, and all the accessories of a modern office, which they are cordially invited to use as their headquarters while visiting Philadelphia. The use of our draughting force is also at their disposal.



WROUGHT-IRON AND GLASS DOORS,
WENDELL MANSIONS, WASHINGTON, D. C.

E. H. GLIDDEN, Architect



CAST-IRON LIGHT WELLS, STATE CAPITOL, HARRISBURG, PA.

Jos. M. HUSTON, Architect



CAST-IRON WINDOW FRAMES, BERNHEIMER BUILDING, BALTIMORE, MD.
CASSEL & SON, Architects



CAST-IRON STORE FRONT AND MARQUISE, ANEWALT BUILDING
RUHE & LANGE, Architects



MAIN STAIRWAY, STATE CAPITOL, HARRISBURG, PA.
Jos. M. HUSTON, Architect



MARQUISE, HOTEL RITTENHOUSE, PHILADELPHIA, PA.
WATSON & HUCKLE, Architects

REFERENCES.

We append a partial list of representative buildings in which our work has been installed:

Dauphin Deposit Bank, Harrisburg, Pa., York & Sawyer, Architects; Institute of Arts and Sciences, Brooklyn, N. Y., McKim, Mead & White, Architects; Naval Observatory Library, Washington, D. C., R. M. Hunt, Architect; Pennsylvania State Capitol, Harrisburg, Pa., Jos. M. Huston, Architect; Racquet Club, Philadelphia, Pa., Horace Trumbauer, Architect; Jefferson Hospital, Philadelphia, Pa., John T. Windrim, Architect; Bernheimer Bros. Department Stores, Baltimore, Md., Cassell & Son, Architects; Bulletin Building, Philadelphia, Pa., Edgar V. Seeler, Architect; Northampton National Bank, Easton, Pa., A. A. Richter, Architect; Virginia Bank & Trust Company, Norfolk, Va., Wyatt & Nolting, Architects; Y. M. C. A. Building, Pottsville, Pa., Seymour & Paul Davis, Architects; B. P. O. E. Building, Washington, D. C., B. Stanley Simmons, Architect; U. S. Post Office, Anniston, Ala., John Knox Taylor, Architect; City Hall, Philadelphia, Pa., W. B. Powell, Architect; W. L. Stewart, Residence, Pittsburg, Pa., Beezer Bros., Architects; Temple Theater, Rochester, N. Y., Leon H. Lempert & Sons, Architects; Horn & Horn Building, Baltimore, Md., Otto G. Simonson, Architect; State Hospital for Criminal Insane, Fairview, Pa., J. C. M. Shirk, Architect.

RIVERSIDE BRIDGE COMPANY

Structural Steel Work

MARTINS FERRY, OHIO

PRODUCTS
AND
SERVICES.

We design, manufacture and contract for STRUCTURAL STEEL WORK for Bridges and Buildings.

FACILITIES.

Our shops are thoroughly and modernly equipped, and our facilities for turning out first-class work are unsurpassed. All our plans are prepared by the most competent engineers and draughtsmen procurable; the work is executed by the most skilled mechanics, with every necessary appliance at hand; and the erecting work is carried out by a perfectly capable corps of men. Every step of the work is under competent superintendence, and mistakes in figuring are almost impossible under our thorough system of checking.

We carry regularly in stock between 2,500 and 3,000 tons of open-hearth structural steel, consisting of I-Beams, Channels, Angles, and Plates in all the standard shapes and sizes.

We are especially equipped to fabricate special shapes and sizes to order.

TERRITORY.

We can economically compete for work the world over, with practically no limitations as to size.

ASSISTANCE
TO
ARCHITECTS.

We employ a corps of trained engineers to furnish suggestions and prepare tentative designs. Upon receipt of data as to your requirements, we will submit a carefully studied and economical solution, with an estimate covering it.

WORK
EXECUTED.

We have built railroad bridges, from 50 to 2,000 tons, for the following companies:

Baltimore & Ohio Railroad Co.

New York, New Haven & Hartford Railroad Co.

Pennsylvania Railroad Co.

Wabash Railroad Co.

Cincinnati, New Orleans & Texas Pacific Railway Co.

Fairmont & Clarksburg Traction Co.

Highway Bridges at Eagle Pass, Tex.; Bridgeport, Ohio; Portland, Ore.; Laredo, Tex.; Cumberland, Md.; Piedmont, W. Va.; and Clarksburg, W. Va.

We append a few of the many buildings for which we have furnished and erected the structural steel:

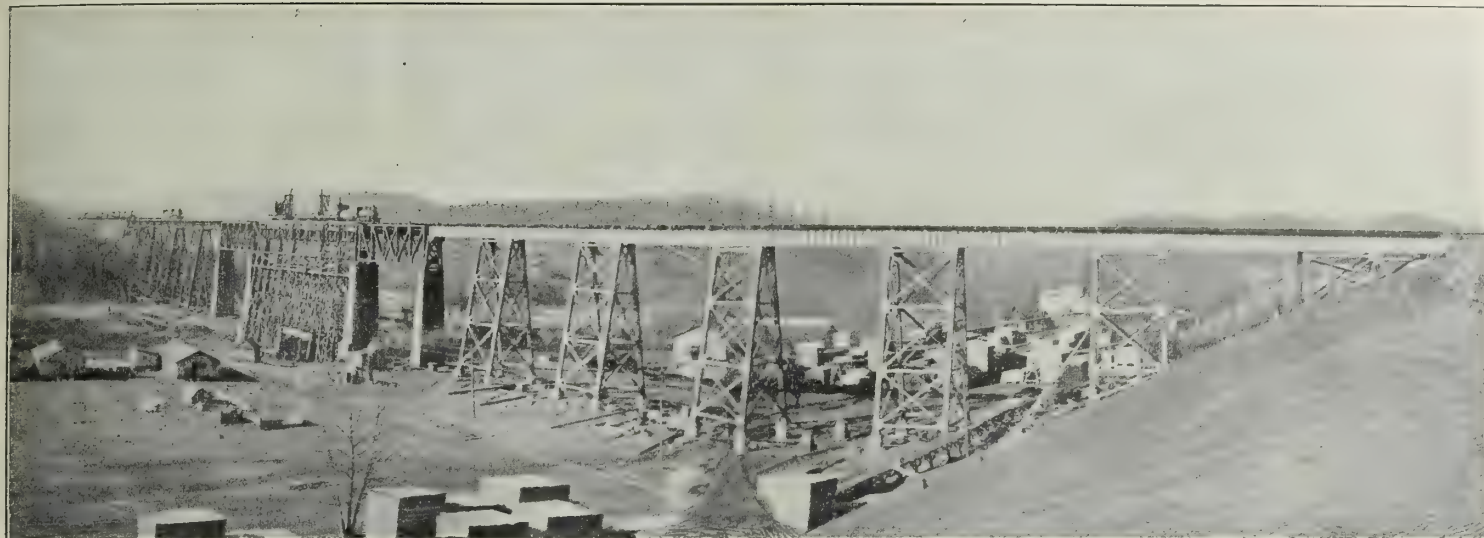
Schmubach Building, Wheeling, W. Va.

Virginia Theater, Wheeling, W. Va.

Scottish Rite Cathedral, Wheeling, W. Va.

Warehouse, Abner Doble Co., San Francisco, Cal.

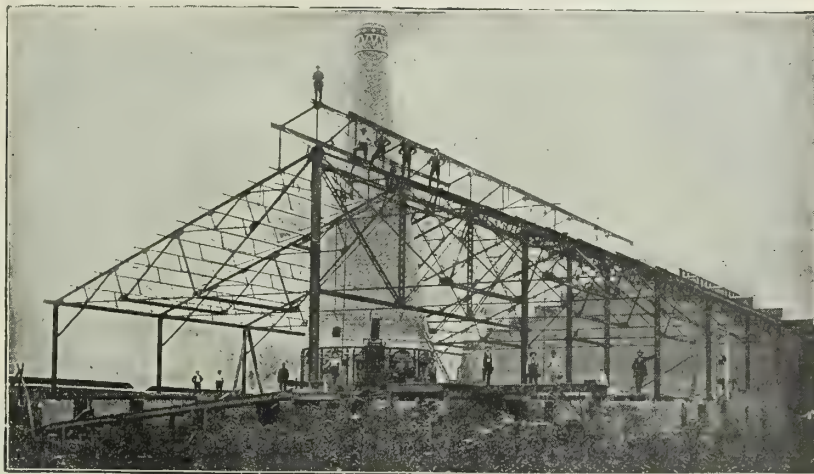
First M. E. Church, Woodsfield, Ohio.



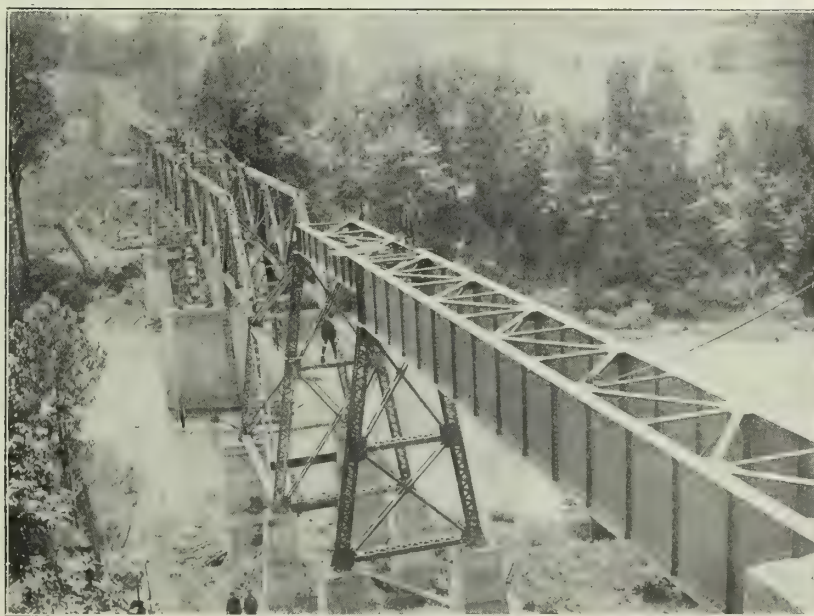
SINGLE-TRACK VIADUCT, QUEEN & CRESCENT ROUTE, NEW RIVER, TENN.
1,310 feet long, 130 feet high at river span. Weight 1,975 tons. Old work removed and traffic maintained



SCHMULBACH BUILDING, WHEELING, W. VA.



STEEL-FRAME GLASS FACTORY



VIADUCT FOR TRACTION LINE

F. P. SMITH WIRE AND IRON WORKS

MANUFACTURERS OF

Iron and Bronze Work

CHICAGO, ILL.

GENERAL OFFICE AND STOCK ROOM
100 AND 102 LAKE STREET
TELEPHONES, CENTRAL 437, 438

FOUNDRY AND SHOPS
CHESTER STREET, CLYBOURN AND FULLERTON
AVENUES
TELEPHONE, LINCOLN 473

PRODUCTS.

We manufacture ORNAMENTAL IRON and BRONZE WORK, including STAIRS, STORE FRONTS, ENTRANCES, ELEVATOR ENCLOSURES, ELEVATOR CABS, PORTE-COCHERES, MARQUISES, GRILLE WORK, WINDOW-GUARDS, BANK RAILINGS, LAMPS, FIRE-ESCAPES, SHUTTERS and DOORS; IRON and WIRE FENCES, ORNAMENTAL IRON GATES, JAIL WORK, HIGH-GRADE IRON, BRASS and BRONZE CASTINGS, CEMETERY VAULT DOORS and TABLETS; FOUNTAINS, STATUARY, VASES, AQUARIA, LAWN FURNITURE, IRON SETTEES and CHAIRS, HITCHING-POSTS, etc.; STRUCTURAL IRON WORK, such as BEAMS, COLUMNS, TRUSSES, etc.; BUILDERS' IRON WORK, consisting of SIDEWALK LIGHTS, ROOF CRESTINGS, FINIALS, TOWER ORNAMENTS, WEATHER-VANES, JOIST, WALL and I-BEAM HANGERS, WALL TIES, POST CAPS, AREA GRATINGS, ASH-PIT DOORS, ANCHORS, TIE-RODS, etc.; WIRE-CLOTH of STEEL, GALVANIZED IRON, BRASS, and COPPER; WIRE LATH, WIRE SIGNS, WIRE NETTING and FENCING; STABLE FIXTURES, including STALL GUARDS, HAY-RACKS, FEED-BOXES, WATER-TROUGHS, STALL POSTS, WHEEL-GUARDS, GUTTERS and CESSPOOLS, HARNESS BRACKETS, BOX-STALL HINGES and LATCHES, OATS CLEANERS, etc.; METAL LOCKERS, either WIRE or IRON; PATENT SPIRAL COLUMNS, and other IRON WORK for CONCRETE REINFORCING; CORNER POST BARS, TRANSOM BARS, COAL-HOLE COVERS, METAL COUNTERS, WOOD COUNTERS, CLEAN-OUT DOORS, ELEVATOR GATES and DOORS; METAL BUILDING FRONTS, COURTHOUSE FURNITURE, FLAG-POLES, GUARD-RAILS, STABLE FLOORS, PIPE and SHAFT HANGERS; METAL LADDERS, METAL LETTERS, METAL LINTELS, WIRE GUARDS, IRON or WIRE RAILINGS, PIPE RAILINGS and PIPE-RAILING FIXTURES.

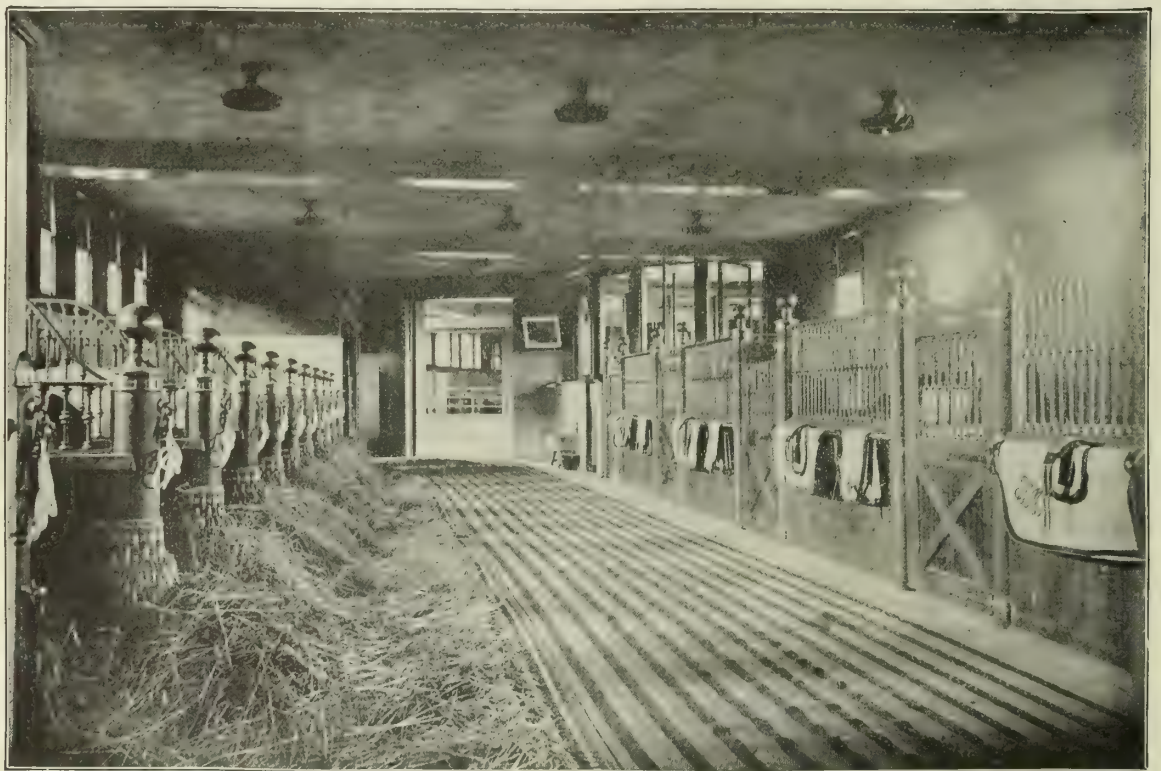


FIG. 1. INTERIOR OF JAMES HOBART MOORE'S STABLE, LAKE GENEVA, WIS.
Furnished complete with our Stable Fittings. JARVIS HUNT, Architect

METAL STABLE
FITTINGS.

The manufacture of Metal Fittings for complete stables of the best class have for many years been made a specialty. Fig. 1 shows many of the required details for such stables.

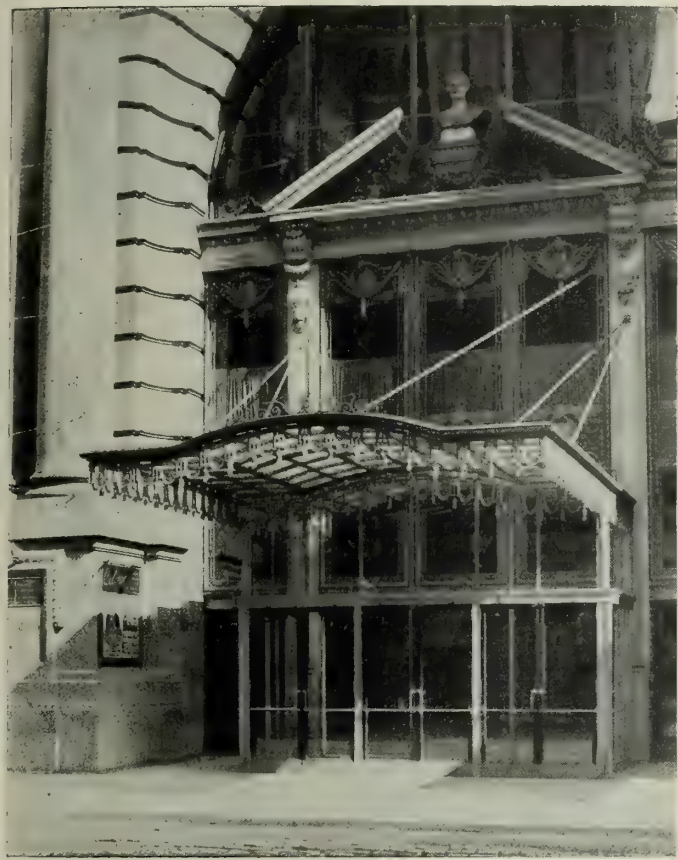


FIG. 2. MARQUISE AND VESTIBULE FOR COLONIAL THEATER, CHICAGO, ILL.
MARSHALL & FOX, Architects



FIG. 3. MAIN STAIRS, 3RD TO 15TH FLOORS, CHICAGO SAVINGS BANK BUILDING, CHICAGO, ILL.
HOLABIRD & ROCHE, Architects

ILLUSTRATIONS.

The accompanying illustrations will convey an idea of the artistic quality of our work.

REFERENCES.

The following is a partial list of buildings in which representative installations of our work have been made:

BUILDING	LOCATION	ARCHITECTS
Chicago Savings Bank	Chicago, Ill.	Holabird & Roche
Illinois Theater	Chicago, Ill.	Wilson & Marshall
Iowa State College, Central Building	Ames, Iowa	Proudfoot & Bird
Iroquois Theater	Chicago, Ill.	B. H. Marshall
Kansas City Power-House	Kansas City, Mo.	Ford, Bacon & Davis
Marshall Field & Co.	Chicago, Ill.	D. H. Burnham & Co.
National Life Insurance Co.	Chicago, Ill.	Jenney, Mundie & Jensen
School Buildings—A large number for Board of Education	Chicago, Ill.	D. H. Perkins
The Cleveland Hippodrome Building	Cleveland, Ohio	Knox & Elliott
The Star & Garter Theater	Chicago, Ill.	Dodge & Morrison
The Stewart Building	Houston, Tex.	Jonas & Rue
The Commonwealth-Edison Co. (4 Buildings)	Chicago, Ill.	Shepley, Rutan & Coolidge
City of Chicago Police Station, Fire-Engine Houses	Chicago, Ill.	Chas. F. Hermann
Rock Island Safety Deposit Building	Rock Island, Ill.	O. Z. Cervin
Mount Carmel Hospital	Columbus, Ohio	Frost & Granger
Chicago Union Hospital	Chicago, Ill.	H. B. Wheelock
Iowa School for the Deaf	Council Bluffs, Iowa	H. F. Liebbe
Sharpe Building	Kansas City, Mo.	H. R. Wilson
U. S. Naval Training Station (fifteen buildings)	Lake Bluff, Ill.	Jarvis Hunt
Montgomery Ward & Co.	Chicago, Ill.	R. E. Schmidt, Garden & Martin

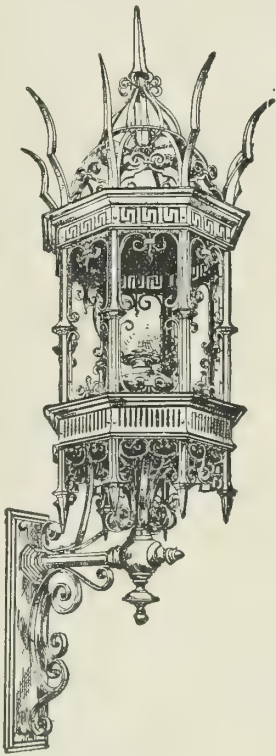


FIG. 4. ORNAMENTAL LAMP, NO. 7

SMYSER-ROYER COMPANY

SUCCESSORS TO E. G. SMYSER'S SONS CO.

MANUFACTURERS OF

Architectural and Ornamental Metal Work

YORK, PA.

BRANCH OFFICES

PHILADELPHIA, PA., Offices and Studio, 1506 Sansom Street

BALTIMORE, MD., 214 Clay Street

PRODUCTS.

GENERAL ARCHITECTURAL and ORNAMENTAL WORK in CAST and WROUGHT IRON, BRASS and BRONZE; STORE FRONTS; STAIRS, ELEVATOR ENCLOSURES; MARQUISES; RAILINGS; FENCES; ENTRANCE GATES; GRILLES; VAULT LIGHTS; FIRE-ESCAPES; GARDEN FURNITURE; VASES; FOUNTAINS; LAMPS and LAMP-POSTS; BANK WORK and GENERAL BUILDING IRON WORK.

FACILITIES.

Our plant at York, covering five acres of ground, has been in operation since 1848. It is complete in every respect and equipped with the most modern machinery, tools and fixtures, giving us facilities for the execution of orders of any size in any branch of the metal industry, and the prompt erection of same in any part of the United States.

We aim to do only high-class work and to interpret intelligently and artistically the results desired by architects and designers. At our studios in Philadelphia we employ skilled artists for the preparation of shop and detail drawings and for the execution in clay and plaster of the more ornamental features required for the important work, where they may be conveniently inspected by those interested.



TRADE-MARK

ESTIMATES AND DESIGNS.

Estimates and designs will be gladly furnished, and correspondence is invited.

REFERENCES.

We have furnished metal work for some of the most important buildings in the United States, and have recently installed high-class work in the following buildings:

BUILDING	LOCATION	ARCHITECTS
Lafayette Building	Philadelphia, Pa.	Jas. H. Windrim
Y. M. C. A. Building	Baltimore, Md.	J. E. Sperry
Daniel Miller Warehouse	Baltimore, Md.	Wyatt & Nolting
Colonial Hotel	York, Pa.	J. A. Dempwolf
Weightman Building	Philadelphia, Pa.	Watson & Huckle
Pittsburg Mercantile Building	Pittsburg, Pa.	Rutan & Russell
Wilkesburg National Bank	Wilkesburg, Pa.	Mowbray & Uffinger
Carnegie Institute	Washington, D. C.	Carrère & Hastings
Memorial Lamp Posts	City Hall Plaza, Philadelphia, Pa.	
Masonic Temple	Baltimore, Md.	J. E. Sperry
Soldiers' and Sailors' Memorial	Pittsburg, Pa.	Palmer & Hornbostel
William Penn High School	Philadelphia, Pa.	J. H. Cook
Stackpole Building	Harrisburg, Pa.	C. Howard Lloyd
The Perry Belmont Residence	Washington, D. C.	Horace Trumbauer



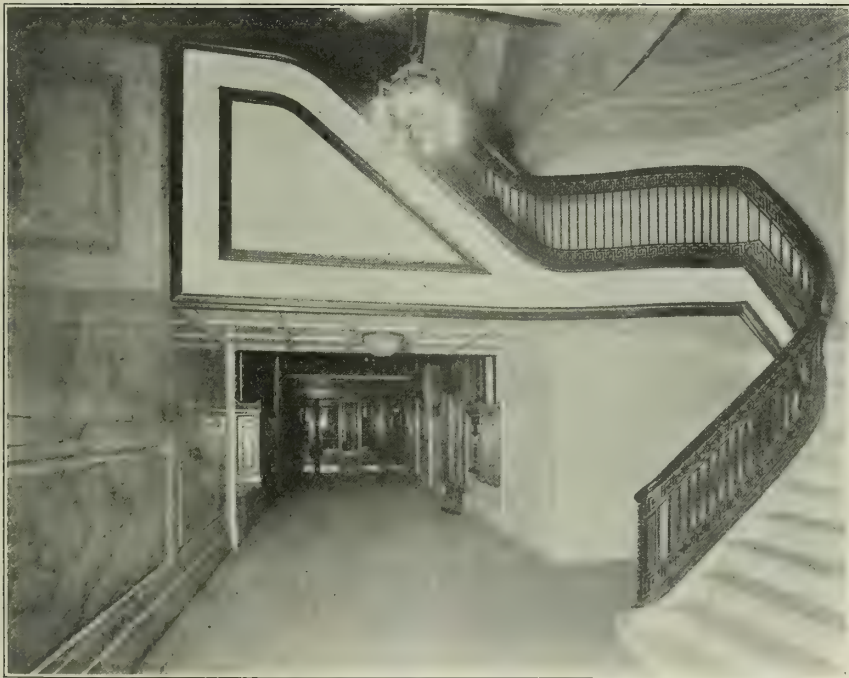
BRONZE ELECTROPLATED CAST-IRON ELEVATOR
ENCLOSURE, LAFAYETTE BUILDING,
PHILADELPHIA, PA.

JAMES H. WINDRIM, Architect



CAST-IRON FRONT, WEIGHTMAN BUILDING,
PHILADELPHIA, PA.

WATSON & HUCKLE, Architects



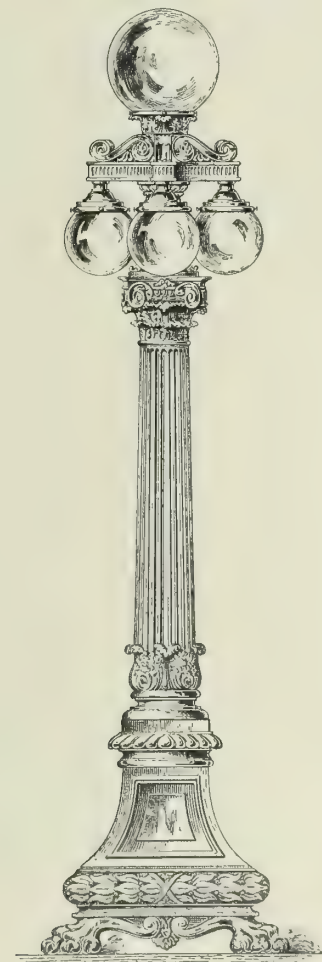
MAIN STAIRS, LAFAYETTE BUILDING, PHILADELPHIA, PA.

JAMES H. WINDRIM, Architect



MAIN STAIRWAY, Y. M. C. A. BUILDING,
BALTIMORE, MD.

JOSEPH E. SPERRY, Architect



LAMP POST DESIGN NO. 106

ESTABLISHED 1834

INCORPORATED 1901

SNOW WIRE WORKS CO.

MANUFACTURERS OF

Ornamental Iron and Bronze

76-86 Exchange Street
ROCHESTER, N. Y.EASTERN OFFICE
NEW YORK, N. Y., 1 Madison Avenue
TELEPHONE, GRAMERCY 293**PRODUCTS.**

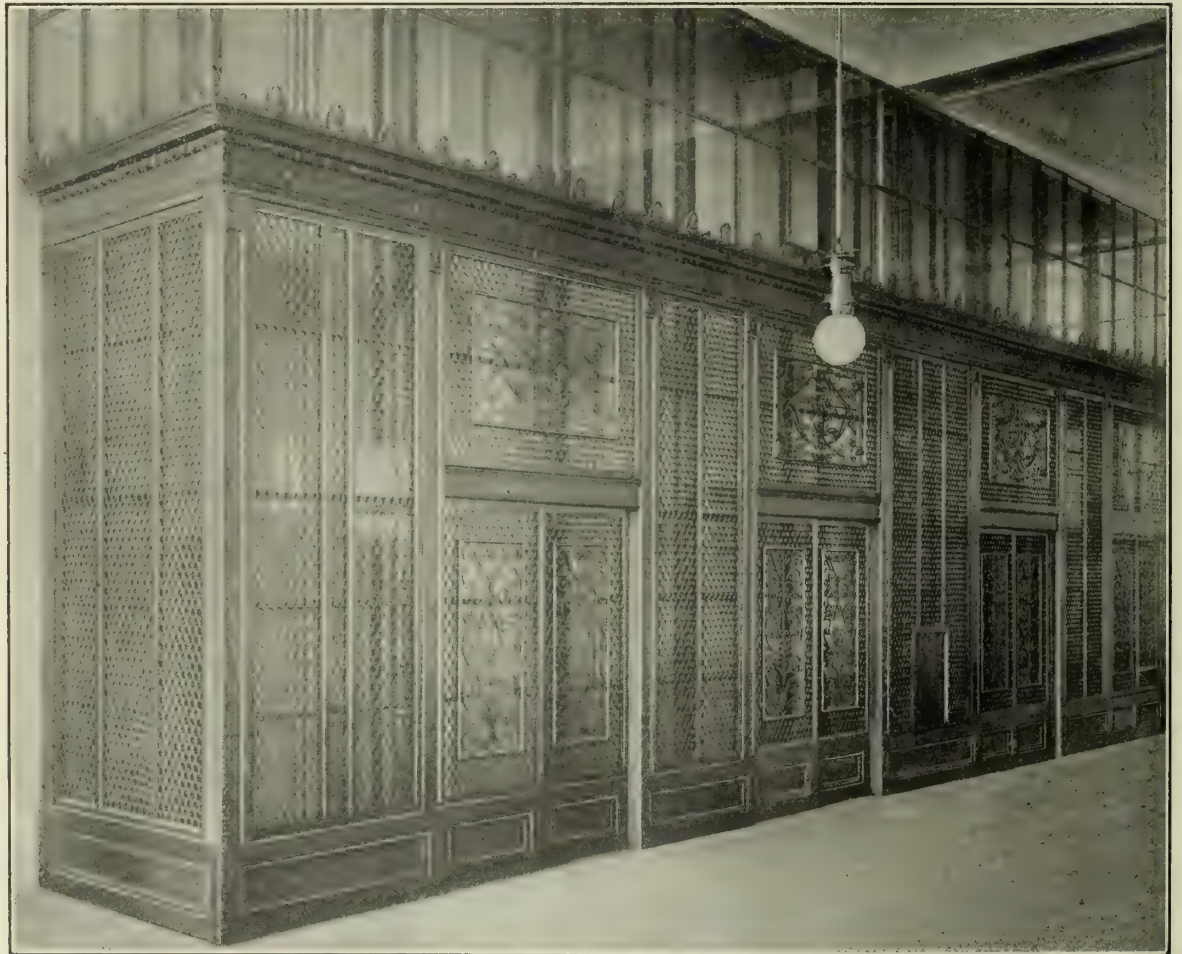
ORNAMENTAL IRON and BRONZE WORK, including ELEVATOR CARS, ELEVATOR ENCLOSURES, BANK and OFFICE RAILINGS and WROUGHT-IRON WORK of all kinds; also, WIRE WINDOW-GUARDS, WIRE PARTITIONS, and everything in the line of WIRE WORK.

SPECIALTIES.

Our specialties are Elevator Cars and Wired-Glass Elevator Enclosures.

**CO-OPERATIVE
SERVICE.**

We are at all times pleased to furnish special designs, and estimates on architects' plans.



ORNAMENTAL METAL AND WIRED-GLASS ELEVATOR ENCLOSURES, DUFFY-McINNERY CO.,
ROCHESTER, N. Y.

THE STANDARD COMPANY

Designers and Manufacturers of Ornamental Iron and Bronze

Railway Exchange Building
CHICAGO, ILL.

TELEPHONE HARRISON, 3116

FACTORY
15TH AND LAFLIN STREETS

PRODUCTS.

General ORNAMENTAL IRON and BRONZE SPECIFICATIONS; ELEVATOR CARS and ENCLOSURES; FIREPROOF DOORS and ENCLOSURES; PATENTED ELEVATOR DOORS, ENTRANCES, STAIRWAYS, RAILINGS, LAMPS, BANK INTERIORS, GRILLE WORK, STORE FRONTS, MEMORIAL TABLETS and NAME-PLATES; MARQUISE, PORTE-COCHERES, MAUSOLEUM DOORS and GRILLES.



A FEW OF THE BUILDINGS IN WHICH ALL OF THE ORNAMENTAL IRON AND BRONZE WAS EXECUTED BY THE STANDARD COMPANY, CHICAGO, ILL.

THE STEWART IRON WORKS CO., INC.

MANUFACTURERS OF

Iron Fence and Entrance Gates, Reservoir Vases, Settees, Etc.
CINCINNATI, OHIO

PRODUCTS.

Manufacturers of IRON FENCE and ENTRANCE GATES, IRON RESERVOIR VASES, IRON and WIRE SETTEES, STABLE FITTINGS, LAMPS, GRILLES, OFFICE PARTITIONS, IRON and WIRE WINDOW-GUARDS, and general ORNAMENTAL IRON WORK.

AWARDS.

We received the highest awards at World's Fair.

FACILITIES.

The Plant of this Company is the largest of its kind in the world. The marvelous growth of our business, established twenty-five years ago, is an acknowledgment that our work has been satisfactory, prices right, and dealings fair.

We have every facility for handling large or small contracts at the lowest possible cost, because we are equipped with the most modern machinery, specially designed for our use, which enables us to produce work at a very low cost and make prompt shipments. Our immense warehouses are always filled with stock materials.

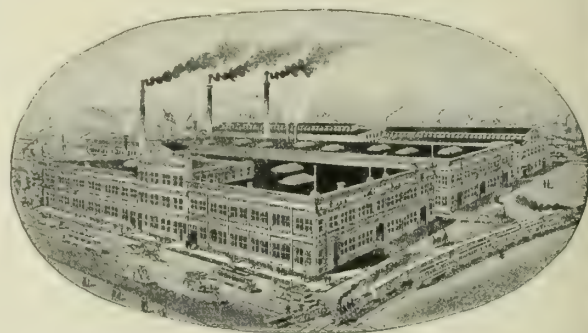
ESTIMATES.

We shall be glad to forward catalogues which illustrate our patented features and give full details of construction. We will furnish special designs, photographs, etc., upon request, if you will give us some idea of what you want.

Estimates given either f. o. b. or delivered and set up. When we sell fence f. o. b. cars we always furnish drawings, instructions, etc., for setting up the work, which can be done by local mechanics.



GRAND PRIZE GOLD MEDAL



PLANT OF THE STEWART IRON WORKS CO., INC.



ORNAMENTAL FENCE AND GATES



GORDON ESTATE, LONG ISLAND



DESIGN NO. 6504. ARTISTIC IRON FENCE AND ENTRANCE GATES

DESIGNS.

We have the largest selection of designs to be found in this country, designed and constructed to suit any kind of property.

WORKMANSHIP.

The work turned out of our factory is made by skilled mechanics, under able supervision.

ARCHITECTS' DRAWINGS.

We give special attention to architects' drawings, and are always ready to co-operate with them or with owners and to furnish them with sketches, designs and full information as to construction. In writing for sketches or estimates send a drawing showing measurements, location of gates (stating width desired), also kind and size of posts.

CO-OPERATIVE SERVICE.

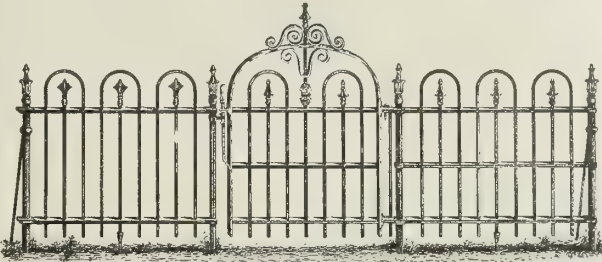
When in the market for Iron Fence and Gates, etc., architects and engineers will do well to correspond with us.

PATENTED FEATURES.

Architects and engineers will be interested in the patented features used in the "Stewart" Iron Fence. Send for descriptive catalogue, to use in making up your specifications.

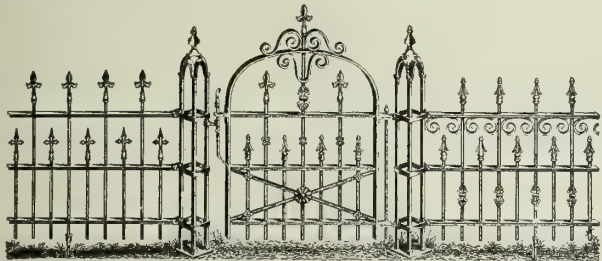


TRADE-MARK



FENCE NO. A. POST NO. 1. GATE NO. 1. FENCE NO. 24

Standard heights: 37, 42, 48 inches high when set; 3/8, 7/16 and 1/2 inch round pickets



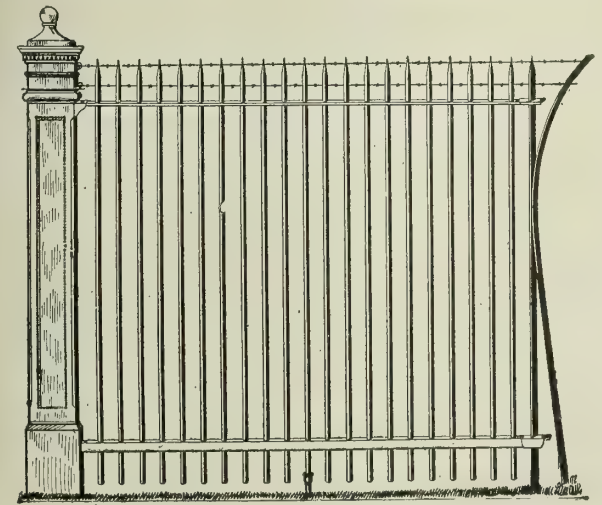
FENCE NO. 30. POST NO. 2. GATE NO. 2. FENCE NO. 45

Our fence can be made any height; 3/8, 7/16 and 1/2 inch round pickets



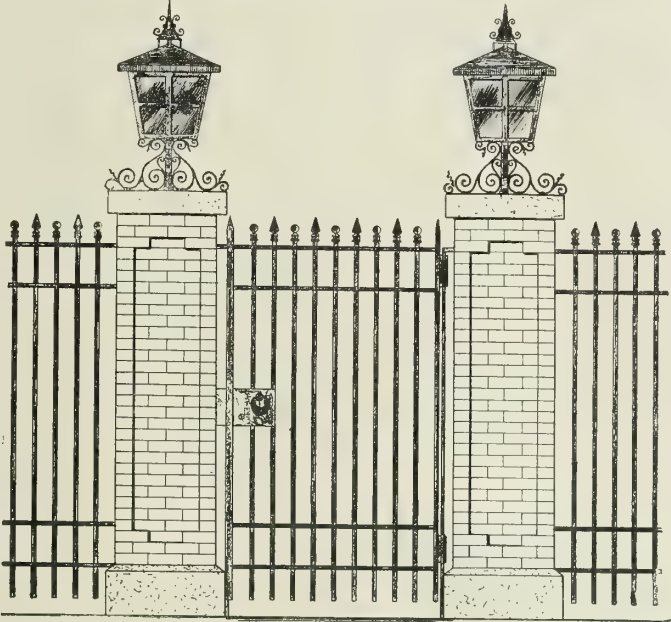
FENCE NO. 150 "S". POST NO. 610. GATE NO. 5

Can be made of 1/2, 5/8 or 3/4 inch square pickets



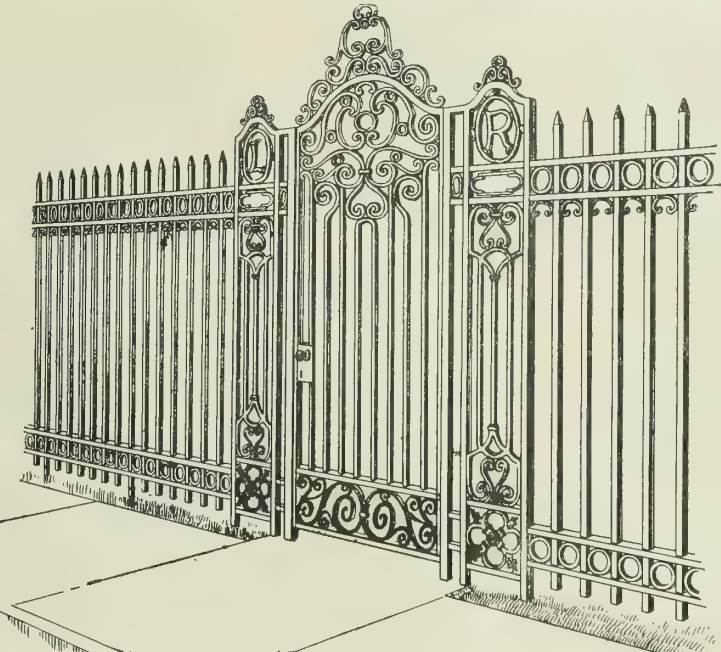
NO. 3250. UNCLIMBABLE IRON FENCE

Can be made in any height desired



NO. 6261. ERECTED FOR PROCTOR & GAMBLE CO., IVORYDALE, OHIO

Approximately 3000 feet, 7 feet high, with 12 sets of Entrance Gates



NO. 6186. ORNAMENTAL GATE AND FENCE, 6 FEET HIGH

TUTTLE & BAILEY MANUFACTURING COMPANY

Special Design Grilles, Tablets, and Architectural Bronzes

CHICAGO, ILL., 211 Lake Street
BOSTON, MASS., 71 Sudbury Street

NEW YORK, N. Y., 83 Beekman Street
BROOKLYN, N. Y., 83 North Tenth Street

PRODUCTS.

We manufacture SPECIAL DESIGN GRILLES, REGISTERS and VENTILATORS, TABLETS, ARCHITECTURAL BRONZES and ORNAMENTAL IRON WORK; BANK RAILINGS, DOORS, GATES, BALUSTRADES, NEWEL POSTS, etc. Also STOCK REGISTERS, etc.—for which see general index.

SPECIAL DESIGNS.

We make a specialty of designs suited to all orders of decoration, including Louis XIV, Louis XV, Colonial, Gothic, Moorish, Old English, Elizabethan, etc. A few of these which are suitable for registers or grilles are here shown. We have in all over 400 designs, and they cover all styles from the severely simple plain lattice to the most ornate Renaissance.

TABLETS.

Tablets of Cast Bronze are finely finished by hand and of superior workmanship and material. They are cast in one piece and made either from architects' details or from designs by our own artists.

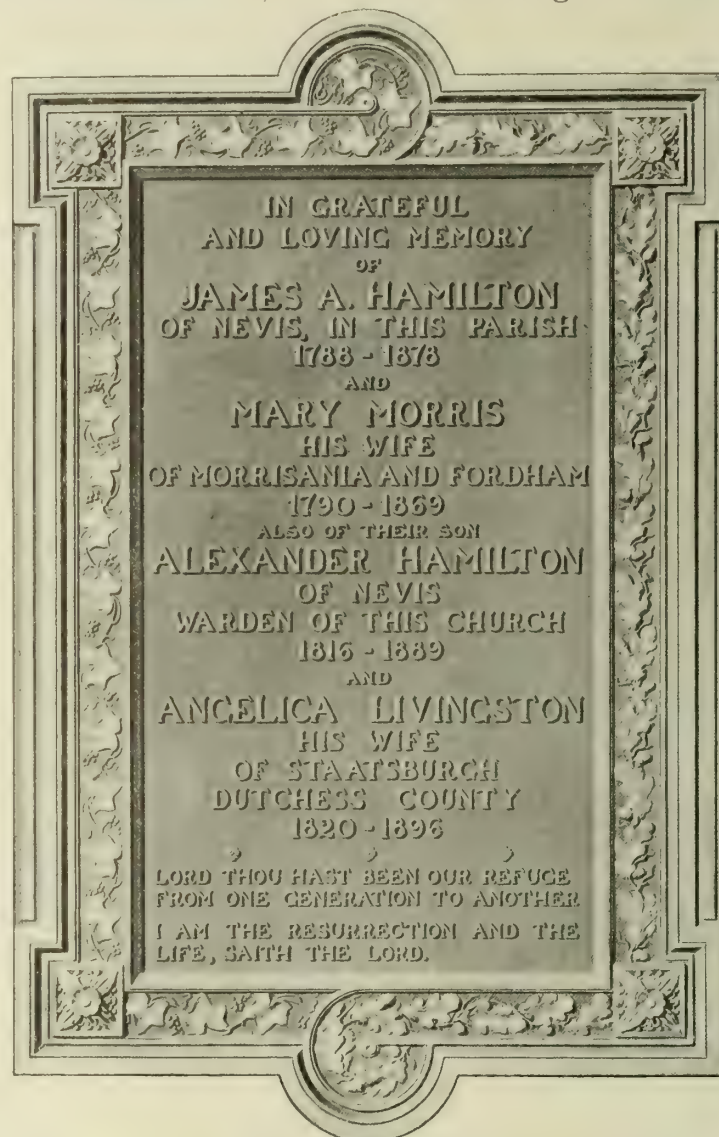
Sheet Bronze Tablets, although much cheaper than Cast goods, are also finished with the care that we give to all of our products.

ARCHITECTURAL BRONZES.

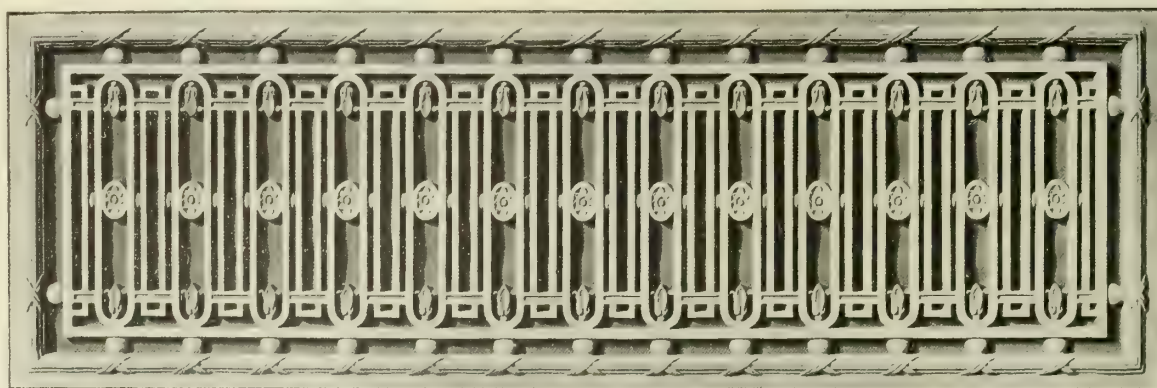
All of our Ornamental Bronzes, consisting of bank railings, doors, gates, balustrades, newel posts, etc., are finely finished by hand and with the best possible workmanship.

QUALITY.

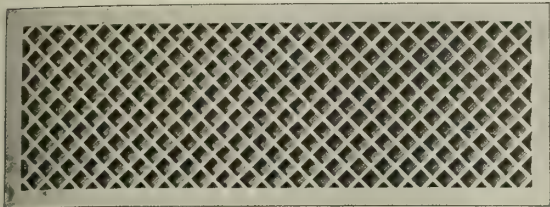
As our ornamental iron and bronze work is designed, modeled and finished by artists, we do not compete except on the basis of similar work.



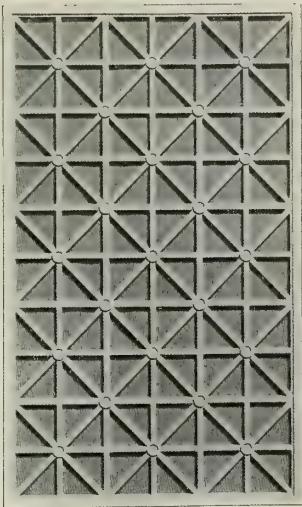
BRONZE MEMORIAL TABLET



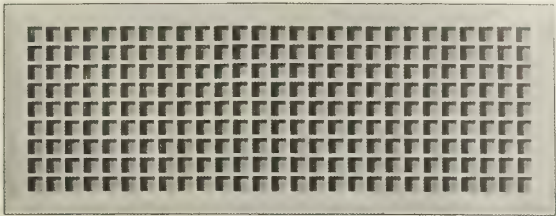
BRONZE GRILLE DESIGN, T. & B. 271 Scale 1½ inch equals one foot



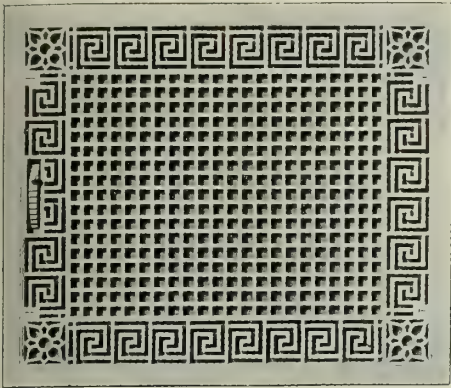
T. & B. 56



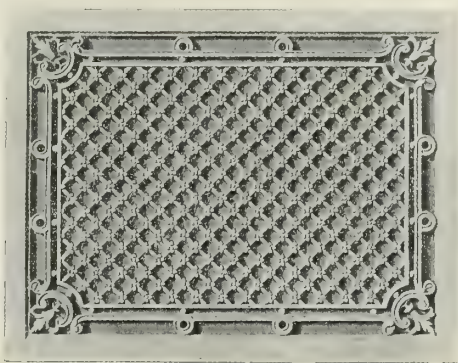
T. & B. 223



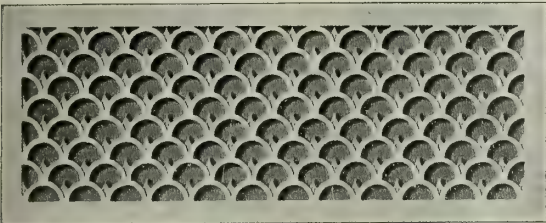
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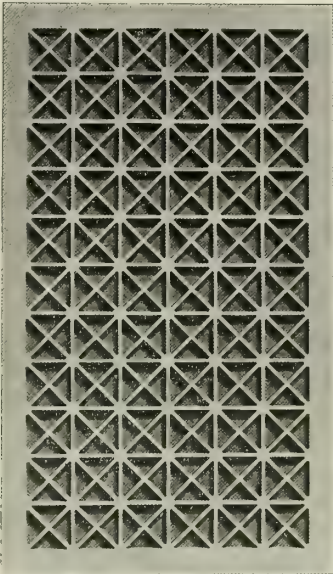
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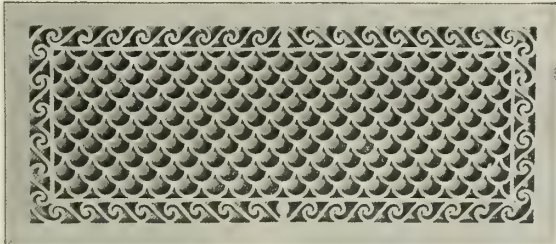
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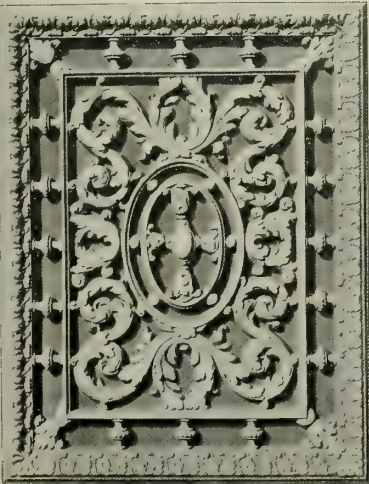
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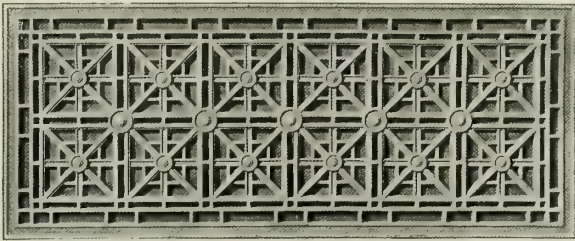
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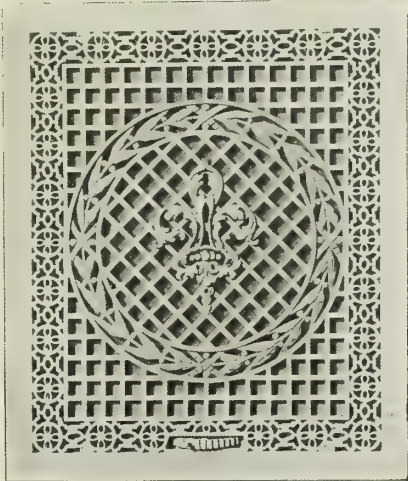
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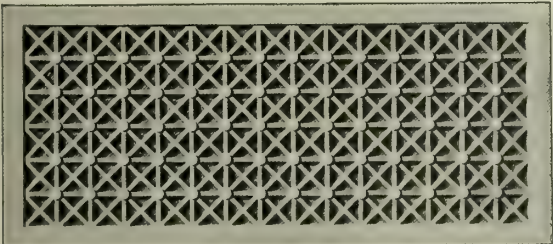
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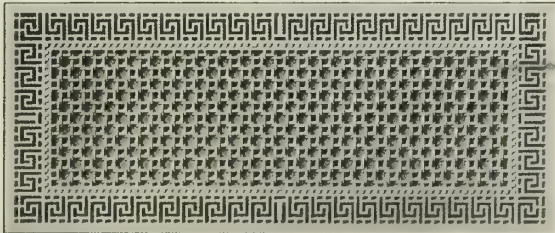
T. & B. 298



T. & B. 1



T. & B. 42



T. & B. 236

TUTTLE & BAILEY SPECIAL DESIGN CAST GRILLES AND SCREENS

Scale approximately, one inch equals one foot

THE W. S. TYLER COMPANY

Ornamental Iron and Bronze

GENERAL OFFICES

CLEVELAND, OHIO

BRANCH OFFICES

PITTSBURG, PA., Bessemer Building

NEW YORK, N. Y., 11 Broadway

PRODUCTS.

Manufacturers of ORNAMENTAL IRON and BRONZE WORK, consisting of ENTRANCES, CORRIDORS, STORE FRONTS, MARQUISE, PORTE-COCHERES, ELEVATOR ENCLOSURES, ELEVATOR CARS, TABLETS, STAIRWAYS, LAMPS, BANK and OFFICE RAILINGS, GATES, GRILLES, RAILINGS and FENCES.



MARQUISE, STORE FRONT AND BRONZE ENTRANCE, THE STERLING WELCH CO., CLEVELAND, OHIO
J. MILTON DYER, Architect

ESTABLISHED 1885

THE WINSLOW BROS. COMPANY

Ornamental Iron and Bronze

MAIN OFFICE AND WORKS

Harrison Street, 46th and 47th Avenues
CHICAGO, ILL.

BRANCH OFFICES

NEW YORK, N. Y., 103 Park Avenue

SAN FRANCISCO, CAL., Monadnock Building

PRODUCTS.

Manufacturers of ORNAMENTAL IRON and BRONZE of the highest standard, for public and private buildings, including STAIRWAYS and RAILINGS; ELEVATOR ENCLOSURES and CARS; STORE FRONTS and ENTRANCES; BANK COUNTER SCREENS and INTERIOR FITTINGS; MARQUISES; MAUSOLEUM DOORS and FITTINGS; MEMORIAL TABLETS; ELECTROLIERS and LAMP STANDARDS; GATES and FENCES, etc.

FACILITIES.

Our modern plant, erected in 1905, is fully equipped with every machine and process required for the entire completion of any contract for Ornamental Iron or Bronze, and is under our direct supervision. The complete works comprise eighteen different departments:

General Offices
Designing
Draughting
Modeling
Pattern Making

Iron Foundry
Bronze Foundry
Power House
Electro-Plating
Blower-Barfing

Fused Color
Polishing
Fitting
Grille Work
Art Forge

Blacksmithing
Stores
Shipping

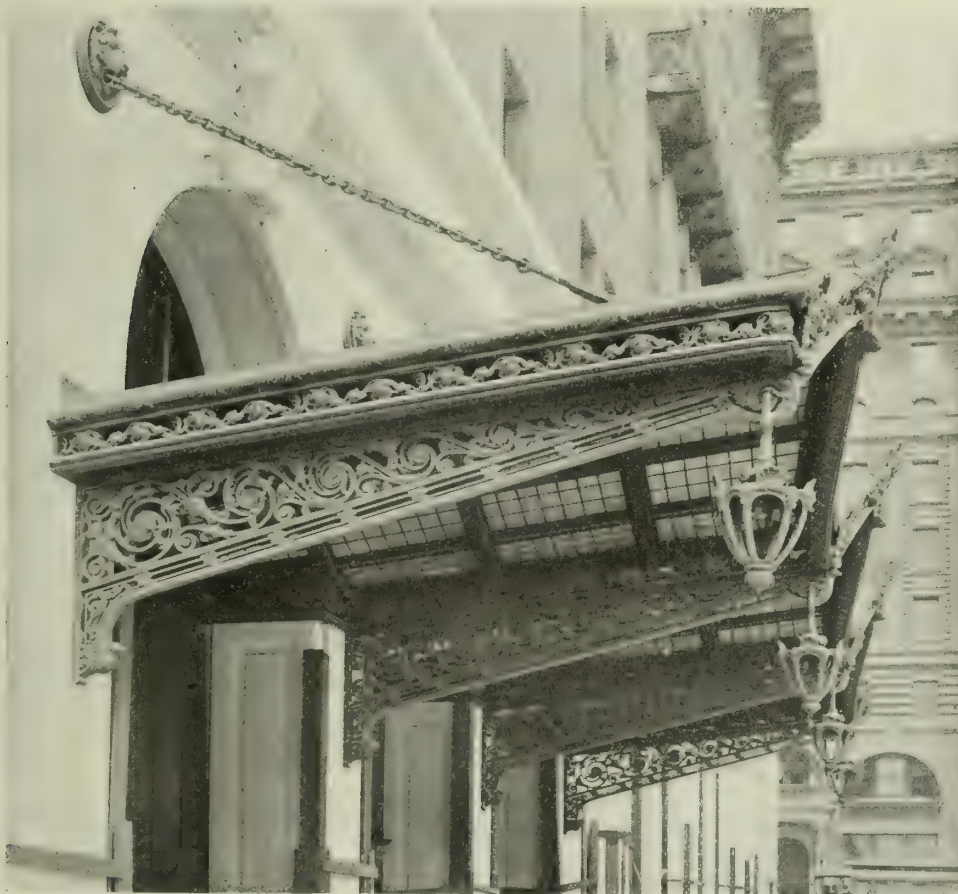
Each department is completely adjusted in its relation to the others to insure the best results in our products.

AGENCIES.

We have agencies in all principal cities of the United States.

CATALOGUE.

Our Book of Plates (edition 1910) illustrating representative Ornamental Iron and Bronze Work produced by us in recent years, will be sent free to registered architects, upon request.



MARQUISE, PALACE HOTEL, SAN FRANCISCO
TROWBRIDGE & LIVINGSTONE, Architects



BRONZE ELEVATOR DOOR, TRINITY
BUILDING, NEW YORK
FRANCIS H. KIMBALL, Architect

UNION FOUNDRY WORKS

MANUFACTURERS OF

Structural and Ornamental Iron Work

Room 1427, 164 Dearborn Street
CHICAGO, ILL.

FACTORY

76TH STREET AND GREENWOOD AVENUE

PRODUCTS AND SERVICES.

STRUCTURAL and ORNAMENTAL IRON WORK, including CAST-IRON COLUMNS, PLATES, SILLS, JAMBS, LINTELS, WHEEL-GUARDS, and general FOUNDRY WORK; STEEL COLUMNS, GIRDERS and TRUSSES, BEAMS, CHANNELS; IRON STAIRS and RAILINGS, ORNAMENTAL CAST- and WROUGHT-IRON GRILLES, AREA GRATINGS, FIRE-ESCAPES, STORE FRONTS, WINDOW-GUARDS, ELEVATOR ENCLOSURES, CANOPIES.

We contract to erect both our Structural and Ornamental Work. Structural Work we frequently furnish f. o. b. cars, but prefer to erect our own Ornamental Work. We can furnish competent workmen to superintend the erection, if desired.

FACILITIES.

We have our own foundry and carry a stock of steel beams, channels and angles, which enable us to get out work quickly and insure prompt service.

ESTIMATES AND DESIGNS.

Estimates will be furnished in accordance with architects' plans and specifications, and designs will be submitted on application.

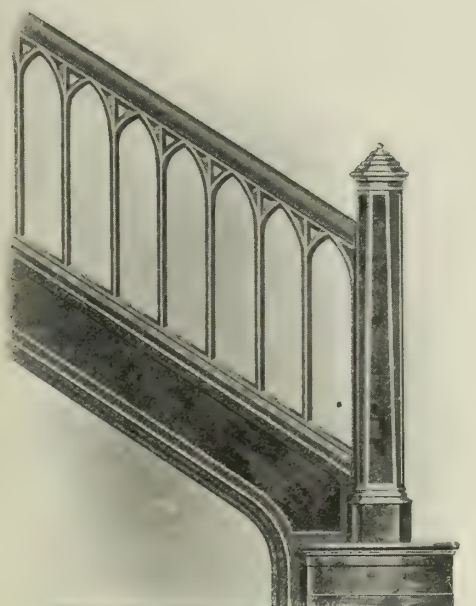
We have a variety of designs for Ornamental Work such as Stairs, Railings, Store Fronts, etc., and can submit stock designs where it is desired to save the expense of special patterns.

REFERENCES.

The following are a few of the buildings for which we have furnished Structural Work:

BUILDING	LOCATION	ARCHITECT
Bryson Building	Chicago, Ill.	S. S. Beman
Sanford Mfg. Co.	Chicago, Ill.	F. W. Perkins
Kuntz Remmler & Co.	Chicago, Ill.	W. J. Brinkmann
Woodlawn Masonic Temple	Chicago, Ill.	L. E. Stanhope
Union Steam Pump Co.	Battle Creek, Mich.	J. C. Llewellyn
High School Building	Beloit, Wis.	J. C. Llewellyn
Independent Congregational Church	Battle Creek, Mich.	J. C. Llewellyn
Office Building, J. I. Case Threshing Machine Co.	Racine, Wis.	H. R. Wilson
Becklenberg Warehouse	Chicago, Ill.	H. R. Wilson
Children's Hospital	Chicago, Ill.	Holabird & Roche
Wells Fargo Express Co., Stable	Chicago, Ill.	Beers & Beers
Great Northern Depot	Spokane, Wash.	Frost & Granger
Field House, Lincoln Park Commissioners	Chicago, Ill.	Perkins & Hamilton
Western Glucose Co.	Roby, Ind.	
Corn Products Mfg. Co.	Pekin, Ill.	
Ph. Schneider Brewing Co.	Trinidad, Colo.	I. H. & W. M. Rapp
International Harvester Co.	Grand Forks, N. Dak.	A. C. Wilmanns
Stein Building	Chicago, Ill.	Treat & Alschuler
Eastman Kodak Co.	Chicago, Ill.	Hill & Wotersdorf
Charles Wouters	Chicago, Ill.	Handy & Cady
High School Building	Oak Park, Ill.	Patton & Miller
Buildings for which we have furnished Ornamental Iron:		
Kuntz Remmler & Co.	Chicago, Ill.	W. J. Brinkmann
Colorado Telephone Co.	Denver, Colo.	F. E. Edbrooke
Woodlawn Masonic Temple	Chicago, Ill.	L. F. Stanhope
Chicago Portrait Co.	Chicago, Ill.	Holabird & Roche
Ryerson Building	Chicago, Ill.	Holabird & Roche
Geo. Smith Memorial—St. Luke's Hospital	Chicago, Ill.	Frost & Granger
Bush Temple	Chicago, Ill.	J. E. O. Pridmore
Chicago, Milwaukee & St. Paul Record Building	Chicago, Ill.	
Kalamazoo National Bank	Kalamazoo, Mich.	J. C. Llewellyn
Connor Hotel	Joplin, Mo.	Barnett, Haynes & Barnett
The Fair	Chicago, Ill.	Jenney, Mundie & Jensen
Glazier Building	Ann Arbor, Mich.	Claire Allen
Bowman Dairy Co.	Chicago, Ill.	Turnbull & Jones
Chicago Polyclinic Hospital	Chicago, Ill.	R. E. Schmidt and Garden & Martin
Y. M. H. A. Building	New Orleans, La.	Stone Bros. and Emile Weil
Gruenwald Theater	New Orleans, La.	Stone Bros.
Swift & Co.	New York, N. Y.	
Swift & Co.	Chicago, Ill.	
School Building	Des Moines, Iowa	Proudfoot & Bird
Chamberlain Hotel	Des Moines, Iowa	Hallet & Rawson
School Buildings	Chicago, Ill.	Board of Education
Mandel Hall, University of Chicago	Chicago, Ill.	Shepley, Rutan & Coolidge
Haskell Museum, University of Chicago	Chicago, Ill.	Henry Ives Cobb
Art Institute	Chicago, Ill.	Shepley, Rutan & Coolidge
University of Illinois—Physics and Natural History Buildings	Urbana, Ill.	W. C. Zimmerman

Continued on next page



STAIRWAY, UNIVERSITY OF CHICAGO,
COMMONS BUILDING
SHEPLEY, RUTAN & COOLIDGE, Architects



CANOPY, ST. LUKE'S HOSPITAL, CHICAGO, ILL.
FROST & GRANGER, Architects



ENTRANCE GATES, ST. LUKE'S HOSPITAL, CHICAGO, ILL.
FROST & GRANGER, Architects



ENTRANCE STEPS, TELEPHONE BUILDING,
DENVER, COLO.
F. E. EDBROOKE ARCHITECTURAL Co., Architects



MAIN STAIRWAY, NASSAU BUILDING, DENVER, COLO.
F. E. EDBROOKE ARCHITECTURAL Co., Architects

THE UNION METAL MANUFACTURING COMPANY

SOLE MANUFACTURERS OF

"Union" Metal Columns, and "Union" Lamp Standards

CANTON, OHIO

PRODUCTS.

We are sole manufacturers of "UNION" METAL (IRON and STEEL) COLUMNS for Porches, Pergolas and Interiors; "UNION" LAMP STANDARDS (PRESSED STEEL, COPPER and BRONZE) for Streets, Parks, Boulevards, and Building Entrances.

We also manufacture CONCRETE-FILLED STEEL and SHEET-METAL COLUMNS, METAL POSTS, IRON and BRONZE LAMPS, LAMP POSTS and LIGHTING EQUIPMENT and FIXTURES generally.



DESIGN NO. 218
Roman Corinthian
Capital, Corin-
thian Flute, At-
tic Base

DESIGN NO. 225
Roman Doric Cap-
ital, Doric Flute,
Attic Base

DESIGN NO. 214
Ionic Capital,
Ionic Flute, At-
tic Base

DESIGN NO. 245
Temple of the
Winds Capital,
Corinthian
Flute, Attic Base

DESIGN NO. 235
Ionic Capital, Do-
ric Flute, Attic
Base

DESIGN NO. 207
Plain Capital, Do-
ric Flute, Attic
Base

DESIGN NO. 250
Plain Capital, Do-
ric Flute, Single
Roll Base

"UNION" METAL COLUMNS.

CONSTRUCTION—"Union" Metal Columns are made entirely of metal, excepting when ornamental composition capitals are furnished. Other capitals and all bases are made of high-grade grey cast-iron. Shafts are made from best grade annealed open-hearth steel.

DURABILITY—"Union" Metal Columns can not split, check, rot, warp, or open up at the joints. Ventilation through the base keeps the entire column and the porch about it perfectly dry; thus eliminating frequent expense for repairs to rotted columns and floors, inevitable with wood columns.

STRENGTH—"Union" Metal columns are made with lock-seamed shafts. The seam is placed wholly on the inside of the column, leaving the exterior surface perfectly smooth. The shafts are tapered to proper architectural proportions, then fluted in accordance with either the Doric or Corinthian Orders of Architecture. The fluting insures for "Union" Metal Columns a metal cross-section equal to the depth of flute; thus increasing by several times both the lateral and compressive strength.

PAINTING—"Union" Metal Columns are painted both inside and outside with high-grade paint, specially prepared to adhere to and protect sheet metal. They do not require painting more frequently than a house and will stand much more neglect in this respect than wood columns.

COST—"Union" Metal Columns cost no more than good wood columns, yet their advantages, shown above, are many and important. They are indestructible and will last a lifetime, consequently the first cost is the only cost.

SPECIFICATIONS.

Design No.	Diam. of Shaft at Base	Bottom Member of Base	Capital	Shaft	Base	Length over all
218	8"	11 1/4" sq.	Composition	Steel	Cast-Iron	5' to 11'
	10"	13 1/2" sq.	Composition	Steel	Cast-Iron	5' to 11'
	12"	15 1/4" sq.	Composition	Steel	Cast-Iron	5' to 11'
	14"	18" sq.	Composition	Steel	Cast-Iron	5' to 11'
225	Same as 218					
214						
245						
235						
250	7"	9 1/4" sq.	Cast-Iron	Steel	Cast-Iron	5' to 11'
and	8"	10 3/4" sq.	Cast-Iron	Steel	Cast-Iron	5' to 11'
207	9"	11 3/8" sq.	Cast-Iron	Steel	Cast-Iron	5' to 11'
	10"	12 1/4" sq.	Cast-Iron	Steel	Cast-Iron	5' to 11'
	12"	16" sq.	Cast-Iron	Steel	Cast-Iron	5' to 11'

FACILITIES.

"Union" Metal Columns are made up to 40 inches in diameter and 35 feet in length. The Company has facilities particularly adapted to this class of work. Do not fail to send for catalogue No. 21, describing "Union" Metal Columns in detail.

"UNION" LAMP STANDARDS.

GENERAL—"Union" Lamp Standards are made of pressed steel, pressed copper or pressed bronze, and represent a unique and interesting development in ornamental street lighting specialties. The invention makes the construction of a sheet-metal column a possibility for the first time, and lends itself admirably to the manufacture of lamp standards requiring classical lines and clean-cut, graceful contours.

CONSTRUCTION—A sheet of steel, copper, or bronze, of sufficient gauge to insure perfect strength, is formed into a plain, tapered column of proper architectural proportions. Another plain column of same size and shape, constructed of special non-oxidizing steel, is forced inside of the first. By means of patented machinery, the double tapered column is then fluted in accordance with either the Doric or Corinthian Orders of Architecture.

COST—While "Union" Lamp Standards possess beauty, durability, strength, and low shipping weight, the matter of reasonable cost is a feature even more remarkable. Pressed Steel Standards can be furnished for approximately one half the price of cast-iron standards of similar design; Pressed Copper, presenting a rich appearance and lasting for generations, for approximately the same price as cast-iron; and Pressed Bronze at a price that, for the first time, makes the use of this metal a commercial possibility for general street-lighting purposes.

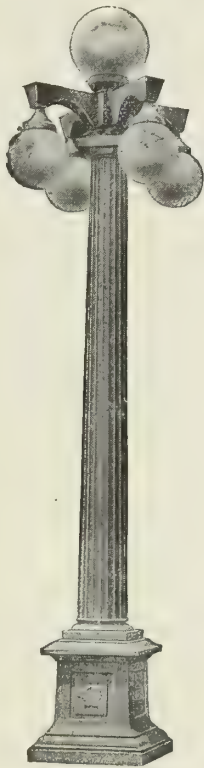
NOTICE.

"Union" Metal Columns and the machines for manufacturing them are broadly protected by patents allowed and pending. Infringements thereon will be promptly and vigorously prosecuted.

REFERENCES.

The following and hundreds of others are satisfied users of "Union" Metal Columns:

- Martin Maloney, Summer Mansion, Spring Lake, N. Y.
- Missouri State Asylum for Deaf, Fulton, Mo.
- Capt. D. H. Barger, Colonial Mansion, Shawsville, Va.
- White City, all column work, Denver, Colo.
- Hon. W. H. Stewart, Colonial Mansion, Rock Hill, S. C.
- Hon. Horace Hood, Colonial Mansion, Montgomery, Ala.
- Richard Massey, large pergolas, Birmingham, Ala.
- J. A. Harpole, College Buildings, Clinton, Ky.



"UNION" LAMP STANDARD
Design No. 183,
3 Light
Design No. 185,
5 Light

UNITED STATES COLUMN COMPANY

MANUFACTURERS OF

"Lally" Patent Columns

Erie and Albany Streets
CAMBRIDGE, MASS.



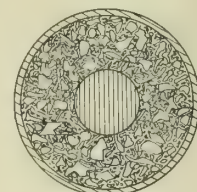
TRADE-MARK

PRODUCT. "LALLY" PATENT COLUMNS.

DESCRIPTION. Our "Lally" Patent Column is a steel and concrete supporting column; it is composed of an outside shell of steel pipe filled most compactly with concrete which is put in by special machinery made for the purpose.

ADVANTAGES. The advantages of the "Lally" Patent Column are many. They can be procured in less time than any other. They are absolutely reliable for the strengths we claim for them.

REINFORCEMENT. By our methods of inner steel reinforcement, shown in illustration, we can get greater strength in the same diameter than any other type of column. We obtain practically the full value of the metal in the reinforcement.



SECTION OF
"LALLY" COLUMN
REINFORCED

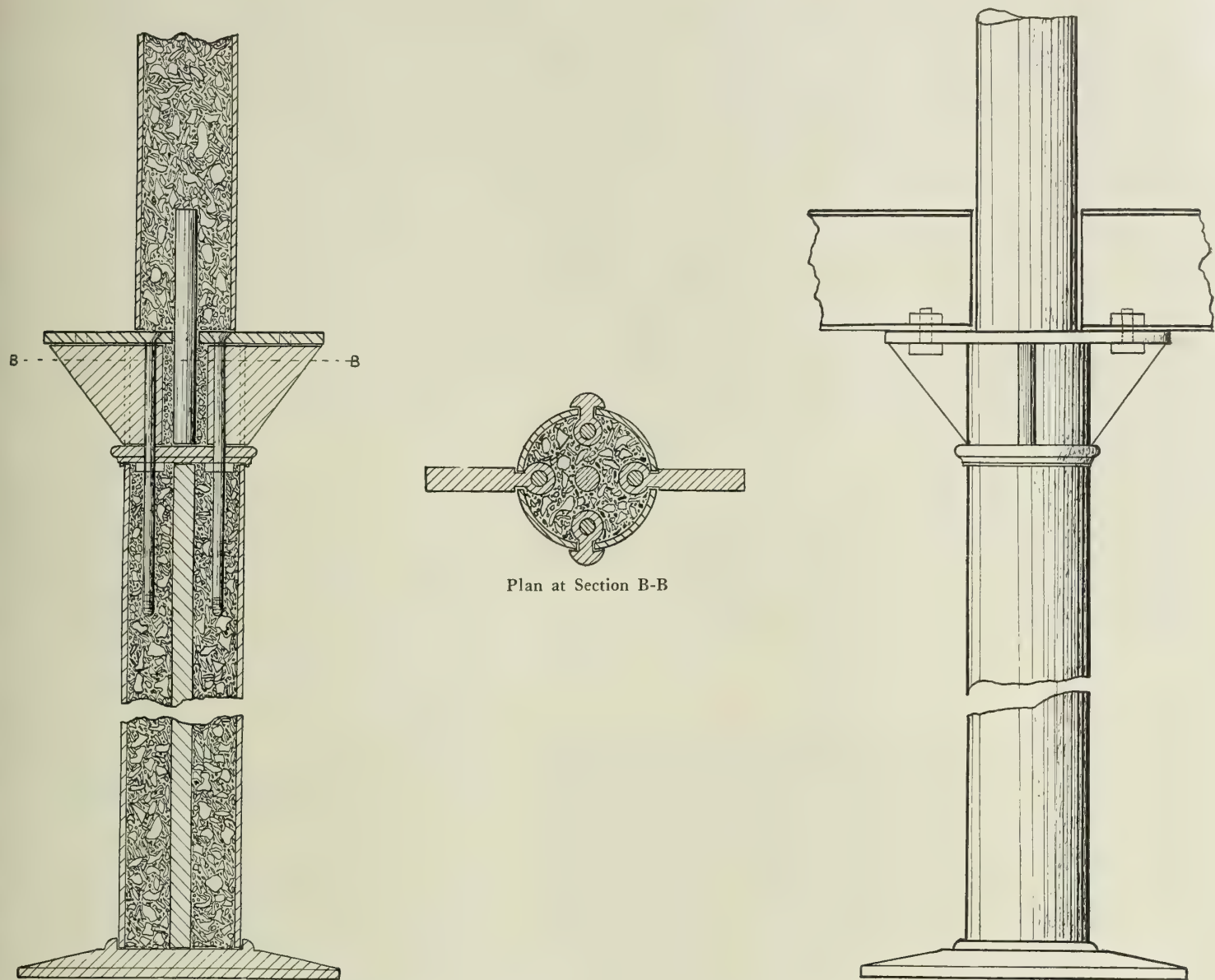
FIREPROOF QUALITIES. The fire-resisting qualities of the "Lally" Column have been tested in several large fires, where they were the only things in the building that were not destroyed. The reinforced "Lally" Column is doubly fireproof, for the metal reinforcement embedded in the concrete is indestructible.



SECTION OF
"LALLY" COLUMN
NOT REINFORCED

STRENGTHS, DETAILS AND PRICES. We will be pleased at any time to furnish catalogues containing full description, strengths and prices.

SPECIFICATION. Architects and engineers who specify "Lally" Patent Columns will not only justify themselves, but benefit their client by insisting upon getting what they specified—the Genuine "Lally" Column.



Plan at Section B-B

STEEL BRACKET CAP CONNECTION FOR CONTINUOUS "LALLY" COLUMNS

DEMONSTRATION.

We sincerely request architects and engineers not to waste any time in comparing any other column claiming similarity or quality equal to the "Lally" Column, but we ask you to invite us in joint demonstration with any and all who claim an article equal to the "Lally" Column.

JNO. WILLIAMS, INC.

MANUFACTURERS OF

Ornamental Bronze and Iron Work for Buildings

556 West Twenty-Seventh Street

NEW YORK, N. Y.

TELEPHONE, 5368 CHELSEA

PRODUCTS.

We manufacture the following: BRONZE and IRON ENTRANCE DOORS, DOOR GRILLES, WINDOW GRILLES, STAIR RAILINGS, TUBE RAILINGS, LAMP STANDARDS, BANK FITTINGS, COUNTER SCREENS, MESH WIRE WORK, TELLERS' ENCLOSURES, ELEVATOR ENCLOSURES, MAUSOLEUM DOORS and FITTINGS, MEMORIAL TABLETS, SIGNS and SEPARATE BRONZE LETTERS, FINE BRONZE CASTINGS, STATUES, FIGURES, PORTRAITS, BUSTS and MEDALLIONS, MONUMENTAL BRONZE WORK, FOUNTAINS, SUN-DIALS, IRON DRIVEWAY GATES, FENCING, GRILLE WORK.

OUR WORKS.

Our buildings now cover twenty city lots and are equipped with modern machinery and appliances for turning out advantageously metal work of the highest standard.

Bronze Foundry and Works, Iron Foundry and Works, 537, 539, 543, 545, 547, 549, 551, 553, 555 West 26th Street, 536, 538, 540, 542, 544, 546, 548, 550, 552, 554, 556 West 27th Street.



BANKING ROOM, NATIONAL EXCHANGE BANK, BALTIMORE, MD.

Showing Bronze Counter Screen executed by JNO. WILLIAMS, INC.

ALFRED H. TAYLOR, Architect

Numerous other designs illustrated in our Magazine, Nos. 2 and 6

OUR MAGAZINE.

The scope of the ornamental metal work executed by the JNO. WILLIAMS, INC., shops enables them to collect, under separate headings, illustrations of this work and publish the same with description of the work in the magazine "American Art in Bronze and Iron." No. 1. Bronze Memorial Tablets; No. 2. Bank Counter Screens; No. 3. Sculpture in



CAST-BRONZE TABLET ERECTED AT FORT MCHENRY, MD.

Modeled, cast and erected by JNO. WILLIAMS, INC., to order of United States Government

FRANCIS B. WHEATON, Advisory Architect

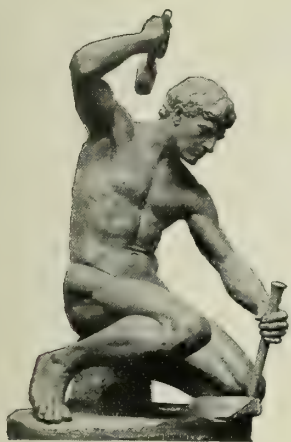
Numerous other designs illustrated in our Magazine, No. 1. A supplementary issue will shortly be published

Bronze; No. 4. Iron and Bronze Stair Railings; No. 5. Cast Bronze Entrance Doors; No. 6. (In preparation) will illustrate sixty Bank Counter Screens executed since the second issue of this magazine; No. 7. Bronze Doors for Mausoleums and Ecclesiastical Metal Work. A supplementary issue will show some of the latest Tablets executed by this company. Another will illustrate Electric Light Standards. Preliminary sheets have been issued of a number illustrating Bronze and Iron Grille Doors.

Copies of the magazine will be sent free to architects who receive "Sweet's."



COVER DESIGN
OF MAGAZINE



COLOSSAL CAST
BRONZE STATUE,
"DRILLER"

CHARLES H. NIEHAUS,
Sculptor

Numerous other designs
illustrated in our Magazine,
No. 3



ELECTRIC LIGHT
STANDARD

Numerous other de-
signs to be illustrated in
a future issue of our
Magazine



BRONZE DOOR, "TRADITION"
OLIN L. WARNER, Sculptor



BRONZE DOOR, "WRITTEN
HISTORY"

HERBERT ADAMS, Sculptor

IN CONGRESSIONAL LIBRARY, WASHINGTON, D. C.

Numerous other designs illustrated in
our Magazine, No. 5



CAST BRONZE DOOR, EATON
MAUSOLEUM, MOUNT
PLEASANT CEMETERY
TORONTO, CAN.

SPROATT & ROLPH, Architects

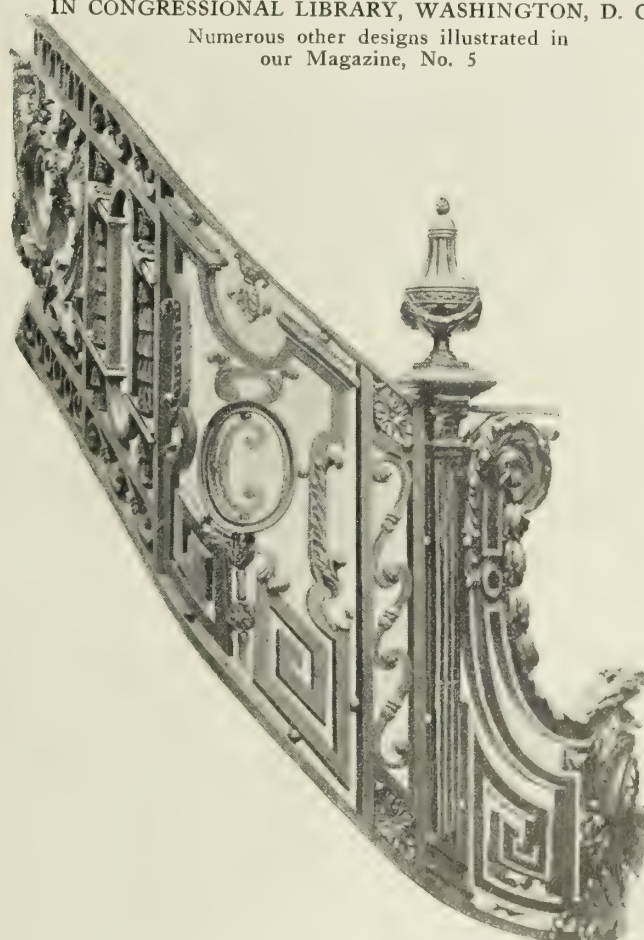
Numerous other designs illus-
trated in our Magazine, No. 7



WROUGHT IRON GRILLE
DOORS, RESIDENCE OF N. L.
McCREADY, 4 EAST 75TH
STREET, NEW YORK, N. Y.

TROWBRIDGE, COLT & LIVINGSTON,
Architects

Numerous other designs to be il-
lustrated in a future number of our
Magazine



WROUGHT IRON STAIR RAILING, RESIDENCE OF
R. FULTON CUTTING, NEW YORK, N. Y.

ERNEST FLAGG, Architect

Numerous other designs illustrated in our Magazine, No. 4

WRIGHT WIRE CO

MANUFACTURERS OF

Wire and Wire Products

WORCESTER, MASS.

BRANCH OFFICES AND WAREHOUSES

BOSTON, MASS., 32 Oliver Street and Equitable Bldg., Room 72
NEW YORK, N. Y., Home Life Building
CHICAGO, ILL., 33 West Michigan Street
PHILADELPHIA, PA., 410 Commerce Street
SAN FRANCISCO, CAL., 3 Front Street

FACTORIES

WORCESTER, MASS.
PALMER, MASS.

PRODUCTS.

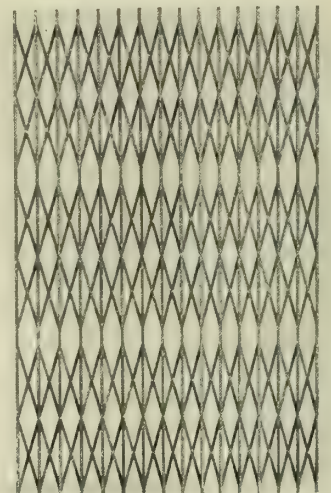
We roll and draw IRON and STEEL WIRE of all kinds; also, manufacture WIRE PRODUCTS, such as CLOTH, Plain and Galvanized, NETTING, WINDOW SCREEN CLOTH, CLOTHES-LINES, WIRE ROPE and CABLE, PICTURE-CORD, FOUNDRY RIDDLES, LATHING, Plain, Galvanized, and Stiffened, and STAPLES; also, ORNAMENTAL IRON, BRASS, and BRONZE WORK, including ELEVATOR CABS and ENCLOSURES, BANK RAILINGS, COUNTER RAILINGS, WIRE GRILLES, GUARDS and GATES, FOLDING GATES, VAULT GATES, CLOTHES LOCKERS, of Expanded Metal, Wire or Sheet Steel, STALL GUARDS, IRON and BRASS PIPE RAILINGS and FIXTURES, SKYLIGHT and WINDOW GUARDS, FLOWER-BED and TREE GUARDS, PLAIN and ORNAMENTAL WIRE FENCING, FARM and RAILROAD WIRE FENCING, TRUSS and CABLE FENCING, CONCRETE REINFORCEMENT FABRIC, WALL TIES, WIRE SNOW GUARDS, and MISCELLANEOUS WIRE GOODS.



ELEVATOR CAB



ELEVATOR ENCLOSURE



FOLDING GATE

ORNAMENTAL
IRON, BRASS,
AND BRONZE
WORK.

We manufacture Ornamental Iron, Brass, and Bronze Work for all purposes from drawings furnished us, or we will prepare and furnish drawings or sketches if desired. A sketch or specification from the architect or builder is essential in order to obtain a close price. We give particular attention to Elevator Cabs and Enclosures, Bank Railings, Counter Railings, Grilles, and Folding Gates. We guarantee the workmanship and material in all our products.

WIRE, WIRE
CLOTH, ETC.

We can supply Wire, Wire Cloth, Netting, etc., in all sizes and finishes, Clothes-lines of plain and twisted galvanized wire, and Wire Rope of all kinds in all sizes.

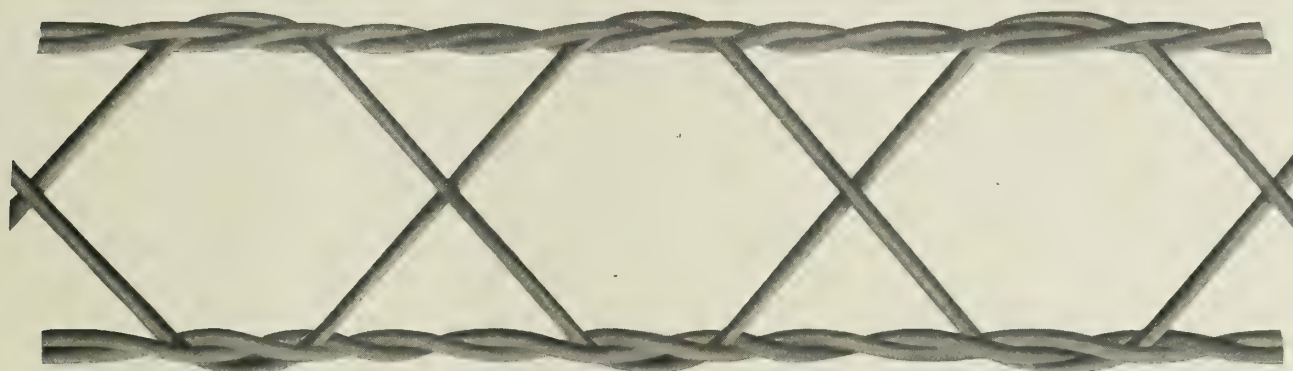
WIRE
LATHING.

Our Lathing is made of either plain or galvanized steel wire, Nos. 18 to 21, and $2\frac{1}{2} \times 2\frac{1}{2}$, 3×3 , and 4×4 mesh. Put up in rolls thirty-six inches wide, in lengths of about fifty yards.

WIRE LATH.

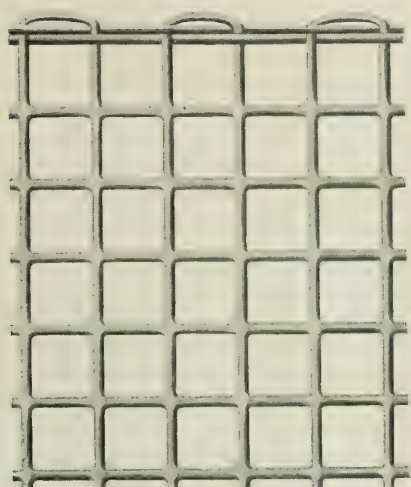
Wire Lath is an article so well known among architects and builders for its great value as an article for the fireproofing of buildings, and has been so successfully used for thirty to forty years in some of the best buildings in the country, that no description of it or explanation need be printed here.

We make and can furnish from our large stock all the sizes usually carried in stock, and any special sizes to order at short notice.

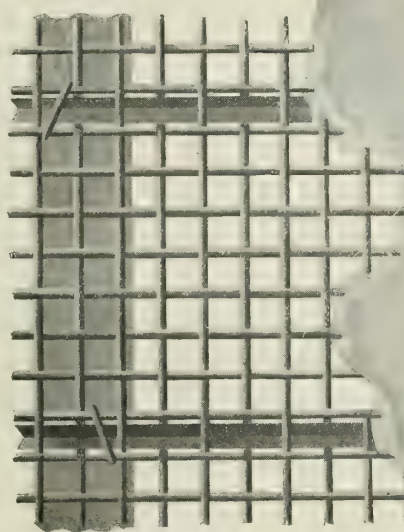


TRUSS AND CABLE FENCING

Rust-proof, galvanized after being woven. The strongest and best fence and reinforcement material



PLAIN AND GALVANIZED WIRE LATH



**"STIFFENED"
WIRE LATH**

STIFFENED WIRE LATH, PLAIN OR GALVANIZED

Woven in all sizes of wire from No. 18 to No. 21 and stiffened with the V Stiffener about every eight inches

THE BERGER MANUFACTURING CO.

MANUFACTURERS OF

A General Line of Architectural Sheet-Metal Work
CANTON, OHIO

BRANCH OFFICES

NEW YORK, N. Y., 154 Eleventh Avenue
PHILADELPHIA, PA., 1034 Washington Avenue
MINNEAPOLIS, MINN., 307 Fifth Street, South
BOSTON, MASS., 286 Devonshire Street

CHICAGO, ILL., 33 Dearborn Street
ST. LOUIS, MO., 1007-09 Market Street
SAN FRANCISCO, CAL., 1120 Mission Street
ATLANTA, GA., 207 Prudential Building

PRODUCTS.

A general line of ARCHITECTURAL SHEET-METAL WORK, including BERGER'S "CLASSIK" STEEL CEILINGS; BERGER'S "PRONG-LOCK" (wireless) STEEL STUDS and FURRING; BERGER'S B. B. EXPANDED METAL LATH; BERGER'S "METAL LUMBER;" BERGER'S "FERRO-LITHIC" PLATES for CONCRETE REINFORCEMENT for roofs, floors, and walls; BERGER'S "MULTIPLEX" STEEL PLATES for concrete floors and roofs; BERGER'S METAL IMITATION or TILE ROOFING; BERGER'S STAR-SPANGLED ROOFING TIN (guaranteed for 25 years); BERGER'S METAL OFFICE and BANK FURNITURE; FIREPROOF DOORS and SHUTTERS; BERGER'S "WORLD" VENTILATORS, with Metal or Glass Tops; SKYLIGHTS; CORNICES; STEEL AWNINGS; METAL ROOFING; METAL SIDING (Beaded, Corrugated, Rock-Faced, Brick, etc.); FERRO-TILE WAINSCOTING, Plain and Corrugated Sheets; and a general line of FITTINGS and TRIMMINGS such as EAVES-TROUGH, CONDUCTOR PIPE, etc.

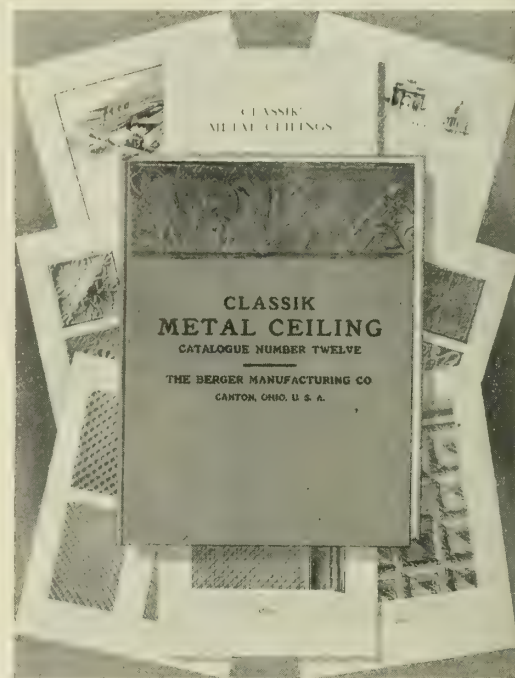
Also BERGER'S "RAYDIANT" SYSTEM of VAULT and SIDEWALK LIGHTING as described elsewhere in this Catalogue, for which see our name in General Index.

Catalogues covering these various specialties are prepared, and will gladly be sent to practising architects on request. Please mention "SWEET'S."

BERGER'S "CLASSIK" STEEL CEILINGS.

Berger's "Classik" Steel Ceilings comprise eleven distinct decorative classes: Greek, Roman, Romanesque, Gothic, Moorish, Italian Renaissance, German Renaissance, French Renaissance, Rococo, Empire, Colonial—each elaborated in a great variety of patterns, to meet the requirements of various sizes and shapes of rooms. The construction is planned to facilitate erection, reduce number of pieces to handle and to minimize number of joints; giving a snug fit with outer edge of bead concealed when overlapped; effectively securing a handsome, consistent, decorative, fire-resisting, and not easily damaged embossed finish, with artistic harmony prevailing throughout.

To place adequately before the architect the unequalled variety of patterns embraced in "Classik" Steel Ceilings, a special architectural catalogue of 420 pages has been prepared. Any architect concerned in effective interior decoration will be interested in this book, which contains practical data as to use and application of this material, painting and decorating of the same, instructions for taking measurements; it also shows the complete line of standard patterns, a large number of effective combination designs, modern installations, etc. Owing to cost of this publication it is desired to confine its distribution to interested practising architects, and it is asked that requests for same be made on the letter-head of the architect desiring it. Ask for Catalogue No. 12-S.



CATALOGUE

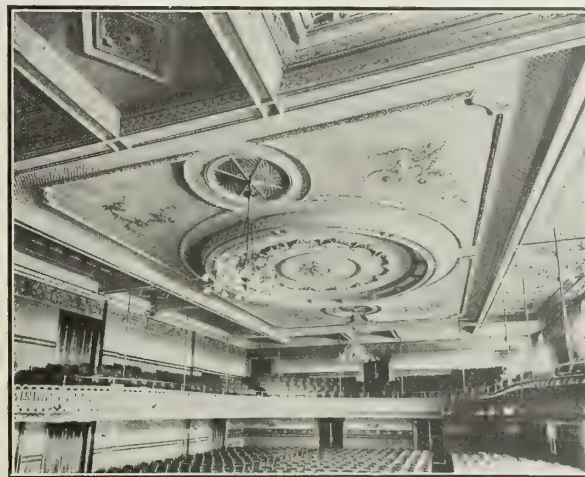
ESTIMATES
AND
DRAWINGS
FOR STEEL
CEILING
WORK.

Architects are invited to avail themselves of the services of the estimating department in preparing suggestion drawings and estimates on contemplated Steel Ceiling and Side-wall work. Send sketch and accurate dimensions of room, with measurements from point to point; show door and window openings, and measurements from same to top of ceiling line; state height of ceiling; indicate preferences as to style or design of ornamentation desired, with any other information helpful in determining a practical, effective, and appropriate treatment to comply specifically with the ruling conditions.

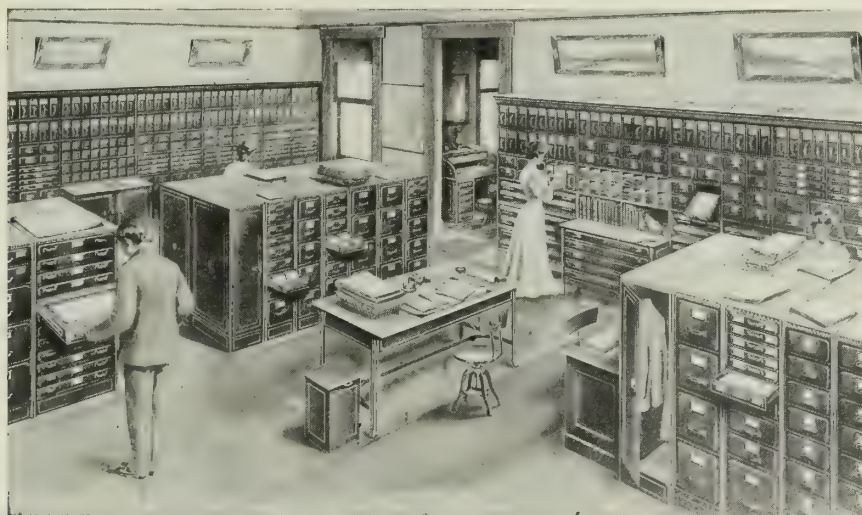
BERGER STEEL
BANK AND
OFFICE
EQUIPMENT.

Berger Steel Bank and Office Equipment is in keeping with modern advanced practice tending to the elimination of inflammable materials from building construction and equipment. It gives every convenience of wood, with increased protection, strength, and durability; furnishes no food for flames, but is, instead, a fire-retardant and protection to its contents. It is rat-proof, mouse-proof, vermin-proof, does not shrink, swell, crack, or come apart.

Berger Steel Bank and Office Equipment includes: Bank Equipment, Book Stalls, Card Indexes, Correspondence Cases, Counters, Cupboards, Desks, Files of every description,



"CLASSIK" STEEL CEILING



BERGER STEEL VERTICAL UNITS, "STEEL-SECT" STACKS, ETC., IN USE

Library Stacks and Shelving, Lockers, Omnibuses, Pigeon Holes, Plain and Roller Shelves, Safety-Deposit Boxes, Storage Drawers, Tables, Wardrobes, etc.

(a) Stock goods, such as: Vertical Units; "Steel-Sect" Sectional goods; Cases, Cabinets, Vault Omnibuses, Transfer Cases, Waste Baskets, Tables, etc. Catalogue on request. Ask for No. 80-H.

Standard finish, olive green; options, black, maroon, imitation oak or mahogany. (Aluminum or other special finishes to order.) Trimmings, solid brass; may be nicked or oxidized if desired. Compressors, springs, etc., are of steel. Locks provided if required.

(b) Special Equipment for Vault, Banking, and Record Rooms, Libraries, etc. Estimates and proposals furnished on receipt of the necessary details.

BERGER'S B. B.
EXPANDED
METAL LATH.

Berger's B. B. Expanded Metal Lath (Diamond mesh, new process) is made from unpickled sheets and in all standard gauges. Write for details.

BERGER
PRONG-LOCK
STUDS AND
FURRING FOR
FIREPROOF
PARTITIONS.

Berger Prong-Lock (Wireless) Steel Studs and Furring, for solid or hollow partitions, are standardized for various classes of construction, and manufactured to exact lengths where specifications are given. No wiring required. The prongs pass through the meshes of the lath and are clinched over it with a hammer. This simplifies and expedites the work. Easily and quickly put to place. No special tools required. It is light for transportation, saves floor space, reduces the dead load in the building, and is a thoroughly efficient fireproofing system.

Made of No. 20-, 18-, or 16-gauge material. The system includes the necessary fastenings for top and bottom of studs, also for suspending ceiling furring.

For solid partitions using our Prong-Lock "T," "U," or "Z" Studs, studs should be spaced 12 inches on centers, when height of story exceeds 11 feet. For height of 11 feet or less, a spacing of 16 inches will answer. For hollow partitions with lath on both sides, studs can be spaced 16 inches on centers for story heights of 16 feet and less. For greater heights they should be placed 12 inches on centers.

A 2-inch solid partition will weigh about 20 lbs. per sq. ft. when dry. Thicker partitions may be estimated on a basis of 120 lbs. per cu. ft. for plaster, and 96 lbs. for cinder concrete, slightly tamped.

Catalogue, showing application to various classes of construction, sent on request. Ask for No. 81-S.

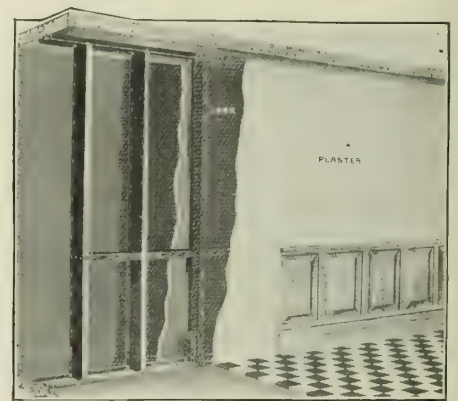
Berger's Metal Lumber consists of joists, channels, angles, etc., formed of sheet steel of various gauges and designed to take the place of wood structural members in dwellings and similar structures; also, for floor and partition work in apartments, office buildings, etc. May be used with brick, brick veneered, stone, reinforced concrete, concrete block, or stucco-finished walls. Expanded Metal Lath for plastering is attached by prongs on the members, as with Prong-Lock Studs previously described. The distinctive constructional features facilitate erection, which can be accomplished as quickly as wood, and quicker than reinforced concrete, while cost of construction is low as compared with other classes of non-combustible or fireproof construction.

The members are cut to exact length at factory and marked to correspond to erection diagram, by the aid of which, and of instructions furnished, any good mechanic can erect the system.

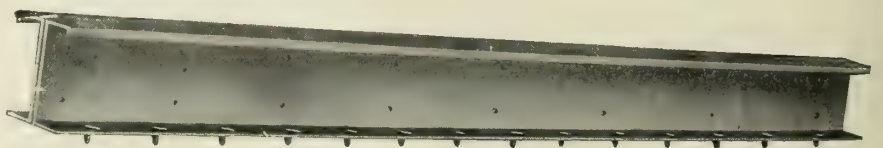
Estimates gladly furnished; also, catalogue giving further details. Ask for No. 82-T.



SHAPES OF PRONG-LOCK STUDS AND FURRING



ONE STYLE OF PRONG-LOCK PARTITION



METAL LUMBER I-JOIST

BERGER'S
METAL
LUMBER.

THOMAS LEE

Sheet-Metal Specialties

OFFICE AND FACTORY

128-132 and 135-137 West Second Street

CINCINNATI, OHIO

PRODUCTS.

Manufacturer of "LEE" LABELED APPROVED HOLLOW METALLIC WINDOW FRAMES and SASH, DAMPERED and GLASS-TOP VENTILATORS, SKYLIGHTS and RAIN-WATER FILTERS.

FACILITIES AND EXPERIENCE.

I have not only extensive factory space and the best of modern machinery, but all connected with my establishment have had years of practical experience. I guarantee prompt shipment of goods to any part of the United States.

ADVANTAGES AND SUPERIORITY.

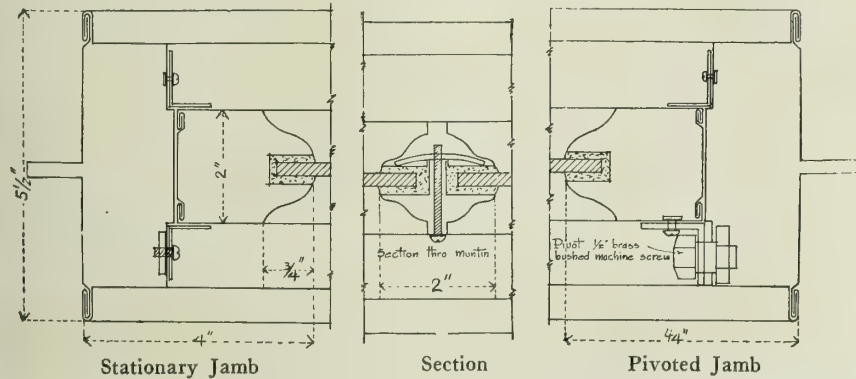
The "Lee" Windows are superior, owing to their simple construction, strength, perfect operation of sash, and general good appearance. All sash, whether stationary, pivoted or double-hung, can be easily set in or taken out of frames. Sash can be glazed by removing inside section of muntin bar and do not have to be taken from the frame. The sills of all windows are reinforced with the "Lee" Cast-Iron Inner Sill before leaving the factory.

OFFICIAL APPROVAL.

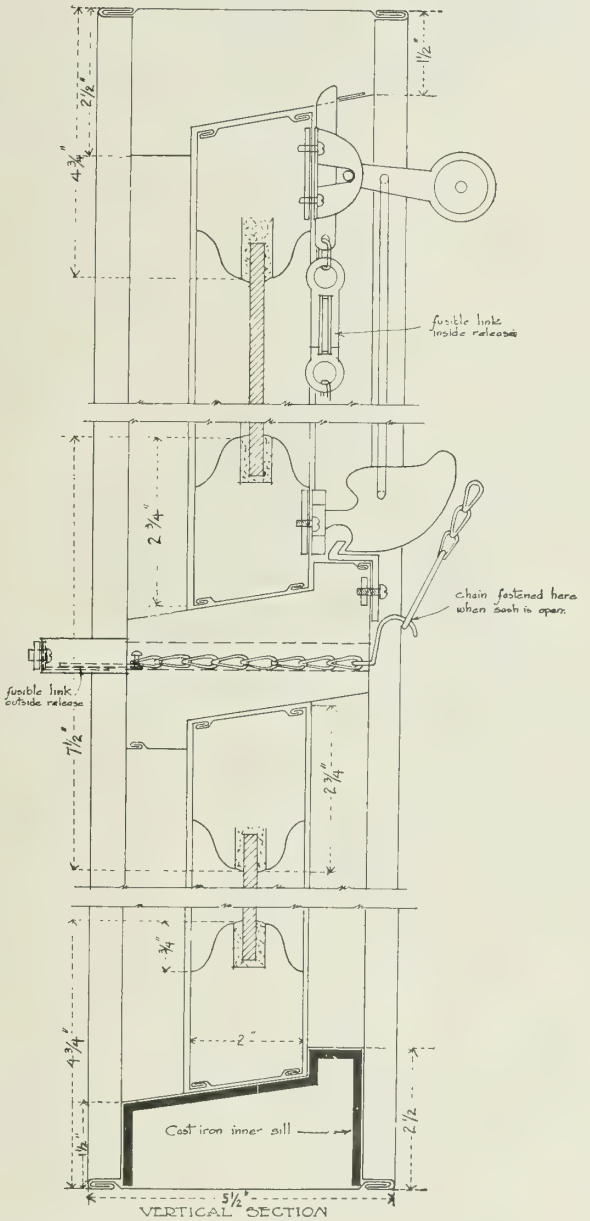
The following styles of "Lee" Hollow Metallic Windows are inspected and labeled by the National Board of Fire Underwriters before leaving the factory: Double-hung; top stationary, bottom sliding; single pivoted; double pivoted; stationary; upper pivoted, lower stationary; lower pivoted, upper stationary; hinged at top.

ADAPTABILITY.

"Lee" Metal Windows are adaptable for use in office buildings, hotels, theaters, factories, or any building in which the window openings must be protected.



SECTIONS OF THE "LEE" UPPER PIVOTED, LOWER STATIONARY, STYLE OF WINDOW

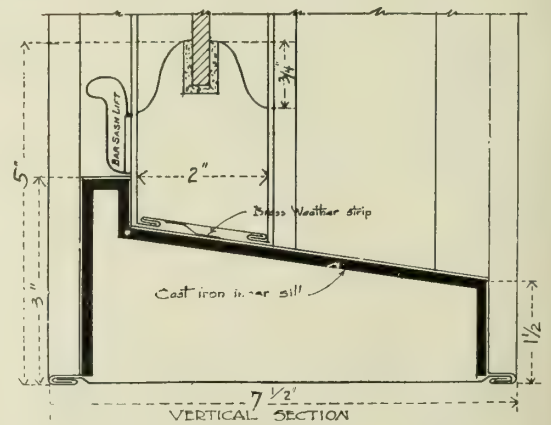
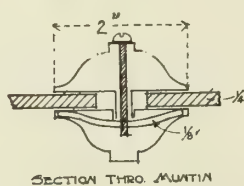
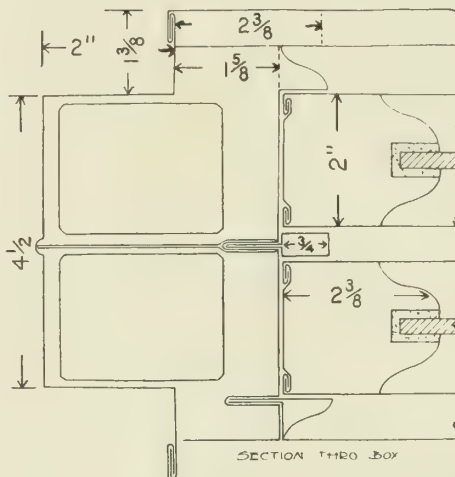
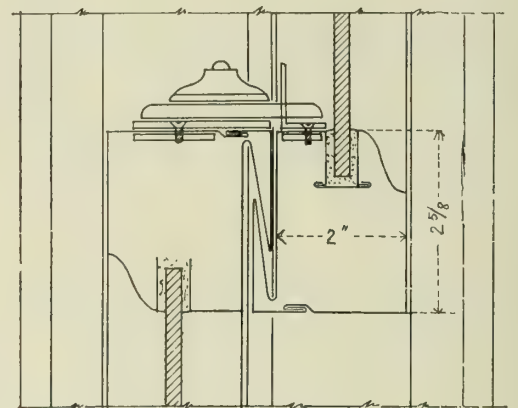
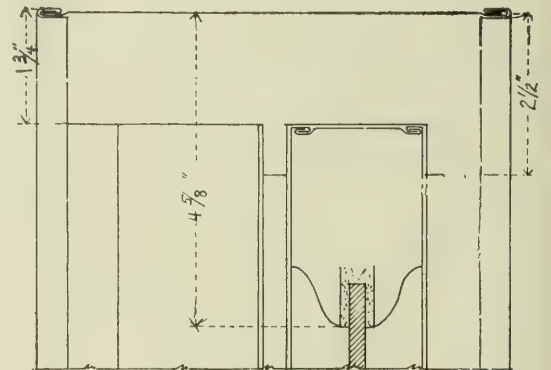
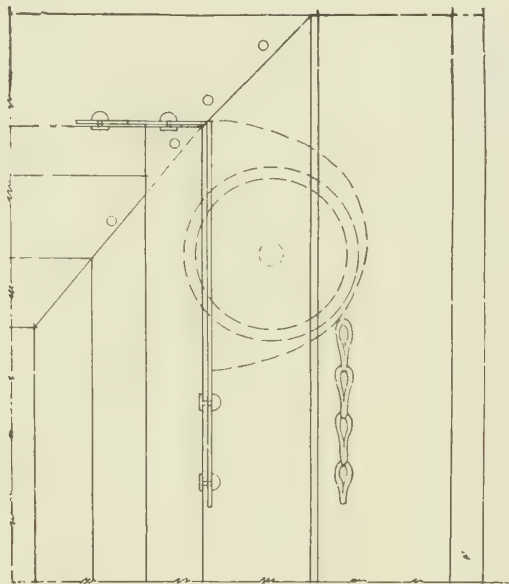


"LEE"
LABELED
WINDOWS.

PRICES AND
GUARANTEE.

All Labeled Windows must be made to conform to the sample that has been tested and approved by the National Board of Fire Underwriters; therefore, we can not make our windows according to specifications, written by the architect or engineer, which specify a special or different form of construction for frames and sash.

Prices will be quoted upon receipt of plans and specifications or a list giving number and sizes of windows wanted. All products are guaranteed to be first class in every respect.



SECTIONS OF THE "LEE" DOUBLE-HUNG WINDOW

“LEE”
PATENT
DAMPERED
VENTILATOR.

The “Lee” Patent Dampered Ventilator is scientifically equalized. The best results, therefore, are obtained by its use. The mechanism for operating the damper is so simple and works so perfectly that a boy can operate a damper of the largest size. Ventilators to give perfect satisfaction should be properly equalized and the dampers should work with ease. The damper of the “Lee” Ventilator can be regulated, thus permitting proper and perfect ventilation. It closes automatically. This ventilator is highly ornamental and is durable. It is made in heavy sheet steel or copper, as desired, with or without damper; also, with glass top.

ADAPTABIL-
ITY.

This ventilator is especially desirable for office buildings, schoolhouses, residences, factories, dry-kilns, barns, or any building demanding perfect ventilation.

SPECIFICA-
TION.

Architects should specify: “This building shall be equipped with the ‘Lee’ Patent Dampered Ventilator, manufactured by THOMAS LEE, Cincinnati, Ohio.”

RAIN-WATER
FILTER.

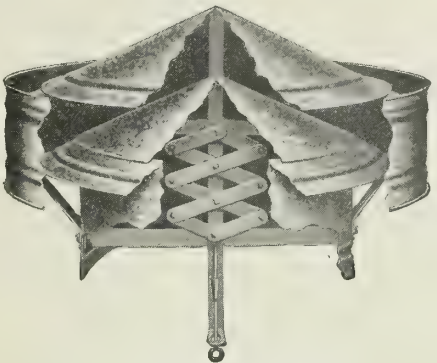
The “Lee” Filter Joint should be attached to all down-spouts in order to keep the drains and cistern free from obstruction from leaves, bird’s-nests, sticks, and like obnoxious and poisonous matter. A removable drawer permits easy cleaning. It will not clog and is always ready for use. It is made of galvanized sheet steel and will last for years. It is not a cut-off.

PRICES.

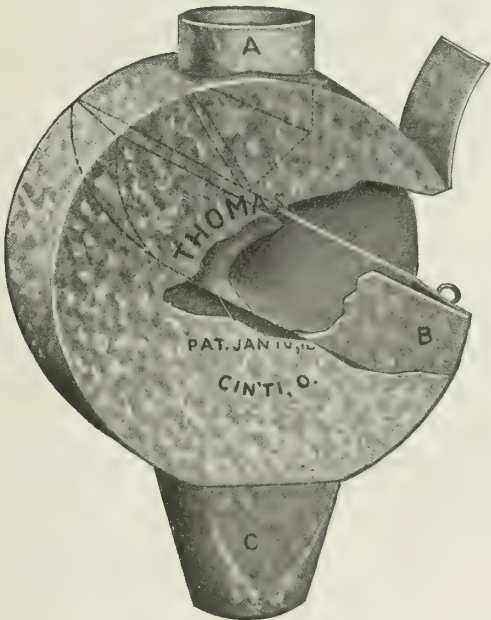
Price-list and discount will be mailed upon application.



“LEE” PATENT DAMPERED
VENTILATOR
Section shows Damper open and locked



“LEE” PATENT DAMPERED
VENTILATOR
Section shows Damper closed



THE “LEE” FILTER JOINT

CHATTANOOGA ROOFING AND FOUNDRY COMPANY

CHATTANOOGA, TENN.

NEW YORK BRANCH: 440 GREENWICH STREET

PRODUCTS.

NEW CENTURY METAL SHINGLES; ORNAMENTAL METAL CEILINGS; METAL STORE FRONTS; SKYLIGHTS; VENTILATORS; CORNICES; FINIALS; CAPPING; CRESTINGS; HIPS; WINDOW CAPS; GUTTERS; EAVES-TROUGH and FIXTURES; CONDUCTOR PIPE and FIXTURES; TIN VALLEY; GALVANIZED IRON, TIN and PAINTED ROOFING and SIDING; METAL AWNINGS; TIN PLATE; ROOF PAINTS; ARCHITECTURAL WROUGHT and CAST IRON WORK; STAIRWAYS; FIRE-ESCAPES; WALL VENTILATORS; GRILLES; BALCONY RAILINGS and BRACKETS; WINDOW GUARDS; CELLAR and BULKHEAD DOORS; CAST-IRON COLUMNS; LINTELS; SILLS; ASH CHUTES and DUMPS; TIE RODS; AIR-TIGHT HEATERS; STOVE PIPE and FITTINGS; PLATED and COMMON "CAHILL" GRATES and FIREPLACE TRIMMINGS.

NEW
CENTURY
METAL
SHINGLES.

These Metal Shingles are made from the best terne plate, or, in other words, the highest grade of roofing-tin. They may be had either painted or galvanized.

New Century Metal Shingles are very artistic in appearance and harmonize perfectly with every style of architecture. They are suitable for the most modest or most expensive residences, churches, public buildings and similar structures.

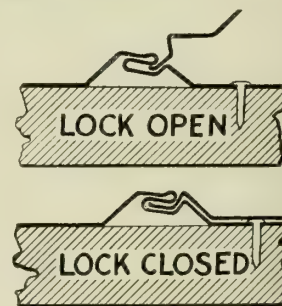
THE
EMBOSSING.

The embossing strengthens and stiffens the shingle, taking every particle of buckle out of the metal. It also forms a continuous passage for the free circulation of air underneath. This keeps the roof cool and the under side of the shingle dry, preventing corrosion and rust. The embossing is also designed to distribute the water evenly, and direct it away from the locks and joints of the shingle into troughs sufficiently deep to carry off the heaviest downpour.

NEW CENTURY METAL SHINGLE,
EMBOSSING AND GENERAL
APPEARANCE

THE LOCK.

The side-locking device on the New Century Shingle is a strong patented feature. It is the same height on both edges, making it impossible for the rain to beat through from any direction. Its construction also allows the shingles to slip together easily when being laid on the roof. The space in our lock not only allows for contraction of the metal in cold weather and expansion in hot weather, but also allows for the unavoidable shrinking and settling of a new building. Notwithstanding all this it is at all times under all conditions perfectly water-tight.



DETAIL OF LOCK

FINISH.

New Century Metal Shingles are all finished by the dipping process, thereby making sure that the paint or galvanizing will cover every part of the shingle including the inside and outside of the lock.

ADVANTAGES.

New Century Metal Shingles are easily and quickly laid and require no skilled labor to apply them. They are absolutely waterproof, fireproof and lightning-proof. They will not rot, crack, split nor break. Owing to their fireproof qualities, houses covered with these shingles are accepted at a very low insurance rate. Fire insurance is a perpetual cost and this saving is worth considering.

SIZES.

New Century Shingles are made in three standard sizes: 7" x 10", 10" x 14" and 14" x 20", which are always carried in stock. All genuine New Century Metal Shingles are stamped with our trade-mark—"Nooga."

Number of shingles furnished for a square:

7 x 10 inches—308 shingles lay 100 square feet.
10 x 14 inches—143 shingles lay 100 square feet.
14 x 20 inches— 67 shingles lay 100 square feet.

PRICES.

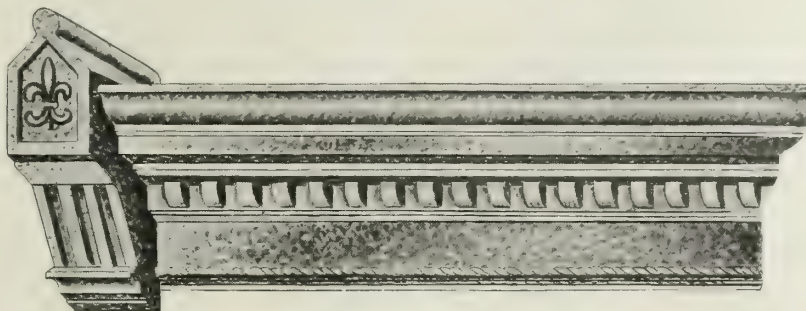
Architects, contractors and builders desiring prices, references and additional information are invited to write to the CHATTANOOGA ROOFING AND FOUNDRY COMPANY.

SKYLIGHTS.

We make Metal Skylights of all sizes and styles, fitted with any kind of glass. They have special secret gutters to carry off all moisture due to condensation. Every joint is strongly riveted and soldered. It is our policy to make the very best skylight on the market and they are guaranteed not to leak.

CORNICES.

The real reason why our Cornices look well after years of use is because the joints are riveted as well as soldered. They are made of Patent Leveled Galvanized Iron. Unlike most manufacturers we ship our cornices in 10-foot lengths, all complete and ready to set up on the building. Brackets, dentils and modillions are riveted and soldered to the cornice and the mouldings run through solid.



CORNICE NO. 1516

24 inches high, 15-inch projection. Price, 90 cents per lineal foot
End blocks, \$5.70 each

ORNAMENTAL
METAL
CEILINGS.

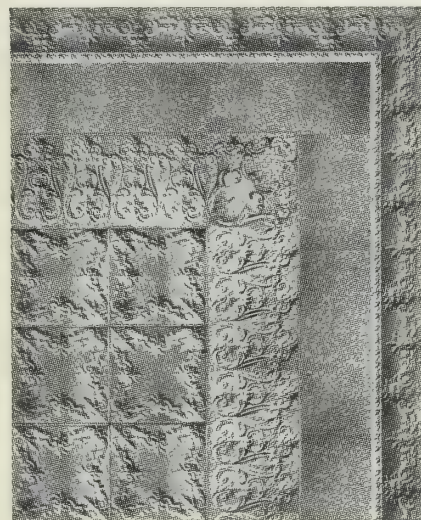
It is needless to dwell upon the benefits derived from Metal Ceilings other than to say that they are fireproof, water-proof, dust-proof, durable and sanitary. It takes but little time and no previous experience to erect them.

Our Southern Ornamental Metal Ceilings are all in the handsome Louis XIV and Colonial designs—none more beautiful. They are suitable for any kind of building from nickelodeon to theater, residence, store, church or banquet hall. These ceilings are made of special high-grade steel that is pliable enough to bend sharply without cracking.

The embossing is clear and distinct, no cracks or abrasions anywhere. Each plate is perfectly square, "trued up" after being embossed.

COMPARA-
TIVE COST.

Southern Ornamental Metal Ceilings cost but little more than plain plaster, far less than wood. A stuccoed ceiling having the same decorative value would cost many times as much. In durability our metal ceilings will outlast them all.



CEILING DESIGN NO. 3007

ARCHITECT-
URAL IRON
WORK.

Our Foundry and Wrought-Iron Departments are the most modern and best equipped in the entire South. Our Drafting and Pattern Departments are competent to carry out any and all ideas that you may submit. We have the facilities for making prompt shipments and our prices compare most favorably with any, anywhere.

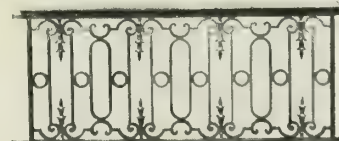
These are the very good reasons why we should have all your foundry and wrought-iron work—why we will have this work if you stop and consider a moment.

CO-OPERATIVE
SERVICES.

The large and varied assortment of our products does not admit of our going into full detailed description of them, but we invite correspondence from architects, contractors, etc., and will be glad to submit estimates on receipt of designs or sketches. Our prices will be found as low as is compatible with good workmanship.

CATALOGUES.

Complete catalogues of any of our different lines will be forwarded, free, on application.

WROUGHT-IRON
BALCONY RAILINGCAST-IRON BALCONY
RAILING

THE EDWARDS MANUFACTURING COMPANY

INCORPORATED 1901

"THE SHEET METAL FOLKS"

Sheet Metal Building Material

Eggleston Ave., 4th to 5th Streets
CINCINNATI, OHIO

BRANCH OFFICES

NEW YORK, N. Y., 81-83 Fulton Street

SAN FRANCISCO, CAL., 315-17-19 Monadnock Building

PRODUCTS.

We are manufacturers of "THE EDWARDS" METAL CEILINGS and SIDE WALLS; "THE EDWARDS" METAL SHINGLES; HIP SHINGLES; "THE EDWARDS" PATENT IMPERIAL VALLEY and RIDGE ROLL; "THE EDWARDS" METAL SPANISH TILE; "THE EDWARDS" REO CLUSTER STEEL SHINGLES, with Patent Side Lock; "THE EDWARDS" PRESSED STEEL BOATS; "THE EDWARDS" CORRUGATED ASH and GARBAGE CANS and SANITARY KITCHEN PAILS; "THE EDWARDS" METAL FIREPROOF WINDOW FRAMES and SASHES, fitted with Ribbed or Rough Wire Glass or Plain Glass; GALVANIZED-IRON CORNICES; STAMPED SHEET-METAL BUILDING FRONTS; SKYLIGHTS, CRESTINGS and FINIALS; STEEL IMITATION BRICK or STONE SIDING; CORRUGATED-IRON or STEEL ROOFING; EAVES-TROUGH; CONDUCTOR PIPE, "Polygon" and other makes; HEADS, ELBOWS, SHOES, STRAINERS, HOOKS and HANGERS and RAIN WATER CUT-OFFS; WINDOW and DOOR CAPS; RIDGE ROLLS and CAPS; GALVANIZED or COPPER BAY WINDOWS; "O. G." BOX and ROOF GUTTERS; SPUN-ZINC BALLS, BALUSTERS, ROSETTES, SHANKS, CIRCLES and URNS; STAMPED WORK in ZINC and COPPER, such as ANIMAL HEADS, BRACKETS, BRACKET SIDES and ROLLS, GABLE ORNAMENTS, GARGOYLES, GARLANDS, LEAVES, LETTERS, MODILLIONS, MOULDINGS, SCROLLS, SHELLS, CRESTING BLOCKS, CROCKETS, and WEATHER-VANES; TIN, GALVANIZED-IRON and COPPER VALLEYS and VENTILATORS; CAPITALS and PILASTER CAPS; CHIMNEY-CAPS; CAST-IRON BOOTS and SHOES for CONDUCTOR PIPE; CORRUGATED-IRON ARCHES, AWNINGS, and METAL SHEETS; EXPANDED METAL LATH.

EXTENSIVE STOCK.

"THE EDWARDS" METAL CEILINGS.

We carry the most extensive line of Sheet Metal Building Material in the world.

The possibilities of stamped sheet metal for interior decoration is unlimited, owing to its adaptability for ceilings and side walls in churches, schools, halls, public buildings, stores, residences, and where an economical, sanitary, ornamental, and permanent dust, moisture, fire and vermin proof material is desired that will compare favorably in cost and durability with any other covering.

"The Edwards" Metal Ceilings are practically indestructible, moderate in cost, and can be applied to wood, steel, terra cotta, concrete, or over old plaster.

DETAILS.

With every ceiling sold we furnish a drawing or working plan, showing location of centers, panels, mouldings, cornices, etc., where to start, and all other necessary information. With the aid of this drawing the ceiling can be erected by an ordinary mechanic.

ESTIMATES AND DRAWINGS.

Upon receipt of plan or sketch giving detailed measurements, we will submit, without charge, carefully prepared drawings showing just how the ceiling will look when finished, together with prices for all material delivered.



"THE EDWARDS" METAL CEILING AND SIDE WALLS
AS APPLIED TO A DINING-ROOM

"THE EDWARDS" METAL SPANISH ROOFING TILE.

"The Edwards" Metal Spanish Tile, made from best quality Worcester grade terne-plate, furnished painted or galvanized (galvanized after formation), size 10 x 14 inches.

"The Edwards" patent high-wall side lock scientifically provides for expansion and contraction, a very essential feature in all metal roofing. Architectural and ornamental in appearance and it will last indefinitely.

"THE EDWARDS" METAL SHINGLES AND METAL SLATES.

"The Edwards" Metal Shingles and Metal Slate are manufactured from the same high-grade material as our Spanish Tile, and are guaranteed to be wind, storm, and fire proof.

Metal Slate is made in sizes 14 x 20, 10 x 14, and 7 x 10 inches. Queen Anne and Rookwood Metal Shingles in size 10 x 14 inches.

They can be applied by an ordinary mechanic without soldering and the use of special tools.

"THE EDWARDS" METAL FIREPROOF WINDOWS.

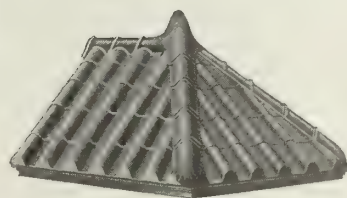
"The Edwards" Metal Fireproof Windows are made strictly in accordance with the requirements of the National Board of Fire Underwriters governing the construction of frames and sash for wire-glass windows.

Constructed on a very simple plan. Weights are made easily accessible at all times, by the use of "The Edwards" Improved Removable Weight Pocket. Particular attention is called to this feature on all "The Edwards" Metal Windows, i. e., that at every point of contact between frame and movable parts such as sash, chains, pulleys, etc., there is an adjustment enabling clients to make every part fit perfectly and take care of slight variations of any kind, thus causing smooth working of sash, etc., and doing away with all rattling. This perfect adjustment feature is found only on "The Edwards" Metal Windows.

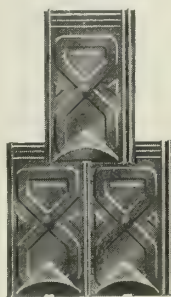


NO. 367. METAL SPANISH TILE

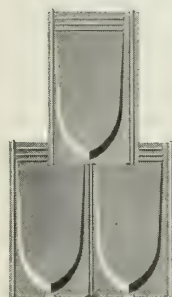
Note construction of side lock



APPLICATION OF "THE EDWARDS" METAL SPANISH TILE, RIDGE TILE, HIP TILE, HIP AND RIDGE TERMINAL



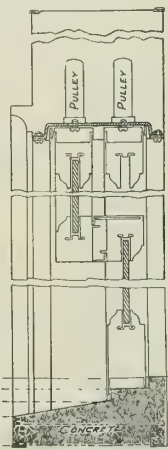
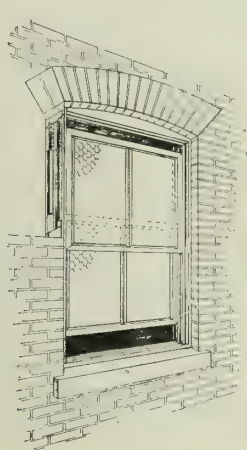
NO. 152
"THE EDWARDS" METAL SLATE



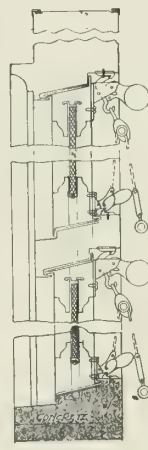
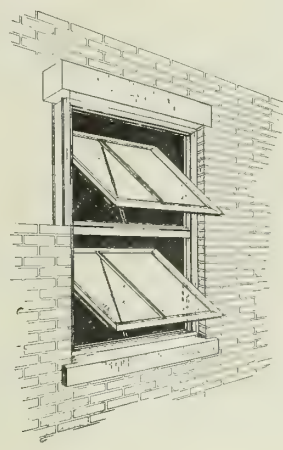
NO. 157
"THE EDWARDS" QUEEN ANNE METAL SHINGLE



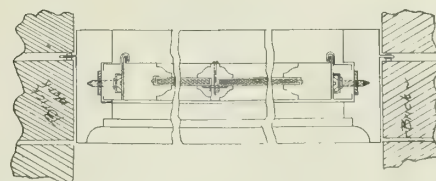
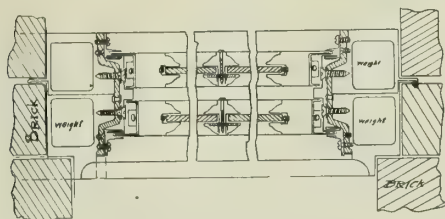
NO. 158
"THE EDWARDS" ROOKWOOD METAL SHINGLE



NO. 1590. "THE EDWARDS" DOUBLE-HUNG WINDOW



NO. 1592. "THE EDWARDS" DOUBLE-PIVOTED WINDOW



THE ELLER MANUFACTURING CO.

SUCCESSORS TO J. H. ELLER & CO.

Metal Ceilings, Cornices, Skylights, Metal Roofing
CANTON, OHIO

PRODUCTS.

Manufacturers of STAMPED METAL CEILINGS, CORNICES, METAL ROOFING and SIDING, including DOUBLE CROSS-LOCK STEEL ROOFING; EAVES-TROUGH, EAVES-TROUGH HANGERS, SKYLIGHTS, CONDUCTOR HEADS, CONDUCTOR PIPE, ELBOWS, SHOES and CUT-OFFS; "UNIVERSAL" CAST-IRON CONDUCTOR CONNECTIONS and BOOTS, COAL-HOLE RINGS and COVERS, WROUGHT-IRON and CHARCOAL IRON SHEETS, TIN PLATE, "CHAMPION" METAL SHINGLES, CORRUGATED IRON, RIDGE ROLL, CRESTINGS, FINIALS, ORNAMENTAL HIP CAPS, WEATHER-VANES, CROWN and BELT MOULDINGS, GABLE ORNAMENTS, GALVANIZED WINDOW and DOOR CAPS, VENTILATORS, STAMPED METAL LETTERS and FIGURES; ROOFING PAINT and CEMENT.

STAMPED METAL CEILINGS.

Stamped Sheet Steel as an inside finish for Ceilings, Wainscotings, and all interior decorations, made in appropriate designs. It is supplanting lath, plaster, and wood ceilings, and possesses the essential advantages of beauty, durability, and fireproof qualities.

Our patterns include the following styles: Greek, Oriental, Romanesque, Gothic, Italian Renaissance, Rococo, Empire, Colonial, Louis XIV, Stucco, and miscellaneous, each style comprising a variety of moulds, cornices, field-plates, centerpieces, coves, and borders.

Our Metal Ceilings (Figs. 1 and 2) are suitable for all kinds of buildings, such as storerooms, factories, offices, asylums, hospitals, churches, colleges, schoolhouses, etc.

We fit these ceilings up for any sized room, when accurate drawings and measurements are furnished us.

Working plans and instructions for erecting are furnished free.

Nails for erecting and wood brackets are furnished with each order, without charge.

We also make diverse ornamental patterns in Continuous Ceiling Sheets.

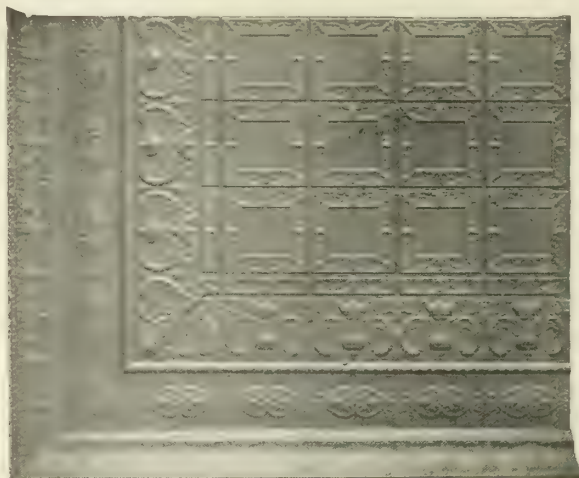


FIG. 1. STAMPED METAL CEILING

Design Italian Renaissance No. 2482. Composed of Cornice No. 2440 (drops 13½ in. on sidewall), Filler No. 2435, Border No. 2426, and Plate No. 2402
Price, \$9.00 per square

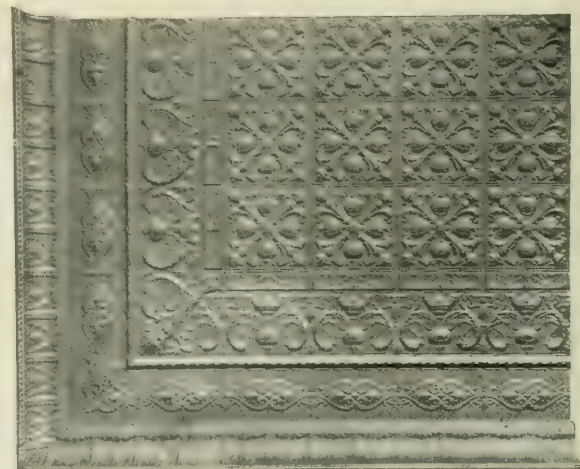


FIG. 2. STAMPED METAL CEILING

Design No. 2485. Composed of Cove No. 2440 (drops 13½ in. on sidewall), Filler No. 2435, Border No. 2426, and Plate No. 2404
Price, \$9.00 per square

COPPER AND GALVANIZED CORNICES.

Two of our numerous designs of cornices are seen in Figs. 3 and 4. Any of our designs can be modified and enlarged or reduced to suit the requirements at a small expense. We will quote prices on any special design upon receipt of accurate drawings. We quote on copper cornices only when specifications are sent us. Discounts furnished upon request.

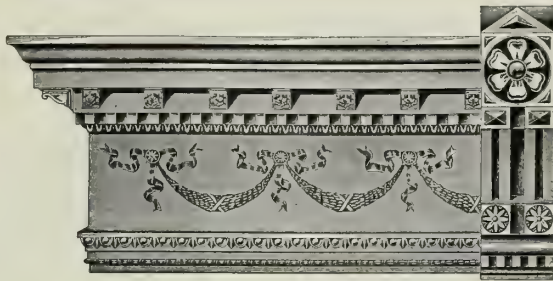


FIG. 3. GALVANIZED CORNICE NO. 112
Height, 44 inches; projection, 20 inches. Price per lineal foot, \$2.80. End trusses, each, \$7.00; miters, each, \$4.00

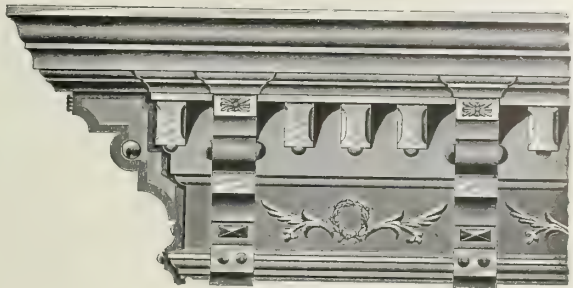


FIG. 4. GALVANIZED CORNICE NO. 115
Height, 48 inches; projection, 24 inches. Price per lineal foot, \$4.00. Miters, each, \$5.00; end trusses, each, \$12.00

DOUBLE
CROSS-LOCK
STEEL
ROOFING.

Our Double Cross Seams are guaranteed not to leak or come apart. This roofing can therefore be used with safety on a flatter surface than any other steel roof made. Fig. 6 shows the construction of the flat cross-seam double lock, the sheets being connected and the lock complete. The cleats (Fig. 5) are all formed at our shops ready for nailing to the roof boards, and do not have to be bent over the edge of roofing with the fingers as is the case with other roofs.

SLIP-JOINT
EAVES-
TROUGH.

Our Improved Slip-Joint Eaves-Trough (Fig. 7) slips together easily and is the longest trough made without a cross seam. It is water-tight and easily put together, and is made in ten-foot lengths without cross seams.

With our improved machinery the beads and the formation of trough are very true. It requires no solder and is not affected by expansion and contraction. The bead on 3½, 4 and 5 inch trough is ½ inch. On all the larger sizes the bead is ⅝ or ¾ inch.

The list prices of galvanized trough are based on No. 28 gauge; prices on heavier gauges on application. Discount on request.

"SECURITY"
ADJUSTABLE
STEEL EAVES-
TROUGH
HANGER.

The "Security" Adjustable Steel Eaves-Trough Hanger (Fig. 8) is a labor-saving and reliable hanger and requires no solder. Ice does not affect it. It is made with rods and nuts, or with straps riveted as desired, and shipped in one-gross boxes.

CHAMPION
LOCK-JOINT
METAL
SHINGLES.

These shingles, made of galvanized steel and tin, are lighter, better and cheaper than slate, better than wood, and simple in construction. They are easily applied, and are absolutely water-tight, ornamental, fireproof, and durable.

We recommend that our Special Ridge and Hip Roll and Capping (Fig. 10), also Special Valley (Fig. 11), always be used with Champion shingles; otherwise we do not guarantee them against leaks.

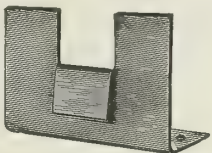


FIG. 5. CLEAT

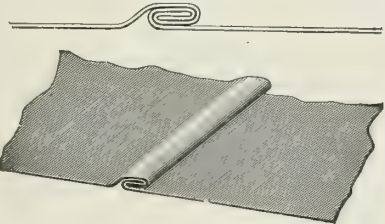


FIG. 6. FLAT CROSS-LOCK SEAM
DOUBLE LOCK

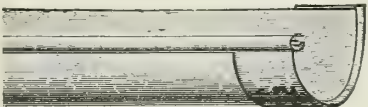


FIG. 7. IMPROVED SLIP-JOINT
EAVES-TROUGH

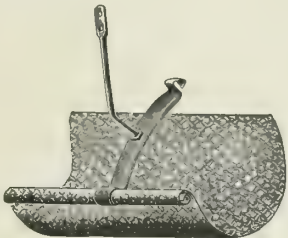
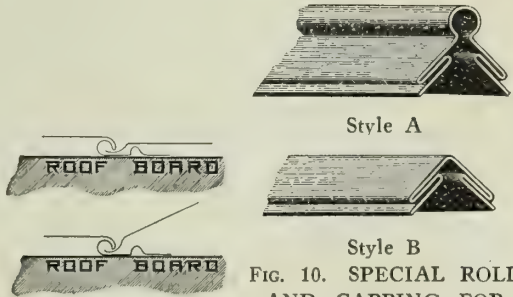


FIG. 8. "SECURITY" ADJUSTA-
BLE STEEL EAVES-TROUGH
HANGER



Style A
Style B
FIG. 10. SPECIAL ROLL
AND CAPPING FOR
BOTH HIP AND
RIDGES

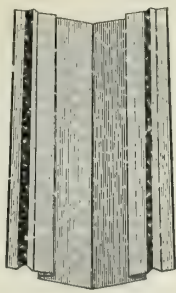


FIG. 11. SPECIAL
VALLEY

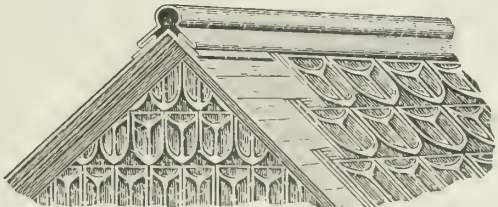


FIG. 12. CHAMPION LOCK-JOINT SHINGLES
WITH STYLE "A" ROLL FOR RIDGING

FIG. 9. LOCK
JOINT

FRIEDLEY-VOSHARDT CO.

MANUFACTURERS OF

Architectural Sheet-Metal Ornaments, Statuary, Steel Ceilings, etc.

733-737 South Halsted Street

761-771 Mather Street

CHICAGO, ILL.

LONG DISTANCE TELEPHONE, MONROE 1081

CABLE ADDRESS, "FRIEDLEY"
A. B. C. CODE, 5TH EDITION

PRODUCTS

STAMPED SHEET BRONZE, COPPER and ZINC ARCHITECTURAL ORNAMENTS for Cornices, SHEET-METAL STATUARY, EMBOSSED STEEL CEILINGS and SIDE WALLS, FINIALS, CRESTINGS, HIP SHINGLES, RIDGE-ROLL, WEATHER-VANES, Painted and Galvanized CLUSTER SHINGLES, GABLE ORNAMENTS, ZINC VENTILATING CENTERPIECES, SPUN WORK of all kinds, Galvanized and Copper CORNICES, SKYLIGHTS, Painted and Galvanized STEEL ROOFINGS of all styles, CORRUGATED IRON; IMITATION PRESSED BRICK, ROCK-FACED STONE, DOOR and WINDOW CAPS; CRESCENT VENTILATORS, Corrugated and Plain CONDUCTOR PIPE, ELBOWS and SHOES, EAVES-TROUGH, O. G. BOX and ROOF GUTTERS, RAIN-WATER CUT-OFFS, CONDUCTOR STRAINERS, EAVES-TROUGH HANGERS, CONDUCTOR HOOKS, CURVED MOULDINGS.

DESCRIPTION OF PRODUCTS, ORNAMENTS.

We make from sheet copper and zinc, all kinds of Architectural Ornaments used for Cornices and Building Fronts, such as crestings, mouldings, enrichments, gargoyles, crockets, wreaths, lion's-heads, garlands, consoles, caryatids, scrolls, rosettes, modillions, brackets, cartouches, capitals, conductor heads, finials, urns, etc.

STATUARY.

We manufacture Sheet Bronze, Copper and Zinc Statuary. We can reproduce, from either sculptor's model or architect's detail, in sheet metal, statuary of any description, guaranteeing the same to be correct in detail and workmanship, and will submit photographs of the full-sized models before proceeding with the work. Our statues are made of sheets varying in size as to the position they will occupy on the finished products, and with reinforced countersunk joints which are practically invisible when finished.

STEEL CEILINGS.

The "F.-V. Co." Ceilings and Side Walls are manufactured from soft steel, and our method of stamping brings out the smallest detail sharp and bold. Our full bead on all four sides insures an absolutely tight joint when erected, leaving no open places for dust to collect. We have a great variety of designs, and will submit sketches and estimates without charge upon receipt of plans. Our goods are all resquared and painted after stamping, thereby covering the edges and preventing rust.

UTILITY.

The "F.-V. Co." Ceilings and Side Walls are suitable for all classes of buildings such as churches, schools, stores, theaters, halls, public buildings and dwellings. They are easily erected, and can be used in either new or old buildings. Being moderate in price they compare more than favorably with any fire-resisting material on the market.

SPECIAL WORK.

We solicit inquiries and plans from architects, and are prepared to give estimates either on special work from their detail or using stock designs. We will follow out architects' details with absolute accuracy, submitting photographs of the models before proceeding with the work.



EAGLE. SPREAD OF WINGS NINE FEET

LOCATION.

Our factory being located in Chicago—the greatest railroad center in the country—gives us the advantage of shipping promptly to all parts of the United States, Canada, Mexico and foreign countries.

FACILITIES.

As we carry a large stock of catalogue designs we are enabled to ship large or small quantities promptly, and usually on receipt of order.

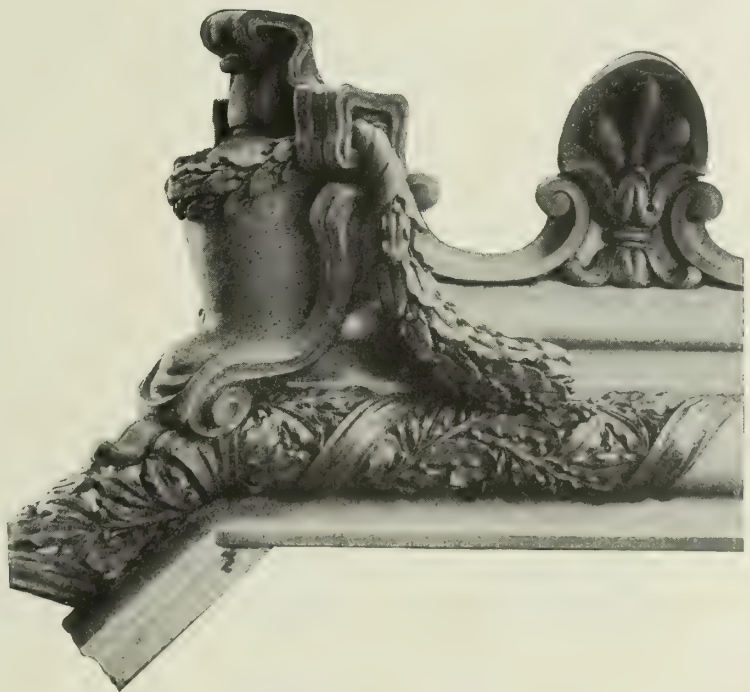
CATALOGUES,
PRICES,
ETC.

With our large assortment of ornamental goods, ceilings, and our various products, it is impossible to quote prices here. We will be pleased to forward our complete catalogue or copies of our various catalogues of the different lines we manufacture to architects, and the cornice trade.



CARTOUCHE

Height, 3 feet 5 inches; width, 4 feet 4 inches



MANSARD ROOF FINISH

THE W. H. MULLINS CO.

MANUFACTURERS OF

Architectural Sheet-Metal Work, Statuary, Fireproof Windows
SALEM, OHIO

LONG DISTANCE TELEPHONE—BELL No. 154

INDEPENDENT No. 355

NORTHWESTERN AGENTS
D. E. FRYER & CO., SEATTLE, WASH.

PRODUCTS.

SHEET BRONZE, COPPER, and ZINC STATUARY; SHEET-METAL FIREPROOF WINDOWS; GALVANIZED-IRON and COPPER CORNICES and BUILDING FRONTS; ROOFING TILES in Galvanized Iron, Zinc, and Copper; STAMPED ORNAMENTS of Sheet Zinc and Copper, for Cornices, etc.; METAL SKYLIGHTS.

DESCRIPTION
OF PRODUCTS,
STATUARY.

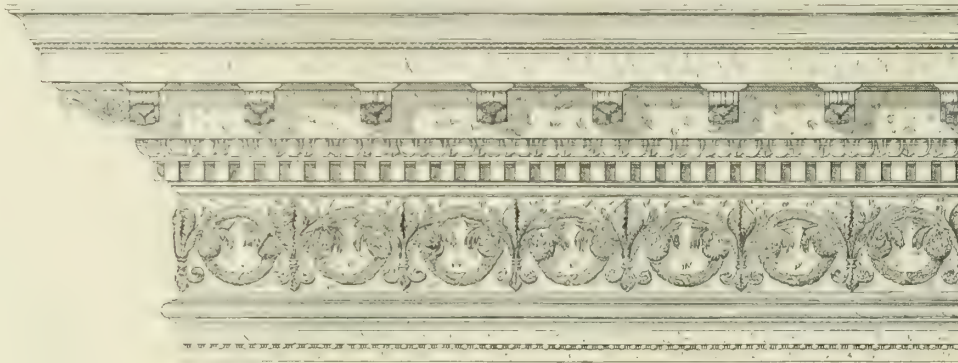
We make Sheet Copper, Bronze and Zinc Statuary which is lighter in weight than either cast bronze or marble and as artistic and durable. We model special designs from sketch or photograph of subject. We reproduce sculptors' models in sheet metal, guaranteeing in each case to carry out every line and detail.

"MULLINS"
FIREPROOF
WINDOWS.

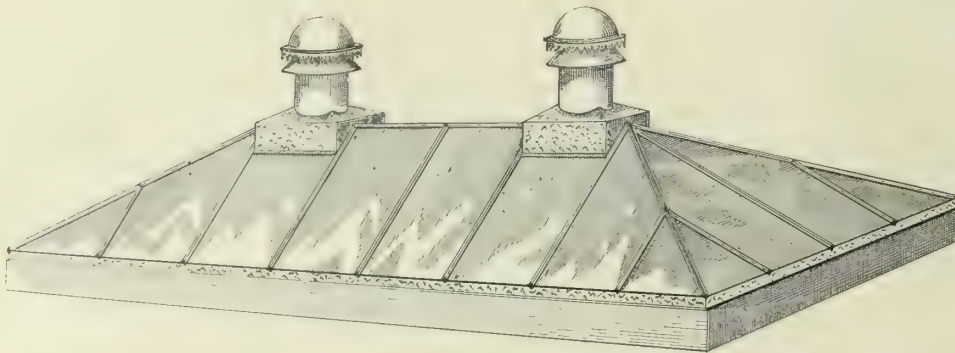
"Mullins" Fireproof Windows are manufactured under supervision of Underwriters' Laboratories, Inc., according to the latest specifications of the National Board of Fire Underwriters, and every window is inspected, approved and labeled with their official label.

METAL
BUILDING
FRONTS AND
CORNICES.

We make many stock designs in galvanized iron and copper. Also special designs carrying out architects' drawings. See illustration for sample stock design.



CORNICE NO. 7004



SKYLIGHT NO. 7127



SHEET COPPER STATUE
6 FT. HIGH. NO. 4749

METAL
ROOFING-
TILES.

Our Metal Roofing-Tiles are made in plates or clusters which are easily and quickly laid. They are storm and waterproof, and expansion and contraction are perfectly provided for.

Our Alcazar Design No. 7191 is extremely bold, while our Spanish Design No. 7166 is artistic and ornamental, but not as bold.

SHEET-METAL
ORNAMENTS.

We make a complete line of cornices, etc.; also, crestings and chenaux. Full variety shown in catalogue. Special designs modeled from drawings.

SKYLIGHTS.

We make the regular Hayes pattern of all sizes and designs.

INSTALLA-
TION.

Our products can be readily installed by the average tinner or mechanic. We furnish full construction drawings.

FACILITIES,
ORDERS.

Large up-to-date factory, skilled workmen, latest machinery. We fill promptly and carefully large or small contracts.

PRICES,
CATALOGUES.

Illustrated Catalogue of any of our lines of work, with price-list and discount, sent on request.

ESTIMATES,
GUARANTEE,
ETC.

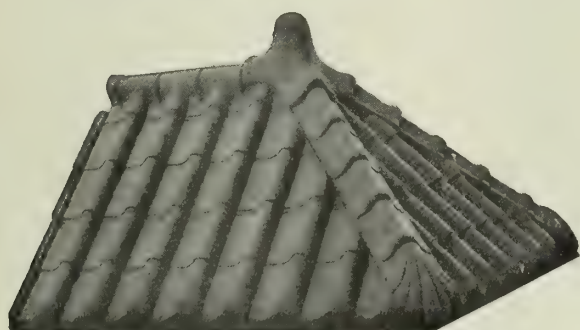
We are glad to furnish estimates for special work and for our regular stock designs when specified.

We appreciate the co-operation of architects and builders and invite correspondence.

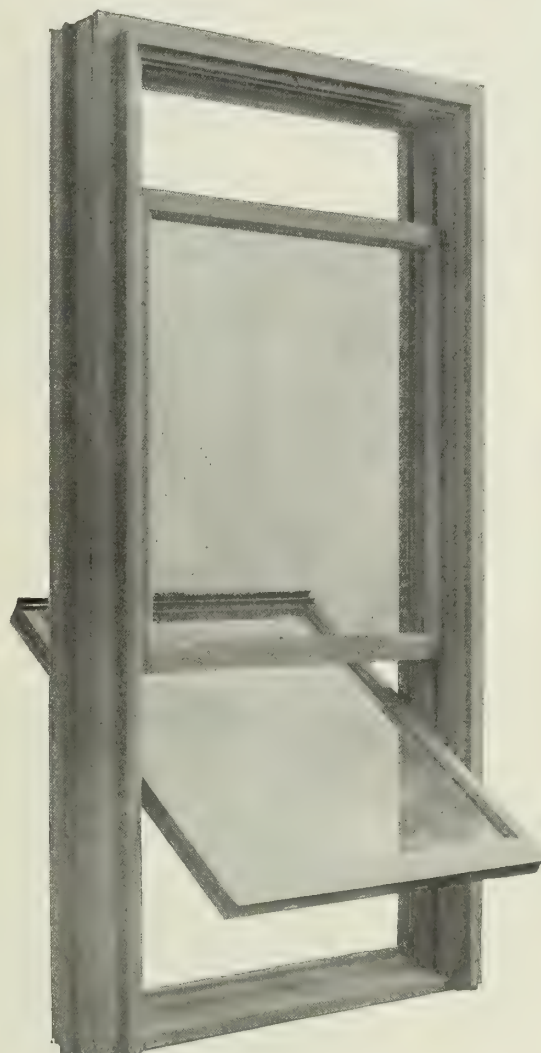
All our products are guaranteed to be made of the best material by skilled mechanics.



ALCAZAR TILE ROOFING NO. 7191



SPANISH TILE ROOFING NO. 7166



METAL FIREPROOF WINDOW

WHEELING CORRUGATING COMPANY

MANUFACTURERS OF

Sheet Metals and Sheet Metal Products

WHEELING, W. VA.

BRANCH OFFICES AND STORES

NEW YORK, N. Y.

CHICAGO, ILL.

PHILADELPHIA, PA.

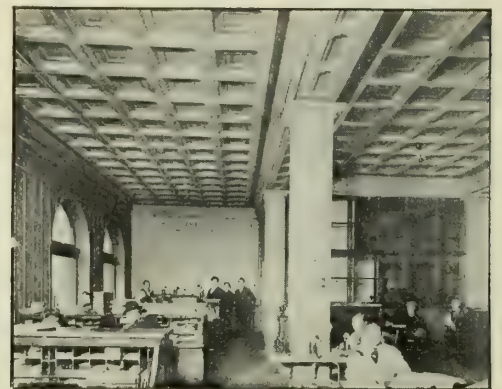
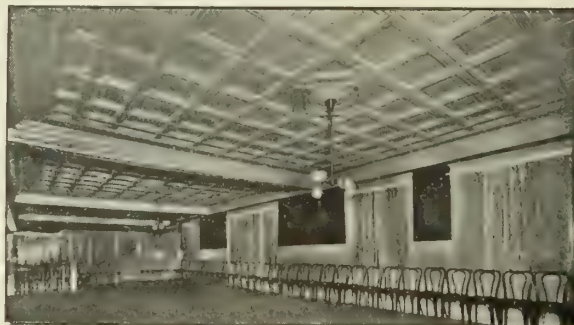
BOSTON, MASS.

ST. LOUIS, MO.

CHATTANOOGA, TENN.

PRODUCTS.

BLACK and GALVANIZED SHEETS; GALVANIZED and PAINTED ROOFINGS and SIDINGS; ROLL ROOFINGS; CORRUGATED SHEETS; CROSS CORRUGATED SHEETS; CURVED CORRUGATED SHEETS; BEADED SHEETS; WEATHERBOARDING; PILASTERS; CORNER FINISH; RIDGE ROLL; ANGLE CAP; CORNER CAP; CORNER BOARD; FLASHINGS; ROOFING PAINT; ROOFING CEMENT; LEAD WASHERS; ROOFING BUTTONS; CRESCENT METAL LATH; TIN PLATES; TERNE PLATES; LONG TERNE or KALAMEINED SHEETS; TIN ROOFING, VALLEY and GUTTER; METAL SHINGLES; HIP SHINGLES; RIDGE COPING; RIDGE FINISH; RIDGE TILE and FINIALS; FORMED VALLEYS and GUTTERS; CONDUCTOR PIPE; CONDUCTOR-PIPE ELBOWS, SHOES and STRAINERS; RAIN-WATER CUT-OFFS; CONDUCTOR HOOKS; EAVES-TROUGH; MITERS, END-PIECES, CAPS, OUTLETS, etc.; EAVES-TROUGH HANGERS; "WHEELING" METAL CEILINGS and SIDEWALLS.



DESIGNS IN "WHEELING" METAL CEILINGS

"WHEELING" METAL CEILINGS.

"Wheeling" Metal Ceilings are made in the largest factory of the kind in the world, from first-class steel sheets with artistic and appropriate designs stamped by the heaviest of machine dies. Every sheet is carefully inspected before stamping as well as after design has been embossed, insuring perfect material, designs, and workmanship.



DESIGNS IN "WHEELING" METAL CEILINGS

ADAPTABILITY.

"Wheeling" Metal Ceilings are especially adapted for use in offices, banking-rooms, halls, opera houses, hotels, sanitariums, dairy rooms, lunch rooms, homes, schools, convents, dormitories, churches, auditoriums, cafés, restaurants, waiting-rooms, rest rooms, stock exchanges, railway stations, ticket offices, club rooms, pool and billiard rooms, reading-rooms and libraries, fire departments, store rooms, rooming houses, city, county and government buildings.



ADVANTAGES.

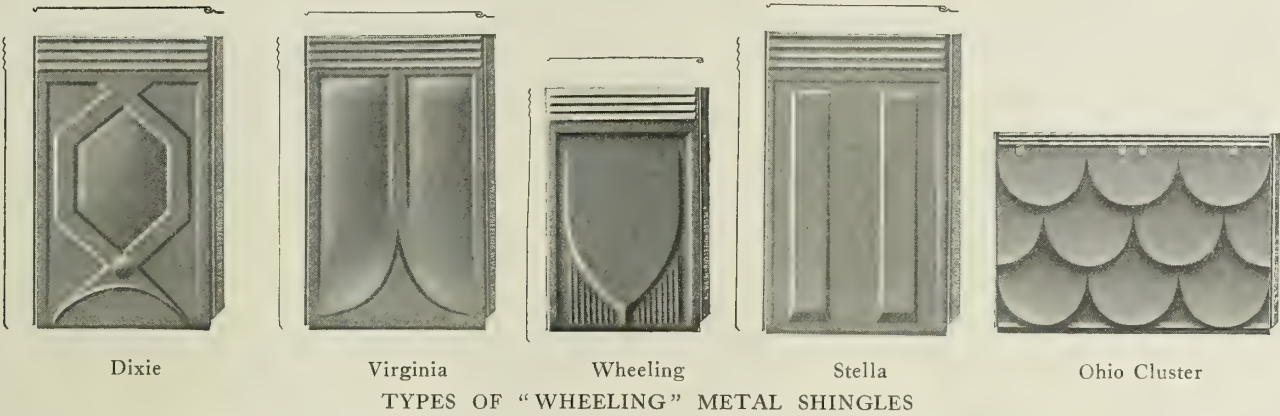
Low insurance rates. No future trouble. Fireproof, dust-proof, vermin-proof, permanent, perfect fitting, economical, artistic, sanitary, and easily erected. The dot and dash bead saves from twenty to twenty-five per cent in cost of erection.

FACILITIES.

We have a large stock at each warehouse and make prompt shipments from the nearest one.

ESTIMATES, PRICES.

Prices per square will be named upon request, or estimates and drawings, showing arrangement of metal ceilings suitable for rooms of any size and shape, will be made without charge, upon receipt of plans or sketches showing detailed measurements.



"WHEELING" METAL SHINGLES. SIZES.

These shingles are made from Prime Terne Plates, Old-Style Plates, and galvanized or painted after stamping, and of copper.
Dixie and Virginia, 7 x 10, 10 x 14, and 14 x 20 inches.
Wheeling and Stella, 10 x 14 inches only.
Ohio Cluster, 20 x 28 inches only.
Packed in boxes containing sufficient quantity to lay one square to the weather.

ADAPTABILITY.

Suitable for all roofs of one fourth or greater pitch, and particularly adapted to bay windows, dormers, gables, mansards, porches, towers, etc., and in fact any place where slate or wood shingles can be laid. Also suitable for siding.

ADVANTAGES.

Absolutely waterproof, weather-proof, fireproof, lightning-proof. Easily applied, no soldering being necessary; economical and ornamental but not gaudy. Make a permanent light-weight roof which can not blow off and does not need constant repairs. They can be taken off and relaid again. Contraction and expansion fully provided for by our improved side locks and end laps. Special catalogue and prices on request.

ROOFING PLATES, SHEETS, ETC.

We also give special attention to the following items:
"Whitaker" Old-Style Roofing Tin Plates; Black and Galvanized Sheets; Steel Roofing, Galvanized or Painted; Tin Roofing, Valley and Gutter in rolls.
Every sheet of "Wheeling" Old-Style Plates, common Terne Plates, and WHEELING CORRUGATING COMPANY'S Genuine Old-Style Charcoal Iron Palm Oil Finish Terne Plates is stamped with brand or name, gauge and weight of coating.

ST. PAUL ROOFING, CORNICE & ORNAMENT CO.

Sheet Metal Building Materials

ST. PAUL, MINN.

ORGANIZED 1885

BRANCH OFFICE

INCORPORATED 1894

MINNEAPOLIS, MINN., 410 Second Avenue, South

PRODUCTS.

Manufacturers of STEEL CEILINGS and SIDE WALLS, "PRUDEN" FIREPROOF WINDOWS, METAL SHINGLES and TILE, METAL ROOFINGS and SIDINGS, CORNICES, MARQUISES OR CANOPIES (Sheet Metal), VENTILATORS, METAL PORCH COLUMNS, CAPITALS (Zinc or Copper), HIP SHINGLES, GUTTERS, CRESTINGS and RIDGINGS, SKYLIGHTS, "PRUDEN" PLASTER CORNER BEAD, VENTILATING CENTERPIECES, STORE FRONTS, COPPERPLATED METAL CEILINGS, METAL MOULDINGS, COPPER WORK, FIREPROOF SHUTTERS, TANKS, ORNAMENTS (Stamped Metal), BAY WINDOWS (Copper or Galvanized), CONDUCTOR HEADS, FINIALS, and VANES, PIPE and TROUGH, SMOKE-STACKS, BRACKETS (Zinc or Copper), AWNINGS (Ornamental), VENTILATING CUPOLAS, etc.

STEEL
CEILINGS
AND
SIDE WALLS.

Ceiling and Side Wall Plates are furnished in black steel, primed with one coat of good paint, either slip or standard lap joints, or in oxidized copperplated steel in any finish ranging from a light brass tint to the deepest bronze. The copperplated finish represents the limit of richness and elegance attainable with embossed metal wall covering, but, of course, costs more than plain steel.

Our new catalogue illustrates a large number of designs arranged to meet a wide range of conditions. Architects are requested, however, when figuring on steel ceilings of important or unusual character, to send us particulars and plans, from which our artists will prepare for consideration special designs exactly suited to the individual requirements of cost or decoration.

Particular attention has been devoted to simplicity of construction in both ceiling and side wall designs for the purpose of lessening cost of erection and insuring a neat finished job. Joints are few in number and practically invisible after application of plates.

ARCHITECT-
URAL SHEET
METAL
WORK.

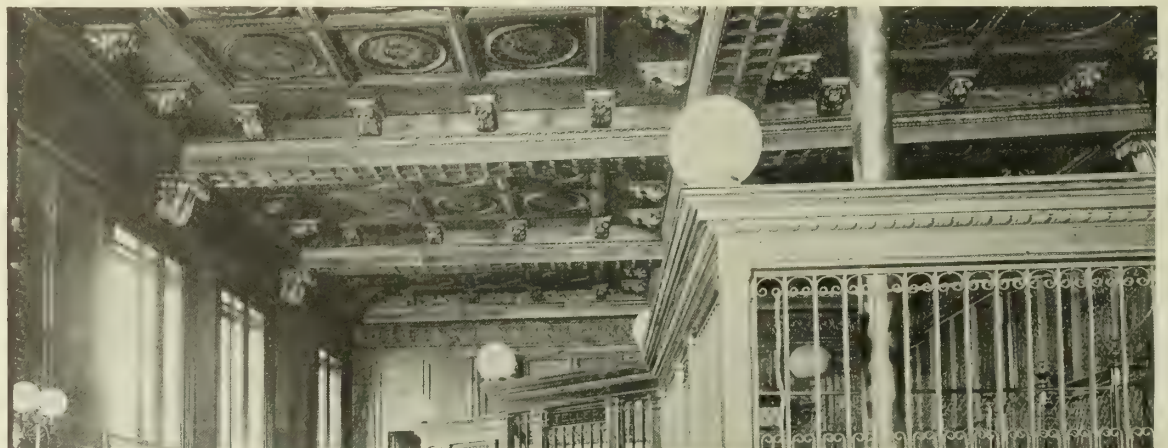
The products under this classification embrace every form of ornamental embellishment or practical appliance made of zinc, copper, tin or galvanized iron, for building purposes.

Our stock of patterns and dies includes a large assortment of standard classical forms, and this, together with our complete modeling department, enables us to produce quickly and cheaply special designs of any kind for any purpose.

CO-OPERATIVE
SERVICE.

We co-operate freely with architects in the preparation of sheet metal plans and details and we are always pleased to submit suggestive ideas and sketches on approval.

Catalogues, blue-prints and estimates supplied promptly.



COPPERPLATED STEEL CEILING, SHOWING METAL CEILING PLATES, BEAM FINISH,
BRACKETS AND MOULDINGS

Side Walls of Copperplated Embossed Steel Panels

BARRETT MANUFACTURING COMPANY

MANUFACTURERS OF
Coal Tar Products, etc.

NEW YORK, N. Y.
CHICAGO, ILL.
PHILADELPHIA, PA.
BOSTON, MASS.
CINCINNATI, OHIO
CLEVELAND, OHIO



KANSAS CITY, MO.
MINNEAPOLIS, MINN.
NEW ORLEANS, LA.
ALLEGHENY, PA.
ST. LOUIS, MO.
LONDON, ENGLAND

PRODUCTS.

We are manufacturers of the following TARRED ROOFING and SHEATHING FELTS:

Made in rolls 32" wide, containing 432 sq. ft., and weighing about 60 lbs. This is made from specially selected stock and is used extensively in laying the Barrett Specification Roof.



TRADE-MARK LABEL

In rolls 32" wide, containing 432 sq. ft., and weighing about 65 lbs. Especially suitable for use in laying a Pitch and Gravel or Slag Roof. The Felt is laid from 4- to 6-ply with Coal Tar Pitch between the layers and Pitch and Slag or Gravel on the surface.

Made in rolls 32" wide, containing about 432 sq. ft., and weighing about 52 lbs. For use in laying a 4- to 6-ply Felt, Pitch and Gravel or Slag Roof. This is an old established brand that is known to every roofer.

Made in rolls 36" wide, containing 108 and 216 sq. ft., and weighing about 25 and 50 lbs. respectively. This is an extra heavy grade of Single-Ply Tarred Felt and is largely used for sheathing under clapboards and for roofing temporary buildings. It is also used, in several thicknesses, for gravel roofs.

This is strictly straight-run American Pitch, and is used in very large quantities for Barrett Specification Roofs, regular Gravel or Slag Roofs, and also for waterproofing the foundations of buildings, cellars, bridges, arches, tunnels, etc.



TRADE-MARK LABEL

Two- and three-ply "Red Seal" and "Black Diamond," 32" wide, containing 108 sq. ft., and weighing 40, 60 and 45, 70 lbs. respectively. Used for temporary roofing on buildings of all kinds; also, for sheathing purposes, and for inside and outside coverings for poultry houses.

TWO- AND
THREE-PLY
READY
ROOFING.

"AMATITE"
READY
ROOFING.

The best and most economical Ready Roofing in the market. Manufactured in rolls 32" wide, containing 110 sq. ft., and weighing about 95 lbs. This is used for roofing buildings of all kinds, being especially adapted for steep roofs. As it is mineral surfaced, it is all ready to lay, requiring no coating or surface covering. Nails and cement for the laps furnished free with each roll.

"AMAZON"
READY
ROOFING.

This is what is known as a rubber or smooth-surfaced Ready Roofing. Made in $\frac{1}{2}$ -, 1-, 2-, and 3-ply rolls 36" wide, containing 216 sq. ft., and weighing 60, 70, 88 and 110 lbs. respectively. Cement, nails and caps packed in the center of each roll. This is used largely for temporary roofing, and is clean and easy to handle.

"NO. 45"
CARBOLIZED
SLATERS'
FELT.

In rolls 36" wide, containing 500 sq. ft., and weighing about 40 lbs. This is a well-seasoned Felt, and is made especially for sheathing under slate.

"BARRETT'S"
BLACK
WATERPROOF
SHEATHING
PAPER.

Manufactured in rolls 36" wide, containing 250 and 500 sq. ft., and weighing about 20 and 40 lbs. respectively. This is a waterproof and air-tight paper for sheathing purposes. It is used also under iron and tin roofs to prevent corrosion, as well as under slate roofs.

"EXCELSIOR"
AND
"EMPIRE"
PARCHMENT.

Made in 1-, 2-, and 3-ply rolls 36" wide, containing 275, 500 and 900 sq. ft., and weighing each 20 lbs. These are waterproof sheathings, resembling parchment. They are saturated with a solution of pine tar, which renders them air-tight, moisture- and vermin-proof.

"CYCLONE"
BLACK
SHEATHING.

In rolls 36" wide, containing 500 sq. ft., 1- and 2-ply, and weighing 20 and 24 lbs. respectively. A good waterproof sheathing paper.

"O UNXLD"
AND
"OO UNXLD."

Made in rolls 36" wide, containing 500 sq. ft., the "O" weighing 18 and the "OO" 25 lbs. A good quality paper and inexpensive. Used for sheathing frame buildings.

"DEFENDER"
FELT
SHEATHING.

In rolls 36" wide, containing 225 sq. ft., and weighing about 45 lbs. A good, strong waterproof sheathing paper and sound deadener. It is made of thick wool felt and a sheet of manila paper cemented together with a layer of waterproof composition. Used extensively in dwellings, public buildings, etc. It not only makes a building sound-proof and waterproof, but adds greatly to its warmth.

"SACKETT'S"
WATERPROOF
SHEATHING
PAPER.

In rolls 36" wide, containing 1,000 and 500 sq. ft., and weighing about 80 and 40 lbs. respectively. Composed of two sheets of manila paper, cemented together with a layer of waterproof composition, making a durable sheathing paper, clean to handle and impervious to moisture and gases.

"B SECURITY"
ENAMELED
LEATHER
SHEATHING.

Made in rolls 36" wide, containing 500 sq. ft., and weighing about 32 lbs. Consisting of a good, strong rosin paper, black enameled on one side, and forming a first-class building and case-lining paper.

"D" AND "E"
LINING
PAPERS.

In rolls 36" wide, containing 1,000 sq. ft., the "D" and "E" rolls weighing about 38 and 18 lbs. respectively. These are waterproof papers, used extensively for lining cases, particularly for export shipment. Cases exposed to moisture if lined with the "D" and "E" papers will always keep the contents dry and safe.

"NOX-EM-ALL" RED
ROSIN SIZED
SHEATHING
PAPER.

Nos. 8, 12, 16 and 20, rolls 36" wide, containing 500 sq. ft., and weighing 60, 40, 30 and 25 lbs. respectively. A 3-ply sheathing paper, of excellent quality and uniform color. This is probably the most widely used Rosin Sized Sheathing Paper on the market, and is noted for the good results obtained from its use.

"TOMB"
BRAND
DEADENING
FELT.

In rolls 36" wide, containing 450 sq. ft. ($4\frac{1}{2}$, 6 and 9 sq. ft. to the pound). Made from all-wool stock, free from lumps and foreign matter. Used as sound deadener for walls and between floors. All well-built dwellings and public buildings are made sound-proof with this material.

THE BARRETT
SPECIFICA-
TION.

The following specification is for a standard slag or gravel roof laid over boards. A roof of this kind is adapted for use on all kinds of buildings (except where the roof is very steep), and is preeminently the best roof for most purposes. Its cost per year of service is much less than any other form of reliable roof covering known. As compared with tin or metal roofing it is immeasurably superior and more economical, as it requires no painting and no repairs of any kind for years after it has been laid. In fact any reputable contractor will guarantee such a roof for at least ten years. This may seem a long time, but experience has proven that with ordinary care most roofs laid according to this specification will give good service for nearer twenty years.

*Barrett
Specification
Roofs*

TRADE-MARK

THE BARRETT
SPECIFICA-
TION FOR
STANDARD
SLAG OR
GRAVEL
ROOFING.

To follow description of Roof Sheathing:

Over the foregoing shall be laid a coal-tar pitch, felt and gravel or slag roof. There shall be used one (1) thickness of sheathing paper or unsaturated felt, five (5) thicknesses of Barrett Specification Felt weighing not less than fourteen (14) pounds per one hundred (100) square feet, single thickness, and not less than one hundred and twenty (120) pounds of Barrett Specification Pitch, and not less than four hundred (400) pounds of gravel or three hundred (300) pounds of slag from $\frac{1}{4}$ to $\frac{3}{8}$ in. in size, free from dirt, per one hundred (100) square feet of completed roof.

The material shall be applied as follows: First, lay the sheathing or unsaturated felt (A) lapping each sheet one (1) inch over the preceding one. Second, lay two full thicknesses of tarred felt (B), lapping each sheet seventeen (17) inches over the preceding one, and nailing as often as may be necessary to hold the sheets in place until remaining felt is applied. Third, coat the entire surface of this two ply with hot pitch (C) mopped on uniformly. Fourth, lay three (3) full thicknesses of felt (D), lapping each sheet twenty-two (22) inches over the preceding one, mopping with hot pitch (E) the full width of the twenty-two (22) inch lap between the plies, so that in no case in the last three plies shall felt touch felt. Such nailing as is necessary shall be done so that all nails will be covered by not less than two (2) plies of felt. Fifth, spread over the entire surface of the roof a uniform coating of pitch, into which, while hot, imbed the gravel or slag (F). The gravel or slag in all cases must be dry.

NOTE—The above specification is designed for roofs having an incline not exceeding three (3) inches to the floor. For steeper surfaces we will submit special Specifications upon request.

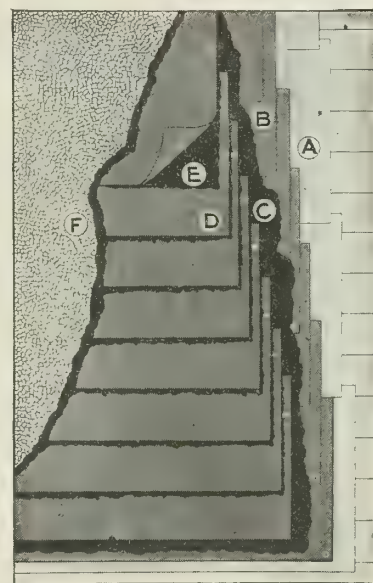


DIAGRAM SHOWING CON-
STRUCTION OF STANDARD
SLAG OR GRAVEL
ROOFING

ADDITIONAL
INFORMA-
TION.

We are at all times prepared to submit additional information on the subject of either Roofing or Waterproofing, and to substantiate our position in any further way that may be desired.

We will furnish, on request, the Barrett Specification in typewritten form, so that it can be easily incorporated into any building specification.

We shall be very glad to hear from architects and engineers regarding this specification, and will welcome criticism or suggestion. All such communications should be addressed to The Specification Department of the BARRETT MANUFACTURING COMPANY, 17 Battery Place, New York City.

ESTABLISHED 1817

F. W. BIRD & SON

MAKERS OF

Roofing and Special Waterproof Papers



TRADE-MARK

MILLS AND MAIN OFFICE
EAST WALPOLE, MASS.

CANADIAN FACTORY AND OFFICE
HAMILTON, ONT.

BRANCH OFFICES

NEW YORK, N. Y., 120 Liberty St.

CHICAGO, ILL., 1434 Monadnock Building
WESTERN CANADIAN OFFICE, WINNIPEG, MAN.

WASHINGTON, D. C., Metzert Building

PRODUCTS.

Manufacturers of the original "NEPONSET" WATERPROOF BUILDING PAPERS, "FLORIAN" SOUND-DEADENING FELT, "PAROID" and "PROSLATE" ROOFINGS, "NEPONSET" and "KO-SAT" INSULATING PAPERS, and "PARINE" PAINT.

TRADE-MARK.

The trade-mark shown at the top of this page appears on all of the products made by F. W. BIRD & SON, East Walpole, Mass. The Little Girl trade-mark has been identified with our business for over twenty-five years.

"NEPONSET"
WATERPROOF
BUILDING
PAPERS.

The standard Building Papers for the last twenty-five years. Used for all sheathing purposes, and extensively as a substitute for back plaster. A perfect insulator against heat and cold—it will not draw away from the studs. "Neponset" is made in two grades—"Neponset" Red, the highest grade of building paper; "Neponset" Black, thoroughly reliable for work where the Red is too expensive. The above trade-mark appears on every roll. "Neponset" Red is also identified by its brighter upper side.

"FLORIAN"
SOUND-
DEADENING
FELT.

"Florian" is the cleanest and most effective sound-deadening felt made. Its corrugations form small dead-air cells, and these are conceded to be the most effective sound insulators. Practical tests prove that one sheet of "Florian" is equal to five or six sheets of ordinary deadening felt. Invaluable in partitions, between floors, and under metal roofs.

"PAROID"
ROOFING.

For over ten years "Paroid" has been used by the United States Government, leading railroad systems, and the largest corporations, for roofs and sides of all kinds of buildings. Contains no tar; absolutely unaffected by extreme heat or cold, or by fumes, sparks and cinders. Attractive in appearance. Complete directions and fixtures for laying are packed in each roll.

"PROSLATE"
ROOFING.

More attractive in appearance than ordinary ready roofings. It is furnished with both straight and ornamental lap edges. Designed especially for pitched roofs. The base of "Proslate" is our regular "Paroid" roofing, and it has, therefore, all of the wearing qualities of "Paroid" with the neat effect of stained shingles. Complete directions and fixtures for applying "Proslate" are packed in the core of each roll.

PRICES AND
WEIGHTS.

Following are the prices and weights of our above-mentioned products:

	Price	Weight
"Neponset" Red Rope Roofing	\$1.20 per square	12 lbs. per square
"Neponset" Black Waterproof Building Paper	.45 per square	9 lbs. per square
"Florian" Sound-Deadening Felt	.70 per square	9 lbs. per square
"Paroid" Roofing, 1-ply	2.50 per square	37 lbs. per square
"Paroid" Roofing, 2-ply	3.25 per square	48 lbs. per square
"Proslate" Roofing (straight edge)	4.00 per square	
"Proslate" Roofing (ornamental edge)	4.25 per square	

Our products are handled by dealers in nearly every city and town. Where there is no dealer, we pay the freight.



THE STANDARD PAINT COMPANY

MANUFACTURERS OF

Building, Sheathing, and Insulating Papers

100 William Street
NEW YORK, N. Y.



BRANCH OFFICES

CHICAGO	KANSAS CITY	BOSTON	PHILADELPHIA	ATLANTA	SAN FRANCISCO
MONTREAL, CANADA, THE STANDARD PAINT COMPANY OF CANADA, LTD. HAMBURG AND BERLIN, GERMANY, RUBEROID GESELLSCHAFT, M. B. H.			LONDON, ENGLAND, THE RUBEROID COMPANY, LTD. PARIS, FRANCE, SCE. ANE. DES TOITURES ET ISOLANTS		

PRODUCTS.

BUILDING, SHEATHING and INSULATING PAPERS, including HERCULES and P & B SHEATHING and INSULATING PAPERS, and GIANT INSULATING PAPER. Also RUBEROID ROOFING and PRESERVATIVE PAINTS, as described elsewhere in this Catalogue, for which see our name in General Index.

QUALITIES.

For almost twenty-five years past leading architects and engineers all over the world have been specifying our Building, Sheathing, and Insulating Papers on their most particular work, in preference to other makes, because they are familiar with their merits and have used them with such uniformly successful results.

All of our papers are thoroughly air-tight, moisture-proof, odorless, strong in texture, exceedingly durable, and free from tar, oil or other ingredients that will be affected by weather conditions or climatic influences. They are also impervious to acids and alkalies, and will not become dry and useless with exposure.

GRADES AND USES.

Hercules Paper is made of a high-grade stock, and is thoroughly saturated with our well-known P & B Compound. It is a very high-grade Sheathing and Insulating Paper, and can be relied upon to give thorough satisfaction wherever used. Made in 1, 2, 3 and 4 plies.

P & B Sheathing Paper is intended for general use and for insulating cold storage rooms, refrigerator cars, etc. It is made of very high-grade selected stock and thoroughly coated on both sides with P & B Compound. It is guaranteed to be both air-tight and moisture-proof. Made in 1, 2 and 3 plies.

Giant Insulating Paper is our best insulating paper in every particular. It is made from the very highest grade selected stock and, in addition to being saturated with P & B Compound, is coated on both sides with the same preservative material. This is absolutely the highest grade and most effective insulating paper on the market. Made in 1, 2, 2½ and 3 plies.

COMPARATIVE ADVANTAGES.

Being made from carefully selected stock, our Papers will be found entirely free from the pinholes and other defects that exist in the average building and sheathing papers. Furthermore, as they contain neither tar, oil, nor rosin, they are not susceptible to changes of temperature and will not dry out with use or be affected in any way by extreme heat or cold.

SAMPLES, PRICES, ETC.

Samples, prices, etc., together with any further information desired, will be forwarded upon application.

REFERENCES.

References will be furnished on application. Many of the largest cold-storage warehouses, breweries, steamship and railroad companies, packers, etc., throughout the world are using our papers, and have favored us with testimonials as to their efficiency.

UNION FIBRE COMPANY

MANUFACTURERS OF

Sound Deadening, Sheathing, and Insulating Materials
WINONA, MINN.

BRANCHES FOR COLD-STORAGE INSULATION

CHICAGO, ILL., 1114 Great Northern Building
NEW YORK, N. Y., 500 Fifth Avenue
KANSAS CITY, MO., 404 New England Building

WINNIPEG, MAN., 259 Stanley Street

AGENTS FOR "LINOVELT" IN ALL CITIES—THE PHILIP CAREY COMPANY

FACTORIES
WINONA, MINN.
YORKTOWN, IND.

SAN FRANCISCO, CAL., 710 Pacific Building
PORTLAND, ORE., 66 North Front Street
VANCOUVER, B. C., 615 Pender Street

PRODUCTS.

"LINOVELT" SHEATHING and SOUND-DEADENING MATERIAL for dwellings, school-houses, theaters, hospitals, etc.; WATERPROOF "LITH" and CORK BOARDS for insulation against heat in cold rooms, cold-storage buildings, breweries, packing-houses, creameries, fur vaults, dairies, candy factories, bakeries, brine and freezing tanks, in fact, wherever low or high temperatures are held within protected space; REFRIGERATOR "LINOVELT" for small, cold rooms and refrigerators and ice-boxes; GRANULATED CORK and ROCK FIBRE WOOL for insulating; "ANTIAQUA" CEMENT for Waterproofing.

FOR HOUSE
SHEATHING
AND SOUND
DEADENING.

"Linofelt" is a flax-fibre insulating quilt for building purposes. Many tests show that it has the effectiveness of thirty-eight thicknesses of ordinary standard building paper for keeping out cold and sound. It is a quilt of flax fibres (unbleached linen threads) stitched between two sheets of building paper or waterproof paper, or asbestos paper, according to quality. Made in two varieties: Retted "Linofelt" and Natural "Linofelt." It is $\frac{1}{4}$ " in thickness. "Linofelt" for sheathing, in the place of ordinary building paper, adds about one per cent to cost of houses.

Standard "Lith" is a non-conductor of sound, heat and cold, in the form of boards, manufactured from Rock Fibre Wool. The method of application is shown in Fig. 2. "Lith" for sound deadening is $\frac{1}{2}$ " and 1" thick, 4", 14" and 18" wide, 48" long.

Mineral Wool Sound Deadener consists of a quilt one half inch in thickness of Rock Fibre Wool stitched between two sheets of building paper or of asbestos paper, according to

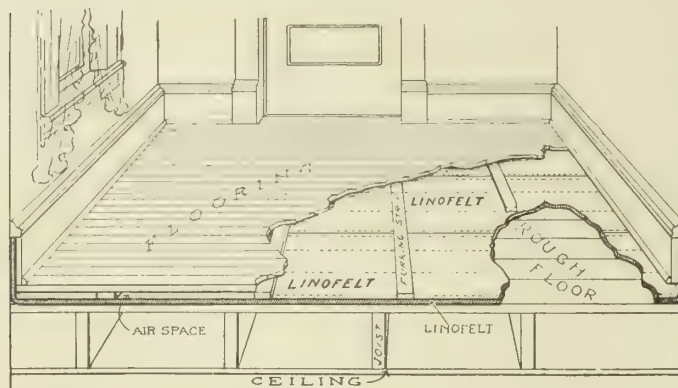


FIG. 1. FLOOR DEAFENED WITH "LINOVELT"

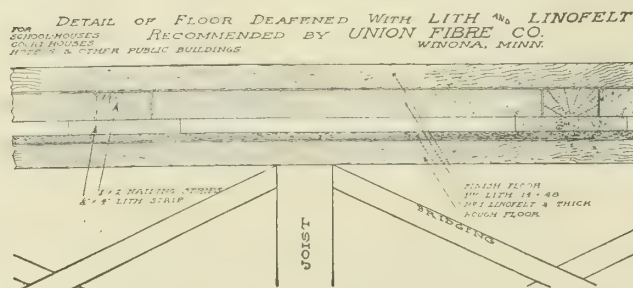


FIG. 2. DETAIL OF FLOOR DEAFENED WITH "LITH" AND "LINOVELT"

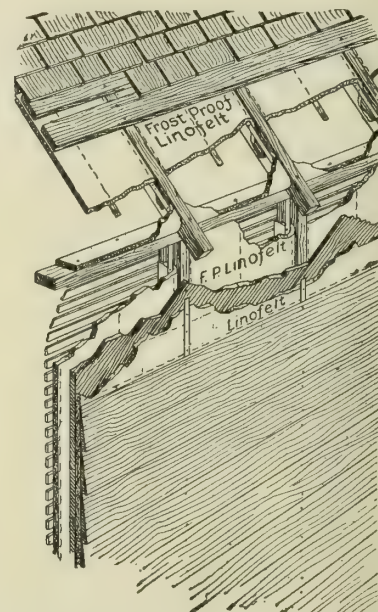


FIG. 3. METHODS OF APPLYING SHEATHING AND FROST-PROOF "LINOVELT"

X, Sheathing "Linofelt"

grade. The quilt has the merit of being unburnable, besides possessing high efficiency as a non-conductor of heat, cold and sound.

Frost-proof "Linofelt" is a substitute for back plaster, and is a barrier to the passage of heat and cold through the walls of a house. It is placed between the studding. (See Fig. 3.)

It is easily applied, never cracks (as does back plaster), and no temporary heating is required to dry it out like back plaster.

If building paper is used, 44 per cent more heat will be lost through walls in winter than if "Linofelt" construction is used. "Linofelt" will also keep the heat outside the house in summer. These statements are based on scientific tests made by the Starr Engineering Co., 258 Broadway, New York, N. Y. (Copy sent on request.)

FOR COLD-
STORAGE
INSULATION.

Waterproof "Lith" is a compound of two materials which naturally offer the highest resistance to the passage of heat. These are Rock Fibre Wool and Flax Fibre. This compound is waterproofed and made into boards 18" wide and 48" long, and from $\frac{1}{2}$ " to 3" in thickness. It can be installed as a solid, permanent wall, as shown in Fig. 4, either set in Portland Cement or in our "Antiaqua" waterproof cement, directly to a wood, brick, concrete or stone wall. It can be applied in every way the same as our "Union" Cork boards described below, and can be sawed to fit special dimensions like cork board or like lumber.

Special booklets, giving sketches for different methods of erection, will be sent upon request.

GUARANTEE.

We have many tests to prove that Waterproof "Lith" is from eighteen to twenty-five per cent superior in insulating value for equal thickness to any other insulating material now in use. We install Waterproof "Lith" under guarantees which are stronger than those of any other manufacturer.

REFRIGER-
ATOR
"LINOFEELT."

Refrigerator "Linofelt" is a flexible insulation made of degummed flax fibre $\frac{1}{2}$ " in thickness. It has been used as insulation in more railroad refrigerator cars than have all other forms of car insulation together. It is extensively used in packing-houses, ice-boxes, and cold storages.

CORK
BOARDS.

"Union" Cork is composed of natural granulated cork combined with high-grade asphaltum into a waterproof board. A special method of manufacture preserves at the highest the insulating value of the cork granules. It is used extensively for brewery floors, and plants where much water and moisture are present. Cork boards are $\frac{1}{2}$ " to 3" thick, 18"x 36".

Fireproof Cork Board is composed of natural granulated cork and our patent fireproof cement, which is waterproof, fireproof and acid-proof. Cork boards are $\frac{1}{2}$ " to 3" thick, 18"x 36".

ROCK FIBRE
WOOL.

Rock Fibre Wool, made by our patent process, is stable in chemical composition, and will not be injured by water, gases or acids. The settling propensity of Mineral Wool is reduced to the minimum under our process, and if properly packed successful results will be obtained in ice-houses and similar structures.

GRANULATED
CORK
"ANTIAQUA"
CEMENT.
INSTALLA-
TION.

Granulated Cork in varying degrees of fineness and "Antiaqua" Cement are furnished in all quantities at short notice. Samples and quotations upon request.

On cold-storage work we always desire to contract for installation. Insulation can be installed by the average workman, but we can not furnish guarantees in such event because the efficiency of insulation, like a chain, is limited to its weakest point. We warrant our own installation.

Our sheathing and sound-deadening materials are sold to be installed by others. Hardware, lumber and building material dealers everywhere will get "Linofelt" for the consumer. The Philip Carey Co., Cincinnati, Ohio, are general distributors.

ESTIMATES
AND CO-
OPERATION.

Architects will be assisted with estimates, special diagrams and drawings, and representatives will call where desired. We will send a book of designs to any architect, upon request.

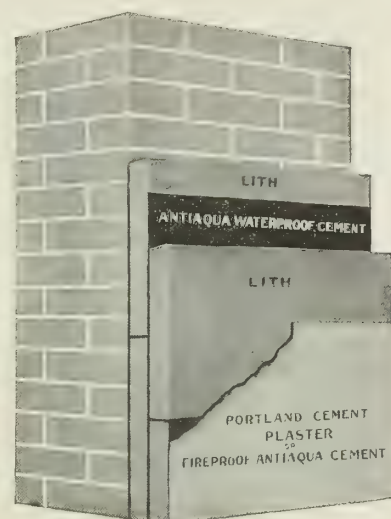


FIG. 4. SOLID CONSTRUCTION
OF "LITH" BOARDS
For Cold-Storage Insulation

THE CINCINNATI ROOFING TILE AND TERRA COTTA CO.

Manufacturers of Roofing Tile

OFFICES AND WORKS

B. & O. S. W. Ry., near Mitchel Avenue

CINCINNATI, OHIO

PRODUCTS.

VITRIFIED ORNAMENTAL ROOFING TILE, TERRA-COTTA HIP ROLLS, CRESTINGS and FINIALS, "AMERICAN S" TILE, "AMERICAN SPANISH MODEL," CLOSED ENDS for HIPS, CLOSED TOPS and BOTTOMS, HIP ROLLS and CLOSED ENDS, GRADUATED "AMERICAN S" CIRCULAR TOWER TILE, FINIALS, TERRA-COTTA CHIMNEY CAP, "AMERICAN" MISSION TILE, SPANISH MISSION TILE, ROMAN SPECIAL TILE, ROMAN TILE, "AMERICAN" PAN TILE, TERRA-COTTA TRIMMINGS for Slate and Shingle Tile Roofs.

The product of THE CINCINNATI ROOFING TILE AND TERRA COTTA CO. is manufactured of proper clay and burned to a very high degree of heat, to produce perfectly vitrified tile, absolutely non-absorbent of moisture, and indestructible under all conditions of climate, from the most extreme heat to the most extreme cold—tiles which can be depended upon not to disintegrate as soft burned material will do in a very short time.

GLAZES.

We can furnish glazed Roofing-Tile in any assortment—green, brown, blue, white, and such other colors as may be specially ordered.

CATALOGUE AND REFERENCES.

A neatly illustrated catalogue is used by THE CINCINNATI ROOFING TILE AND TERRA COTTA CO., which contains designs of Tiles, etc., and details of specifications and construction of woodwork on roofs where their tiles are used; also, a long list of buildings recently erected and covered with these tiles. This will be cheerfully forwarded to architects upon request.

Estimates from plans cheerfully furnished at all times.



THE PERFECT ROOFING
MATERIAL



STABLE FOR JOHN D. ROCKEFELLER, TARRYTOWN, N. Y., COVERED WITH "AMERICAN S" TILE



FINIAL NO. 98



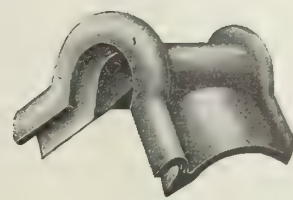
FINIAL NO. 92



HIP ROLL NO. 14



HIP ROLL NO. 25



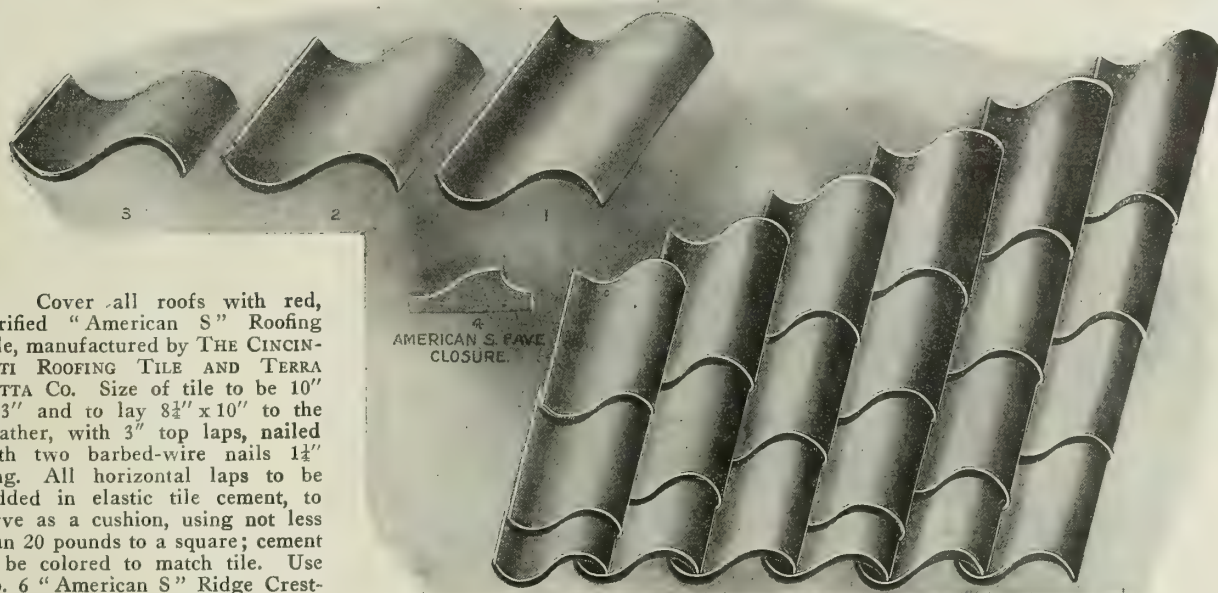
RIDGE CRESTING NO. 6

SPECIFICATIONS FOR LAYING "AMERICAN S" ROOFING TILE.

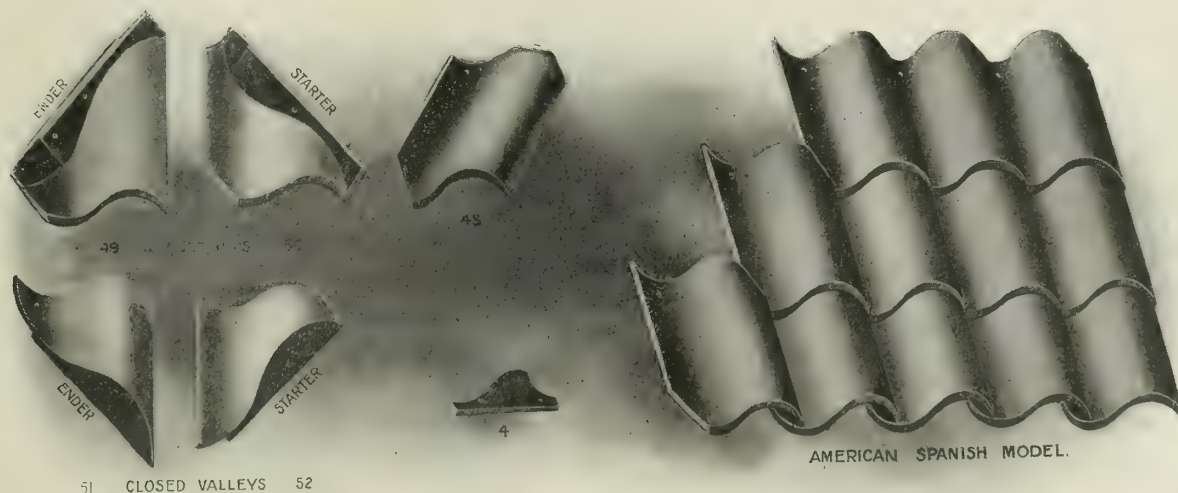
Cover all roofs with red, vitrified "American S" Roofing Tile, manufactured by THE CINCINNATI ROOFING TILE AND TERRA COTTA CO. Size of tile to be 10" x 13" and to lay 8 1/2" x 10" to the weather, with 3" top laps, nailed with two barbed-wire nails 1 1/4" long. All horizontal laps to be bedded in elastic tile cement, to serve as a cushion, using not less than 20 pounds to a square; cement to be colored to match tile. Use No. 6 "American S" Ridge Cresting for all ridges, and No. 25 or No. 14 for all hips, and No. 96 or No. 98 for all hip finials. Before laying tile, cover sheathing with a heavy layer of carbonized roofing-felt, weighing not less than 25 pounds to one square of single-ply, with 3" laps, well tacked to sheathing with barbed-wire nails, with tin caps under nail heads, spaced not more than 6" apart. Cover sides of dormer with flat, vitrified shingle tile of same material as tile roof.

All terra-cotta crestings and finials are to be made of the same material, and vitrified same as the tile. All hips and crestings are to be bedded in colored cement mortar. Color to match shade of tile as near as practicable.

All tile at eaves to be closed up with a separate piece of terra-cotta eave-closure.
All the above is to be done to the satisfaction of the architects and superintendent.



PERSPECTIVE, SHOWING METHOD OF LAYING PATENTED
"AMERICAN S" TILE



PERSPECTIVE, SHOWING METHOD OF LAYING "AMERICAN SPANISH MODEL" TILE

FEDERAL CEMENT TILE CO.

GENERAL OFFICES

Fort Dearborn Building
CHICAGO, ILL.BRANCH FACTORY
TEXAS CITY, TEX.WORKS
HAMMOND, IND.

PRODUCTS.

"FEDERAL" REINFORCED-CEMENT ROOF TILES, REINFORCED-CEMENT WALL-PLATES, FLOORS, GUTTERS, etc.

"FEDERAL"
REINFORCED-
CEMENT
ROOF TILES.

"Federal" Tiles are impervious to the severest elements. Neither heat nor cold, fire nor water, can affect them; time only strengthens them; noxious gases and sulphurous fumes improve them.

Laid directly on steel purlins, making a fireproof construction. All joints interlock and overlap. Require no painting, repairing, or other maintenance and once in place will last as long as the structure.

"FEDERAL" TILE DATA

Covers 24 x 48 inches
Overall length, 52 inches
12½ Tiles per square (100 sq. ft.)
14 lbs. weight per sq. ft.
Thickness, ⅞ inchReinforcement, Expanded Metal No. 16
Purlin spacing, 4 ft. 0 in.
Least allowable slope, ⅓ pitch
Safe carrying load, 200 lbs. per sq. ft.
Breaking load, 300 lbs. per sq. ft.

COST.

"Federal" Tiles make the best and cheapest roof on the market, because they are indestructible and everlasting; no expense for maintenance; cut the rates if fire insurance is carried; save steel in the building frame; eliminate wood sheeting, also repairs and renewals.

ESTIMATES.

Estimates made from plans for roofs laid complete and guaranteed.

CO-OPERATIVE
SERVICE.

Our engineers are structural experts and will assist our patrons in detailing steel work to carry "Federal" Tiles, making no charge for this service.

REFERENCES.

"Federal" Tiles cover a large variety of structures as shown by the following list of recent contracts:

BOILER, ENGINE, AND ELECTRIC POWER HOUSES

United States Steel Corporation, Gary, Ind.
Illinois Steel Co., Joliet, Ill.
Chicago, Lake Shore & Eastern Railway, Gary, Ind.
Western Glucose Co., Roby, Ind.
Federal Furnace Co., South Chicago, Ill.
Studebaker Bros. Manufacturing Co., South Bend, Ind.
Wisconsin Steel Company, South Chicago, Ill.
Pullman Co., Pullman, Ill.
Calumet Steel Co., Chicago Heights, Ill.
Citizens Gas Co., Kankakee, Ill.
Springfield Metallic Casket Co., Springfield, Ohio
Wickwire Steel Co., Buffalo, N. Y.
Falls Manufacturing Co., Oconto Falls, Wis.
Forster, Waterbury & Co., Franklin Park, Ill.
J. T. Ryerson & Son, Chicago, Ill.
Illinois Brick Co., Chicago, Ill.
Phister-Vogel Leather Co., Milwaukee, Wis.
Rome Gas, Electric Light & Power Co., Rome, N. Y.
Sioux Falls Light & Power Co., Sioux Falls, S. D.
City of Fremont, Fremont, Neb.

FOUNDRIES

United States Steel Corporation, Gary, Ind.
Industrial Works, Bay City, Mich.
National Brake & Electric Co., Milwaukee, Wis.
Forster, Waterbury & Co., Franklin Park, Ill.

RAILROAD BUILDINGS

Chicago, Lake Shore & Eastern Railway, Gary, Ind.
Elgin, Joliet & Eastern Railway, Joliet, Ill.
Mineral Point Zinc Co., De Pue, Ill.

WAREHOUSE AND STORAGE BUILDINGS

United States Steel Corporation, Gary, Ind.
Illinois Steel Co., Joliet, Ill.
J. T. Ryerson & Son, Chicago, Ill.
Forster, Waterbury & Co., Franklin Park, Ill.
J. Morrell & Co., Ltd., Ottumwa, Iowa
Western Steel Car & Foundry Co., Hegewisch, Ill., Chicago, Ill.
Mineral Point Zinc Co., Depue, Ill.
South Shore Country Club, Chicago, Ill.

AUDITORIUM AND CONVENTION HALL

Milwaukee Auditorium, Milwaukee, Wis.

BLACKSMITH AND FORGE SHOPS

United States Steel Corporation, Gary, Ind.
Elgin, Joliet & Eastern Railway, Joliet, Ill.
Illinois Steel Co., Joliet, Ill.
Chicago, Lake Shore & Eastern Railway, Gary, Ind.
Western Glucose Co., Roby, Ind.
International Harvester Co., Deering, Ill.
Curtis Motor Truck Co., Decatur, Ill.

BLAST-FURNACE CAST HOUSES

Federal Furnace Co., South Chicago, Ill.
Wisconsin Steel Co., South Chicago, Ill.
Wickwire Steel Co., Buffalo, N. Y.

COAL STORAGE PLANTS

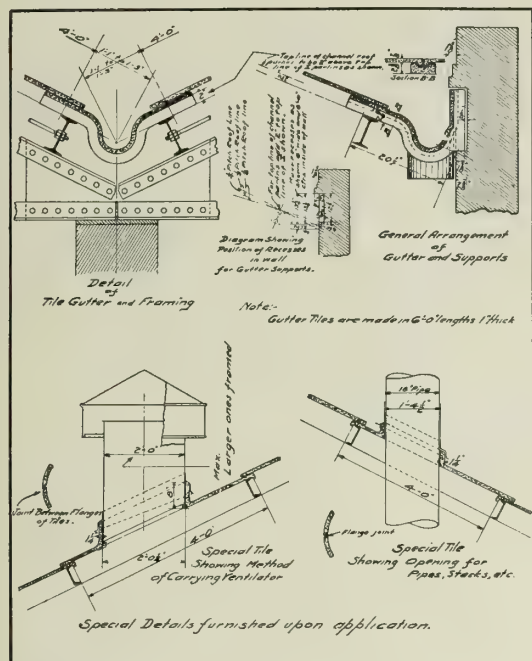
United States Steel Corporation, Gary, Ind.
Illinois Steel Co., Joliet, Ill.
Solvay Process Co., Detroit, Mich.
Western Glucose Co., Roby, Ind.
J. T. Ryerson & Son, Chicago, Ill.

GAS AND COKE PLANTS

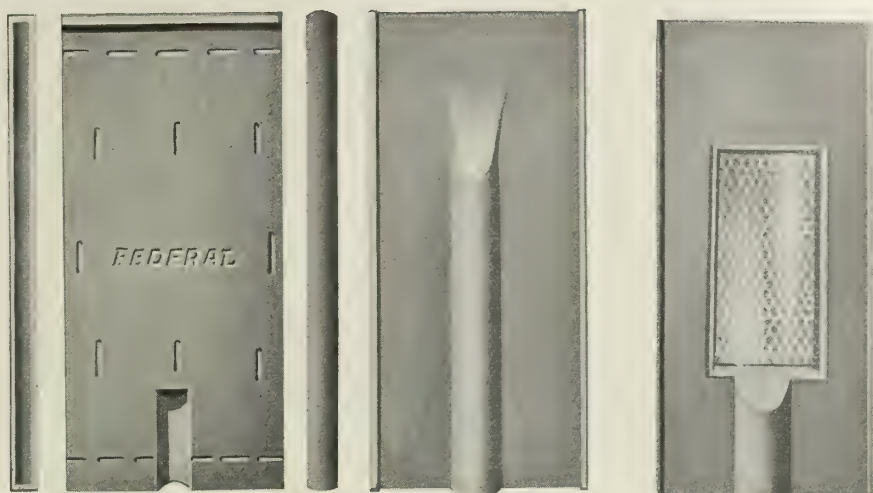
Illinois Steel Co., Joliet, Ill.
Western Glucose Co., Roby, Ind.
Citizens Gas Co., Kankakee, Ill.
Citizens Gas Co., Indianapolis, Ind.
Mobile Gas Co., Mobile, Ala.

MACHINE SHOPS

United States Steel Corporation, Gary, Ind.
Illinois Steel Co., Joliet, Ill.
Chicago, Lake Shore & Eastern Railway, Gary, Ind.
Monarch Motor Car Co., Chicago Heights, Ill.
Curtis Motor Truck Co., Decatur, Ill.
Thatcher Mfg. Co., Streater, Ill.
Chicago, New York & Boston Refrigerator Co., Chicago, Ill.
Wisconsin Steel Co., South Chicago, Ill.
John Mohr & Son, Chicago, Ill.
Great Western Smelting & Refining Co., Chicago, Ill.
The William Fetzner & Co., Springfield, Ill.



DETAILS OF ROOF CONSTRUCTION



Front

"FEDERAL" TILE

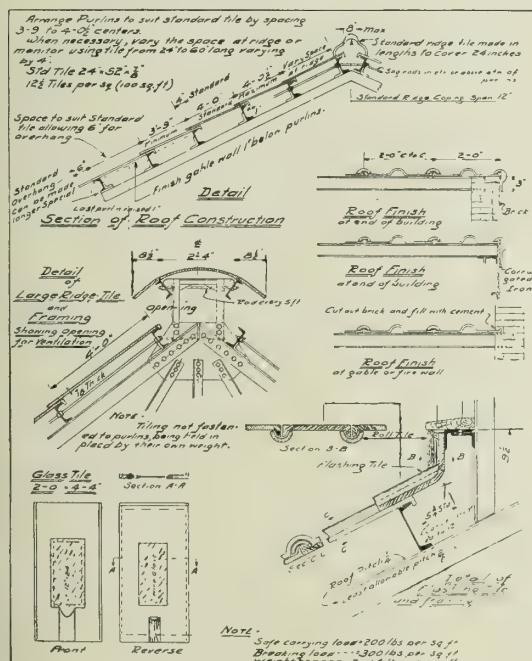
Back

TILE WITH WIRE GLASS



CAR REPAIR SHOP, CHICAGO, LAKE SHORE AND EASTERN RAILWAY CO., GARY, IND.

Interior view showing "Federal" Reinforced-Cement Roofing Tiles and "Federal" Glass Tiles for lighting. Columns and trusses 20' on center, 8" channel purlins, 4' centers on trusses.



DETAILS OF ROOF CONSTRUCTION

DETAILS AND CATALOGUE.

The above details and half-tones may be had in large scale, on application. Also, Catalogue.



TOP VIEW, LOOKING ALONG ONE OF FIVE TILE GUTTERS
Iron and Steel Warehouses of Jos. T. Ryerson & Son, 16th and Rockwell Streets, Chicago, Ill.

THE MOUNT LAUREL SLAG COMPANY

PRODUCERS OF

Slag and Roofers' Supplies

Baer Building
READING, PA.

CRUSHERS AT
MOUNT LAUREL, PA., and TEMPLE, PA.

PRODUCTS.

"MOUNT LAUREL" SLAG and "TEMPLE" SLAG, for roofing and concrete.

BUILDING PAPER; TARRED FELTS; RUBBER ROOFING; SAND-COATED ROOFING;
GRAVEL SURFACE ROOFING; DEADENING FELT; RED ROSIN-SIZED FELT and SLATERS' FELT.

OUR SLAGS.

The Slag of our production is from the famous old Mount Laurel furnaces. It is the only charcoal slag on the market that is thoroughly vitrified and free from sulphur.

Our "Temple" Slag is light gray in color and is seasoned. It is crushed into all sizes for roofing and concrete.

OUR BUILD-
ING PAPERS.

Our line of Building Paper is full and complete. It embraces Tarred Felt, Rubber, Sand-Coated and Gravel-Surface Roofing; Deadening Felt and the famous Red Rosin-Sized Felt and Slaters' Felt.

These building commodities are of the best grades procurable and their use by prominent builders and specifications by architects have proved their value.

ESTIMATES
AND RATES.

Estimates and freight rates will be furnished on application to our Reading Office. On receipt of a card of request our representative will make a personal call when possible.

HUNTINGTON ROOFING TILE CO.

OFFICE AND FACTORY

South 16th Street

HUNTINGTON, W. VA.

SALES OFFICES

BALTIMORE, MD., NATIONAL BUILDING & SUPPLY Co., 418 East Pratt Street

BOSTON, MASS., WALDO BROS., 102 Milk Street

CHICAGO, ILL., MEDING & MACLELLAN, 115 Dearborn Street

CINCINNATI, O., ALLAN R. RAFF, Room 43, Mitchell Building, 9 West 4th Street

COLUMBUS, O., R. L. WATSON, Room 400, Brunson Building

WASHINGTON, D. C., O. W. KETCHAM, Home Life Building, 15th and G Streets, N. W.

LOS ANGELES, CAL., CLARK-GUEST Co., 232 Bradbury Block

NEW YORK, N. Y., O. W. KETCHAM, 1170 Broadway

PHILADELPHIA, PA., O. W. KETCHAM, 24 South 7th Street

PITTSBURG, PA., PITTSBURGH CLAY PRODUCTS Co., Keenan Building

ST. PAUL, MINN., TWIN CITY BRICK Co., Manhattan Building

TOLEDO, O., A. B. LUTEN, 1231 Ohio Building

PRODUCTS.

Manufacturers of "HUNTINGTON" SHINGLE TILE; also, TERRA-COTTA ROOF TRIMMINGS of all kinds.

HUNTINGTON SHINGLE TILE.

Huntington Shingle Tile is made from a very pure quality of shale, free from any foreign matter. This shale insures a tile that is of uniform density, having little or no porosity, and great strength. Our regular Shingle Tile is 6" x 13½" x 3", and weighs about 1,100 pounds per square. When laid 51" to the weather only 436 tiles are required for a square. Huntington Tile is curved slightly so that it will lie close at the butt. The side edges are rounded off, forming a groove or channel that enables any water which gets into the side joints to escape freely without spreading under the tile. This rounding of the edges also emphasizes the joints and makes a more brilliant roof than one of tile with square edges.

COLOR.

The color of the Huntington Tile is a rich permanent red. It is made in several different shades, and can be furnished in uniform colors, or if a mottled effect is desired, in assorted shades.

SPECIAL SHAPES.

Ornamental Butts and Graduated or Circular Tower Tile made to order.

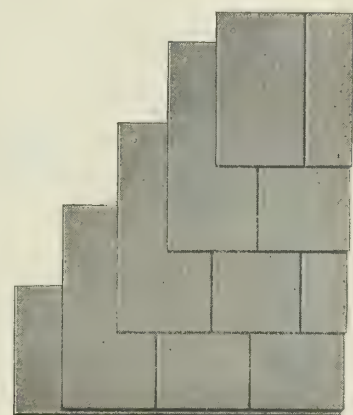
TERRA-COTTA ROOF TRIMMINGS.

Our Terra-Cotta Roof Trimmings, such as ridge rolls, hip rolls, ridge saddles, tower finials, gable finials, etc., as illustrated, show some of our standard patterns.

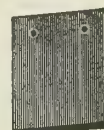
All rolls and saddles are made to lay one foot on the roof after making the necessary lap.

ADVANTAGES.

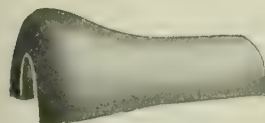
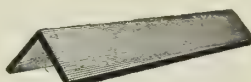
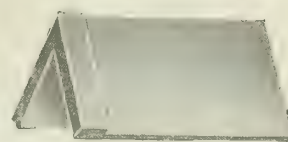
Huntington Tile is very uniform in quality, and is made from such a high quality of



HUNTINGTON SHINGLE TILE

No. 1—
6 x 13½
RegularNo. 7—
3 x 13½
"Split"No. 8—
6 x 9½
Ridge
CourseNo. 9—
6 x 7½
Under
Eaves

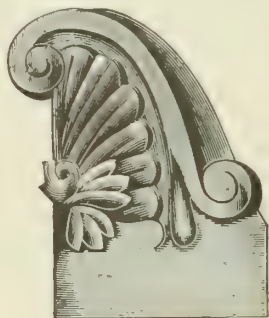
SHAPES FOR FITTING

No. 11—3 x 9"
No. 12—5 x 13"
No. 13—7 x 13"
No. 14—9 x 13"No. 15—6 x 13"
No. 16—7 x 13"No. 20—5½ x 13"
HIP SADDLENo. 18—3½ x 13"
No. 19—4½ x 13"No. 26—Square Lip
Length 13"No. 27—Square Lip
Length 13"

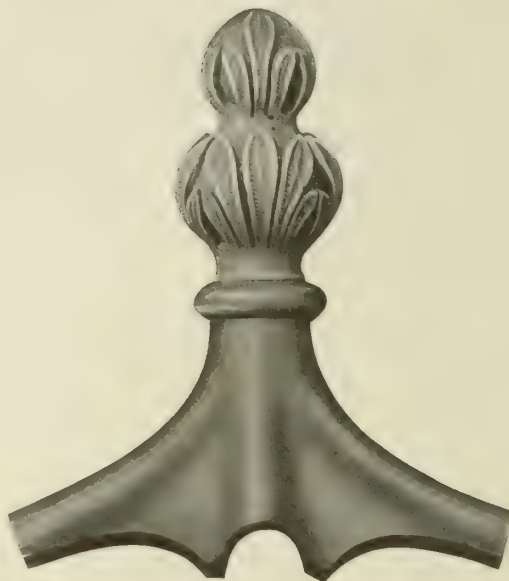
RIDGE SADDLES



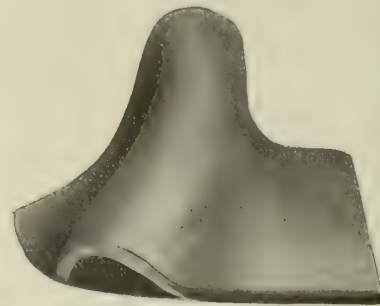
No. 38
HIP FINIAL, TWO POCKETS



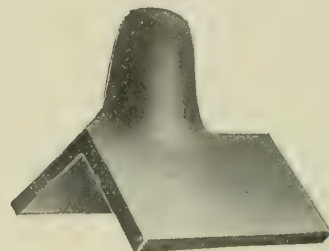
No. 39
GABLE FINIAL



No. 47
TOWER FINIAL



No. 35
HIP FINIAL, TWO POCKETS



No. 36
GABLE FINIAL

shale that it is very easily and accurately cut for hips and valleys. Our tile is suitable for all classes of buildings, either in the city or country, and can be applied by any competent roofer.

CO-OPERATIVE SERVICE.

We are always pleased to furnish, promptly, estimates on all classes of roofing work, upon receipt of the roof plan and the four elevations. Also, we will gladly make, at any time, special designs for tile or terra-cotta roof trimmings from the architect's drawings.

ORDERS.

In all cases where graduated tiles for circular towers or circular roofs are desired, these, and all terra-cotta trimmings that must fit the pitch of roofs, are necessarily made to order and require from four to six weeks' time to make. It is therefore advisable to send orders promptly to avoid delays.

COST.

Prices quoted upon application to our main offices or agencies.

SCOPE OF MARKET AND DIRECTIONS FOR SHIPPING. DIRECTIONS FOR LAYING.

As we always keep a full stock of shingle tiles and standard trimmings ready for shipment, we are prepared to fill, on the shortest notice, orders of the largest size and deliver them to any point in the United States.

As is customary with all tile and slate roofs, the sheathing is first covered with a suitable asphalt or roofing felt. Huntington Shingle Tile is then secured to the sheathing by means of two large-headed barbed nails, driven through the holes in each tile. In some cases galvanized-iron nails, and in others copper nails, are used. No cement is required to lay Huntington Shingle Tile.

REFERENCES.

BUILDING
Chicago University, Blaine Building
Convent Monastery of Visitation
Duquesne Club
Joliet Library
Mrs. Francis Kinnicut's House
St. Joseph's Convent
U. S. Naval Academy Barracks
U. S. Post Office
Arthur A. Carey, Residence
Power-House
Epileptic Asylum
St. Paul's Church
Residence, W. H. Wannamaker, Jr.

LOCATION
Chicago, Ill.
Riverdale, N. Y.
Pittsburg, Pa.
Joliet, Ill.
Dark Harbor, Me.
Brentwood, L. I.
Annapolis, Md.
Helena, Mont.
Cambridge, Mass.
Springfield, Ohio
Gallipolis, Ohio
Savannah, Ga.
Merion, Pa.

ARCHITECT
Jas. G. Rogers
D. W. Daley
Rutan & Russell
D. H. Burnham & Co.
Foster, Gade & Graham
Schickel & Ditmars
James Knox Taylor, Supv. Architect
James Knox Taylor, Supv. Architect
Hartley Dennett
Hannaford & Sons
F. L. Packard
Jno. Sutcliff
Walter H. Thomas, C. Wharton
Churchman and John Molitor



RESIDENCE OF JOHN R. THOMPSON, CHICAGO, ILL. HORATIO R. WILSON, Architect
Roofed with Huntington Shingle Tile



RESIDENCE OF WM. A. ARNOLD, PATERSON, N. J. FRED WENTWORTH, Architect
Roofed with Huntington Shingle Tile

LUDOWICI-CELADON COMPANY

MANUFACTURERS OF

Terra Cotta Roofing Tile

GENERAL SALES OFFICE

Chamber of Commerce Building

CHICAGO, ILL.

BRANCH OFFICES

NEW YORK, N. Y., 1126 Presbyterian Building
WASHINGTON, D. C., 822 Colorado Building
DENVER, COLO., 522 Colorado Building
ATLANTA, GA., 710 Chandler Building

NEW ORLEANS, LA., 322 Hibernia Bank Building
CLEVELAND, OHIO, 514 Cuyahoga Building
KANSAS CITY, MO., 307 Dwight Building
PHILADELPHIA, PA., 1015 Weightman Building

AGENCIES

LOS ANGELES, CAL., B. V. COLLINS, 928 South Main Street
SAN FRANCISCO, CAL., GLADDING, McBEAN & Co.
JACKSONVILLE, FLA., H. H. RICHARDSON & Co.
GRAND RAPIDS, MICH., F. H. McDONALD, The Gilbert
DETROIT, MICH., THOMAS BROS. & Co., Hammond Building

ST. LOUIS, MO., A. P. MILLER, Century Building
MILWAUKEE, WIS., RICKETSON & SCHWARZ, University Building
MINNEAPOLIS, MINN., HAROLD JOHNSON, Lumber Exchange
MONTREAL, CAN., DAVID MCGILL, Merchants Bank Chambers
TORONTO, CAN., J. D. MACDONELL & Co., 19 Yonge Street Arcade

FACTORIES

CHICAGO HEIGHTS, ILL.

COFFEYVILLE, KAN.

LUDOWICI, GA.

NEW LEXINGTON, OHIO

PRODUCTS.

We manufacture TERRA COTTA ROOFING TILES, including the following: CONTINENTAL INTERLOCKING SHAPES—"GERMAN," "FRENCH," "NIAGARA" and "ORLEANS"; INTERLOCKING SPANISH—"MADRID," "SEVILLE" and "HAVANA"; INTERLOCKING SHINGLES—"YORK," "ENGLISH" and "THAMES"; also, IMPERIAL SPANISH PROMENADE TILE, together with all necessary fittings.

ILLUSTRATIONS.

In presenting, through this medium, a few of the many patterns which we make (see illustrations), we have selected those that take precedence in the favor of architects and engineers for architectural effect, mechanical accuracy, individuality and proved merit. These tiles are designed for use on roofs of not less than one quarter pitch.

CHARACTER.

All these tiles are made of plastic clays or shales, and subjected to high degrees of heat after painstaking preparation for the kilns. They are devised to interlock in the only practical and effective manner, so that water is carried on to the surface of the next lower tile. Their durability is established by the only unassailable verdict—the test of time. The first product of this Company was put on the American market about twenty years ago, at the rate of possibly three hundred squares per month. At present the output of our four factories is approximately five hundred squares per day; an unmistakeable evidence that builders recognize the merits of our ware.

COLORS.

The standard color of Roofing Tiles is a bright terra-cotta red. The greater development of color study in building has opened a field for glazed roofing tiles, of which we make a very complete line, embracing greens, yellows, browns, blacks, and whites, in varying shades. We can furnish our Tile, "German," "York" and "Madrid" (see illustrations), in any of these colors, in the full glazes; also, the matt glazes, or the sand-blasted. We offer our Imperial Spanish in the dull green glaze or in the brown.

INSTALLATION.

Roofing Tiles are usually laid by experienced tile layers or slaters. We prefer to sell to contractors in this line, but will erect the material ourselves at points where there are no contractors sufficiently experienced or competent to do this work.

ESTIMATES.

We shall be pleased to furnish catalogue and estimates on application, but inquiries for complete estimates should be accompanied with roof plan and the four elevations.

GLASS TILE.

Duplicates of "German," "Niagara," "Orleans" and "French" are made in glass for skylight purposes.

SPECIFICATIONS.

"All pitched roofs shall be covered with Tile made by the LUDOWICI-CELADON COMPANY, with stock fittings suitable for each pattern, unless otherwise selected by architect. The tiles as specified above must be hard burned, of color, and in accordance with samples deposited in the office of the architect.

Before the roofer is sent for, the owner or general contractor should construct roofs in strict accordance to plans, sheath the roofs tight, have all chimneys and walls above roof line completed, have all vent pipes through roofs, furnish all strips of required width used under hip rolls, furnish all $1 \times \frac{3}{4}$ inch cant strips used under tile at eaves, and have all scaffolding ready for roofers' use. The metal contractor should have all gutters in place on the roof (gutters, whether box, hanging or secret, to extend over the roof sheathing and cant strip, and run under the felt and tile at least eight inches), and should also have in place all valley metal, the width of which must be not less than 24 inches, with both edges turned up $\frac{1}{2}$ inch the entire length of the valley, the valley metal to be fastened with clips and never nailed or punctured in any manner. The valley metal must be laid over one layer of felt running lengthwise the entire distance of the valley. The metal contractor must have in readiness all flashing metal used along side and in front of dormers, gables, skylights, towers, perpendicular walls, also around vent pipes and chimneys, and place same after the arrival of the tile roofer and under his direction.

After the roofs have thus been prepared to receive the felt and tile, the tile roofer should cover the sheathing of the roofs with one thickness of asphalt roofing felt weighing not less than 30 pounds to the square, laying same with a $2\frac{1}{2}$ -inch lap secured in place by nails with caps. The felt should be laid parallel with the eaves and lapped over all valley metal about 4 inches, and laid under all flashing metal about 6 inches.

The roof having thus been prepared, the tile layer is to fasten the tile with copper nails, one nail to each tile. The roofer shall see that the tile are well locked together and lie smoothly, and no attempt shall be made to stretch the courses. The tile must be laid so that the vertical lines up and down the roofs are parallel with each other and at right angles to the eaves.

The tile that verge along the hips should be cut close against the hip board, and a water-tight joint made by cementing cut hip tile to hip board with elastic cement. Each piece of hip roll shall then be nailed to the hip board, and the hip rolls cemented where they lap each other. The interior spaces of hip and ridge rolls must not be filled with the pointing material."

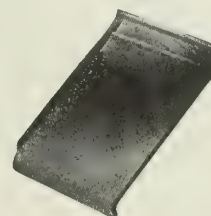
Open Construction—Only "German," "Orleans," "Niagara" and "French" are suitable for this method. These are laid directly on steel or wood purlins, fastened with special fasteners. For factories only.



CONTINENTAL INTERLOCKING

Size 9×16 inches
Exposure $8 \times 13\frac{1}{2}$ inches
Number to square 135
Pounds to square 900

"German," "Niagara," "French,"
"Orleans"



INTERLOCKING SHINGLE

Size 9×13 inches
Exposure $7\frac{1}{2} \times 10\frac{1}{4}$ inches
Number to square 188
Pounds to square 1000

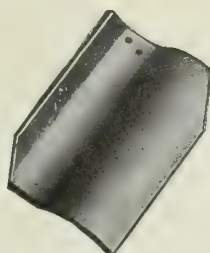
"York," "English," "Thames"



INTERLOCKING SPANISH

Size 9×13 inches
Exposure $7\frac{1}{2} \times 11$ inches
Number to square 166
Pounds to square 900

"Madrid," "Seville," "Havana"



IMPERIAL SPANISH TILE

Size $9\frac{1}{2} \times 13$ inches
Exposure $7\frac{3}{8} \times 10\frac{1}{4}$ inches
Number to square 187
Weight per square 1050 pounds



PROMENADE TILE

Size $6 \times 9 \times 1$ inch
Number to square 258
Weight 4.2 lbs. each

The kiln-run goods are commonly used for roofing purposes

THE UNITED STATES TILE CO.

MANUFACTURERS OF

Shingle Tiles and Terra-Cotta Trimmings

PARKERSBURG, W. VA.

FACTORY AND SHALE BANK
"LEE'S HILL," ALONG BALTIMORE &
OHIO RAILROAD
PARKERSBURG, W. VA.

PRODUCTS.

U. S. SHINGLE TILES, PLAIN and ORNAMENTAL, with Thick Butts; PROMENADE or FLAT-ROOF TILE; TERRA-COTTA TRIMMINGS, made from superior Shales.

ADVANTAGES.

U. S. SHINGLE TILES positively make a leak-proof roof.

U. S. SHINGLE TILES are vitrified and take up least possible amount of moisture.

U. S. SHINGLE TILES will never disintegrate, flake off or fade.

U. S. SHINGLE TILES are frost, ice, heat, hail, fire and acid proof.

U. S. SHINGLE TILES absorb no smoke, grime, dust or dirt.

U. S. SHINGLE TILES are non-conductors of heat and cold.

U. S. SHINGLE TILES keep the attic as cool as the first floor.

U. S. SHINGLE TILES are the result of scientific study and years of experience in manufacture.

U. S. SHINGLE TILES are made of shale, not clay.

U. S. SHINGLE TILES have no foreign substance added to obtain color. The color is from the shale.

U. S. SHINGLE TILES are not dipped, brushed or slipped.

U. S. SHINGLE TILES are a rich *red* in color, of light, medium and dark shades.

U. S. SHINGLE TILES are easy to lay on the roof.

U. S. SHINGLE TILES are strong, tough, and will outlast the building.

U. S. SHINGLE TILES are made by expert tile makers.

U. S. SHINGLE TILES are suited to any manner of building.

U. S. SHINGLE TILES have proved their worth.

U. S. SHINGLE TILES are honest goods at honest prices.

TRIMMINGS.

All Standard patterns of trimmings are kept in stock for prompt shipment. Special designs made to order. Send architect's drawings and specifications or pattern to be matched for estimate.

SPECIFICATIONS.

Architect's specifications require no special features. Tiles require 2-inch slaters' nails (galvanized or copper, as desired). Any slaters' light felt is sufficient for covering sheathing, as a light bed only is necessary on which to lay tile. U. S. Shingle Tiles do not require any spun oakum or cement to be used in body of roof, as do tiles of rim-engaging or interlocking devices. They make a leak-proof job, without outside assistance.

No extra charge for cut hip tile, cut valley tile or gable rake tile.

CATALOGUE.

Ask for catalogue No. 5. It gives detail and descriptive information that we can not give here.

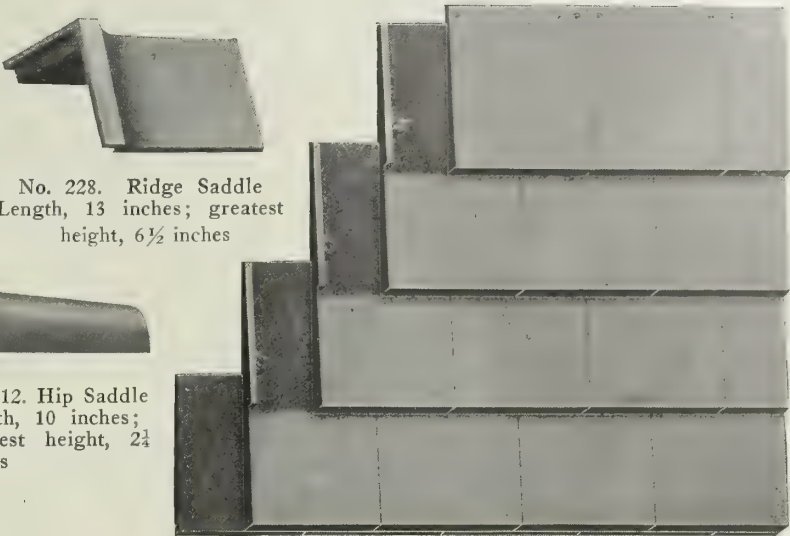


NO. 270. TOWER FINIAL

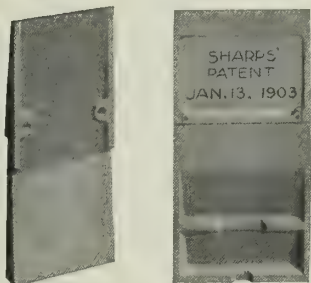


NO. 271. TOWER FINIAL

DIMENSIONS AND WEIGHTS U. S. SHINGLE TILES
Full-sized Tile, 7 x 14½ inches
Weather-exposed surface, 6 x 7 inches
Split Tile (half width), for breaking joints, 3½ x 14½ inches
Ridge Tile (finishing course), 7 x 9½ inches
Under-eave Tile (starting course), 7 x 8½ inches
Number of Tile per square, 350
Weight per square, about 1,200 pounds



No. 228. Ridge Saddle
Length, 13 inches; greatest height, 6½ inches

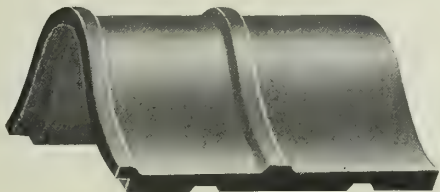


Front

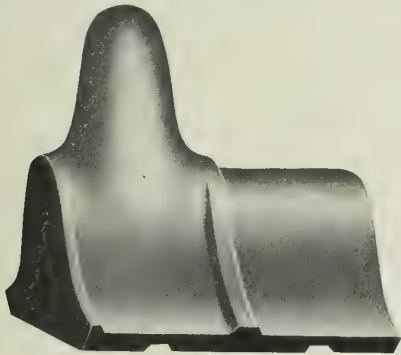
Back

No. 215. Hip Saddle
Length, 11 inches; greatest height, 3 inches

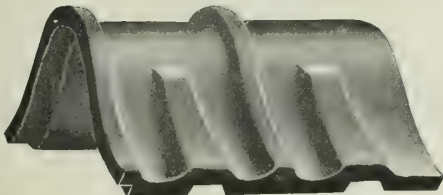
No. 212. Hip Saddle
Length, 10 inches; greatest height, 2¼ inches



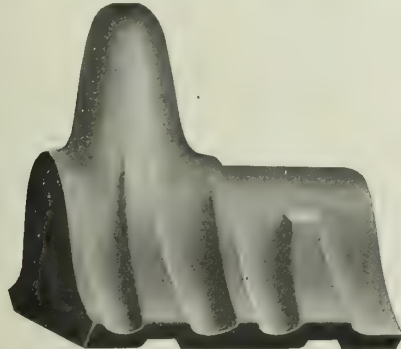
No. 202. Ridge Saddle
Length, 15 inches; greatest height, 7 inches



No. 201. Gable Finial



No. 208. Ridge Saddle
Length 15 inches; greatest height, 7 inches

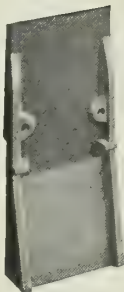


No. 205. Gable Finial

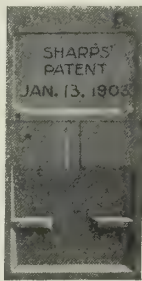
U. S. SHINGLE TILES, PATTERN A, PLAIN



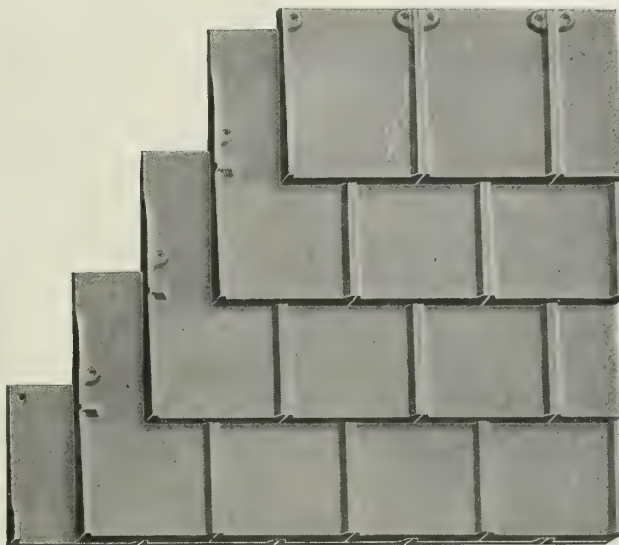
No. 203. Hip Saddle



Front



Back

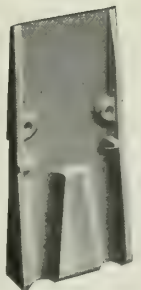


Thickness of Tile at Butts, 1¼ inches

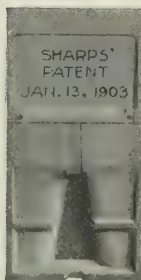
U. S. SHINGLE TILES, PATTERN B, RIBBED



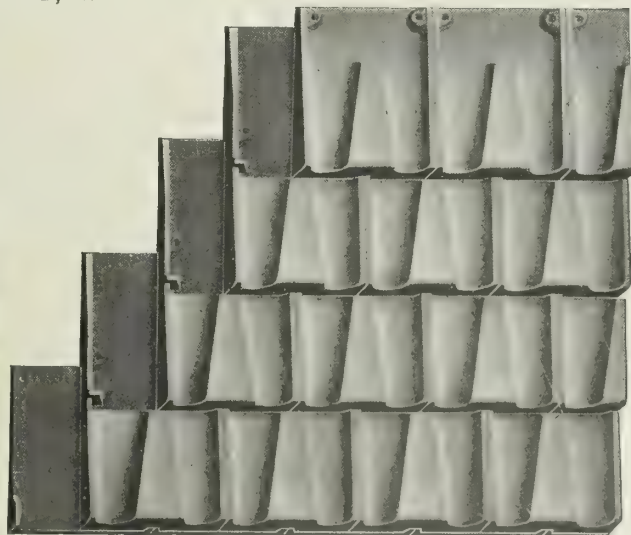
No. 209. Hip Saddle



Front



Back



Thickness of Tile at Butts, 1¾ inches

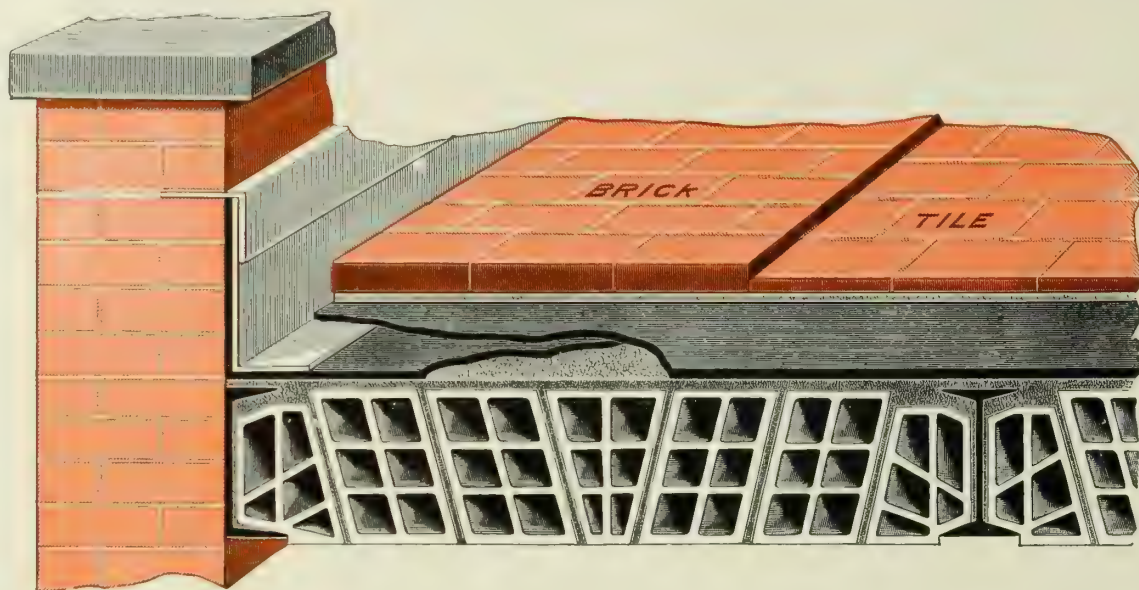
U. S. SHINGLE TILES, PATTERN C, RIBBED AND FLUTED

T. NEW CONSTRUCTION COMPANY

518 and 520 West Twenty-Ninth Street
NEW YORK, N. Y.

PRODUCTS.

BRICK and TILE ROOFS and WATER-TIGHT CELLARS; WATER-TIGHT FLOORS for STABLES, LABORATORIES, BREWERIES, BATTERY ROOMS, etc.; GRAVEL and SLAG ROOFING.



T. NEW'S PATENT BRICK AND TILE ROOFS

T. NEW'S PATENT BRICK AND TILE ROOFS.

Absolutely proof against fire and water. They will stand quite as long as the buildings they cover. They make a clean and sanitary pavement, which may be used either for pleasure or business purposes.

The brick roof is the only roof that has proved equal to the wear and abuse of tenement houses.

We have them on for thirty years without repairs.

Can be used on either wood or fireproof construction.

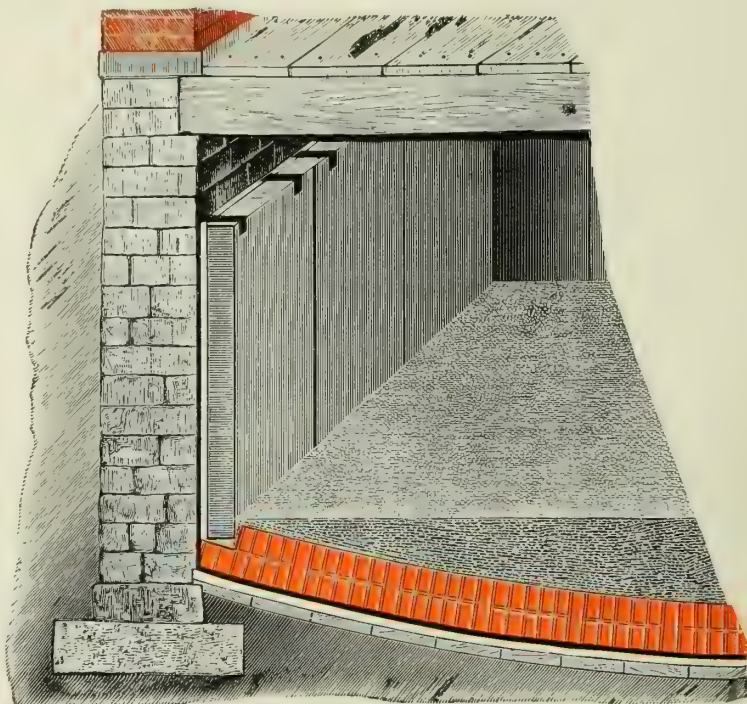
T. NEW'S PATENT WATER- TIGHT CELLARS.

Our patent system is a perfect method of reclaiming cellars and basements from the influence of tide, spring or surface water.

We can make any cellar permanently water-tight, no matter where located.

Useless cellars are made ten-antable by T. New's Patent System.

Our system of construction, although thirty-five years old, has never been improved upon by others, and is to-day the standard system of waterproof construction.



T. NEW'S PATENT WATER-TIGHT CELLARS

THE BARBER ASPHALT PAVING COMPANY

MANUFACTURERS OF

Genasco Roofing and Waterproofing Materials

Land Title Building
PHILADELPHIA, PA.

NEW YORK, N. Y., 30 Church Street

SAN FRANCISCO, CAL., 1083 Monadnock Building

CHICAGO, ILL., Tribune Building

PRODUCTS.

TRINIDAD LAKE ASPHALT ROOFING CEMENT; GENASCO ASPHALT SATURATED FELT; GENASCO ASPHALT TILE CEMENT; VULCANITE SPECIAL MASTIC.

GENASCO READY ROOFINGS, four types: MODEL, SMOOTH SURFACE, STONE SURFACE and WHITESTONE.

GENASCO LIQUID ROOF COATING for Felt Roofs; GENASCO ROOF PAINT for Tin and Metal Roofs.

GENASCO POSITIVE SEAL FELT; GENASCO POSITIVE SEAL FABRIC; GENASCO POSITIVE SEAL SOLID and LIQUID CEMENTS; GENASCO POSITIVE SEAL PAINTS.

All of the above products are made from Trinidad Lake Asphalt and other natural asphalts.

DESCRIPTIONS.

TRINIDAD LAKE ASPHALT ROOFING CEMENT—For use with either asphalt or coal-tar felts in the construction of built-up roofs. This material is the most durable which can be procured, and while the cost is somewhat higher than coal-tar pitch, this is a small consideration in comparison with the increased efficiency.

Trinidad Lake Asphalt Roofing Cement is not affected by extremes of climatic temperature, and is suitable for both flat and steep roofs. Grade "S" should be specified for excessively steep inclines such as saw-tooth construction.

GENASCO ASPHALT SATURATED FELT consists of the best grade of wool felt with 150 per cent saturation, weighing about fourteen pounds per square.

GENASCO ASPHALT TILE CEMENT is a waterproof product of natural asphalt. It is applied over the roofing felt and the tile embedded in it, being grouted with the same material or with Portland cement. It retains its life under all climatic conditions, allows for expansion and contraction, and will not squeeze up between the tile in hot weather.

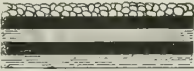
VULCANITE SPECIAL MASTIC is the highest grade of mastic on the market, being made from imported asphalt rock. It is extensively used for waterproofing reservoirs, and for floors of railway concourses, packing houses, canning factories and breweries, as well as for school buildings, toilets, and other purposes where a smooth monolithic floor is desired for sanitary reasons. Roofing tile is frequently embedded in this mastic.

GENASCO READY ROOFINGS—The following sectional illustrations describe four types of Genasco Roofing designed to meet various requirements. They are used extensively not only throughout the United States but in nearly every foreign country.



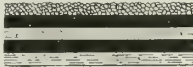
Crushed Quartz
Trinidad Lake Asphalt
Wool Felt
Trinidad Lake Asphalt
Burlap
Trinidad Lake Asphalt

GENASCO MODEL
ROOFING



Gravel
Trinidad Lake Asphalt
Wool Felt
Trinidad Lake Asphalt
Wool Felt

GENASCO STONE SURFACE
READY ROOFING



Crushed Stone
Trinidad Lake Asphalt
Wool Felt
Trinidad Lake Asphalt
Wool Felt

GENASCO WHITESTONE
READY ROOFING



Trinidad Lake Asphalt
Wool Felt
Trinidad Lake Asphalt

GENASCO SMOOTH SUR-
FACE READY ROOFING

While not equal to a Trinidad Lake Asphalt built-up roof, on account of their ease of application and numerous other advantages, these roofings have a very large field where a built-up roof would not be practicable.

They are the standard ready roofings, and are guaranteed for from five to ten years. Each roll is complete with nails and cement and directions for laying are packed inside.



GENASCO POSITIVE SEAL FELT—For rendering concrete impervious to water and for protecting all kinds of underground structural work from deterioration the only method which has been found to give entire satisfaction is the application of bituminous materials. In order to apply them effectively and economically it is generally necessary to make use of a fibrous sheet which will hold the waterproofing course in place and prevent its being broken as a result of vibration or pressure.

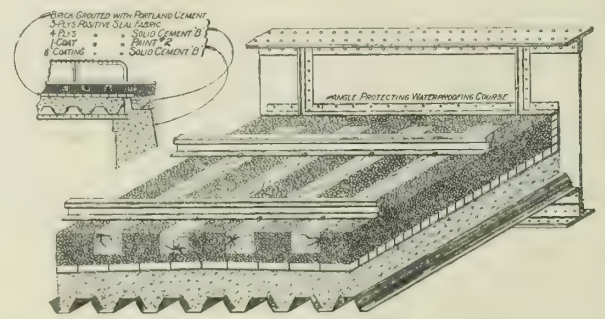
Genasco Positive Seal Felt is a high grade of wool felt, properly saturated with natural asphalt and so coated that no particle of the fiber is exposed. It has great tensile strength and in connection with Genasco Positive Seal Cement will make the most effective waterproofing course possible to construct. Where unusual strength is required to withstand incessant vibration or excessive contraction and expansion we recommend Genasco Positive Seal Fabric.

GENASCO POSITIVE SEAL FABRIC is used either in connection with Positive Seal Felt or as a substitute for it. This fabric consists of a high grade of burlap from which all moisture is removed before saturating and coating with natural asphalt. Its flexibility makes it desirable where necessary to work it into close places. The coating of both felt and fabric will form a perfect bond with Genasco Positive Seal Solid Cement when applied hot.

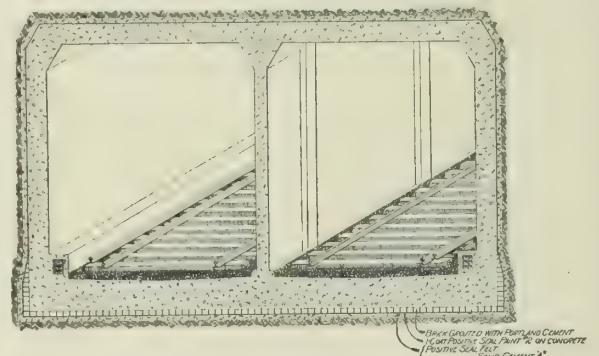
GENASCO POSITIVE SEAL SOLID CEMENT is manufactured from natural asphalt. It is used as a ply-cement with Genasco Positive Seal Felt or Fabric for all classes of underground waterproofing. Where there is no water-pressure to be overcome it may be applied without the use of felt or fabric, for the protection of metal, concrete or brick structures. Such surfaces should always first be painted with Genasco Positive Seal Paint in order to form a perfect bond, and the cement applied hot.

"A" cement is for use in waterproofing tunnels and foundations where there are not excessive extremes of temperature, and is liquid, suitable for applying, at about 300° Fahr. Where extremes of temperature will be encountered, as on trough girders or similar steel bridges, under rock ballast, or under earth filling on culverts, "B" cement should be specified. This should be heated to about 400° Fahr. The "C" cement is particularly adapted for lining all kinds of tanks or conduits, whether of brick, concrete, steel or wood. It is extensively used for tanks containing dilute sulphuric acid, in the electrolytic refining of copper. Genasco Positive Seal Solid Cement will yield about 250 gallons per ton.

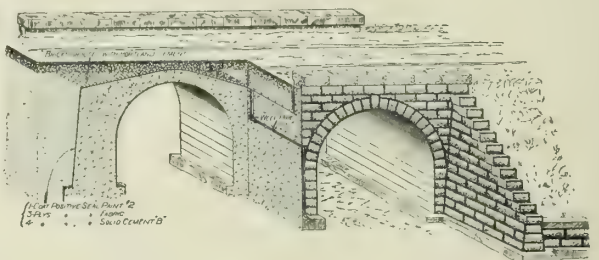
GENASCO POSITIVE SEAL LIQUID CEMENT may be used cold as a substitute for the Solid Cement where there are no facilities for heating the latter. It is of heavy consistency and should be applied with a brush or mop. It is intended only for work under earth or other filling.



WATERPROOFED RAILROAD BRIDGE, POSITIVE SEAL METHOD



WATERPROOFED DOUBLE-TRACKED SUBWAY, POSITIVE SEAL METHOD



WATERPROOFED CULVERT, POSITIVE SEAL METHOD

GENASCO POSITIVE SEAL PAINT NO. 1—This is the ideal damp-proofing paint, having valuable characteristics not possessed by any other paint. It will positively seal the pores of brick, stone or concrete against moisture. Expensive building stone is made proof against cement or mortar discolorations by one good coat. There is nothing like it for cellar walls or hollow-tile partitions, and floors of fireproof construction are rendered damp-proof and practically waterproof with one or two coats, insuring decorations from damage by leaks. Positive Seal Paint may be used under any form of sand plaster, the rough plaster being laid directly upon the paint without lathing or furring. One gallon will cover one hundred square feet of brick surface, and rougher construction proportionately. It should be applied with a brush. One coat is usually sufficient.

GENASCO POSITIVE SEAL PAINT NO. 2 is used as a priming coat for wood, masonry or steel, where Positive Seal Solid Cement is to be applied hot. It is of thin consistency and penetrates the pores, leaving a thin glossy coating not in itself waterproof but forming a perfect bond with the hot cement.

SPECIFICATIONS.

For a standard 4-ply roof the following specifications should be used:

Materials—Wool-Felt of standard quality, 32" wide, containing 150 per cent saturation of asphalt or coal-tar, and weighing not less than 14 lbs. per 100 sq. ft. Asphalt saturated felt should always be used where the slant of the roof is greater than 3" to the foot.

No rosin-sized sheathing nor dry felt is required before applying the saturated felt, as Trinidad Lake Asphalt Roofing Cement will not run, creep nor shove under the hottest summer sun. There is, therefore, no danger of the cement dripping through, as coal-tar would do.

Trinidad Lake Asphalt Roofing Cement, not less than 100 lbs. per 100 sq. ft. of finished roof if laid over boards, or 140 lbs. over concrete or hollow tile.

The surfacing material shall be Slag, Gravel or Tile. Where Slag or Gravel is used, it shall be not larger than $\frac{3}{8}$ " nor smaller than $\frac{1}{4}$ " in diameter.

Not less than 300 lbs. of slag or 400 lbs. of gravel shall be used to 100 sq. ft. of roof.

Application—Sweep the surface, carefully examining it for projections that might puncture the felt or depressions that would hold water.

The roofing shall be laid in the following manner:

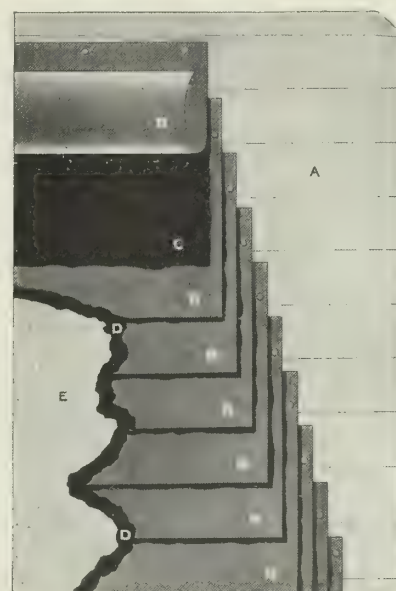
Over the roof boards or other base apply four thicknesses of felt, lapping each sheet three fourths of its width over the preceding one, shingle-fashion, and mopping the entire surface between with hot Trinidad Lake Asphalt Roofing Cement.

Where laid on boards, nail the upper edge of the felt sufficiently to hold it in place, so that succeeding layers of felt will cover all nail heads; where laid over concrete or hollow-tile, first mop the entire surface with Trinidad Lake Asphalt Roofing Cement, not less than 40 lbs. per 100 sq. ft., and apply the felt while the cement is hot so that it will adhere firmly to the base.

Mop the entire surface with Trinidad Lake Asphalt Roofing Cement, and while it is hot embed dry slag or gravel.

Where roof is to be finished with tile, omit final mopping with roofing cement and embed the tile in a standard quality of Asphalt Mastic or Tile Cement using not less than 200 lbs. per 100 sq. ft. Forty lbs. less of roofing cement will thus be required for each square of tile roofing.

Where there is excessive moisture within the building resulting in condensation on the under side of the roofing, as in paper mills, or where the felt is exposed to the fumes of gases, as in railway sheds, chemical works, etc., satisfactory results will be obtained by first applying a layer of Genasco Positive Seal Felt, lapping each sheet 2" over the preceding one and cementing with hot Trinidad Lake Asphalt Roofing Cement. Mop the entire surface of the Positive Seal Felt with the Roofing Cement and while hot apply three thicknesses of roofing felt, lapping each sheet two thirds of its width over the preceding one, and proceeding as with a four-ply roof. The Positive Seal Felt has an asphalt coating which thoroughly protects the fiber from acids and gases as well as moisture, thus overcoming a serious difficulty heretofore experienced with this class of buildings.



ROOF CONSTRUCTION

TRADE-MARK.

In order to insure securing genuine Trinidad Lake Asphalt Roofing Cement, see that the Horseshoe Trade-Mark appears on every barrel.

BOOKLETS.

Booklets containing full information with detailed descriptions and specifications of the above roofing and waterproofing materials, will be mailed on request.

Architects and Engineers will be particularly interested in "Waterproofing by the Positive Seal Method."

J. A. & W. BIRD & COMPANY

Prepared Roofing, "Zolium" Tile Roofing, Building Papers and Waterproofing Felts

235 India Street
BOSTON, MASS.

OFFICES

NEW YORK, N. Y., 31 Union Square, West
CHICAGO, ILL., 25 North Clark Street
COLUMBUS, OHIO, 36 East Swan Street

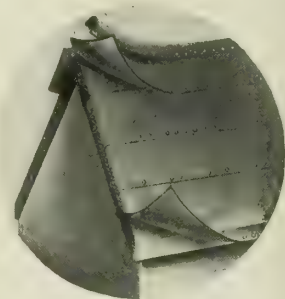
MONTREAL, CAN., 27 Common Street
NEW ORLEANS, LA., Hennen Building
ATLANTA, GA., 55 Kennesaw Avenue

PRODUCTS.

"REX FLINTKOTE" ROOFING; "ZOLIUM" PATENTED TILE ROOFING; "PARADUX" CANVAS-TOP ROOFING; "IBEX" BUILDING and INSULATING PAPERS; "RUTHERFORD" BLACK WATERPROOF PAPER, "TUNALOID" WATERPROOFING FELT; "RIPOLIN" ENAMEL PAINT and "REX" ROOF PAINT.

"REX FLINTKOTE" FIRE-RESISTING ROOFING.

"Rex Flintkote" is made from a solid piece of wool felt, saturated and coated with compounds which are acid, alkali and gas proof. It contains no tar and will not soften in summer or become brittle in winter. It will not ignite from hot coals. This comes in 36" rolls containing 72 running feet of roofing, or enough to cover two squares of roof surface. Nails and cement are packed in every roll.



METHOD OF APPLYING
"REX FLINTKOTE"
ON A PITCH ROOF

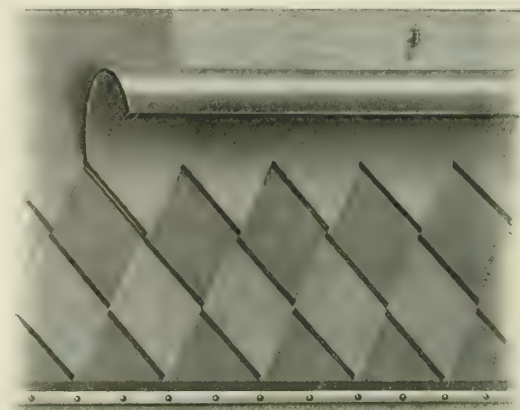
"ZOLIUM" PATENTED TILE ROOFING, RED AND SLATE COLOR.

"Zolium" is a sheet roofing and comes in rolls, but it has a saw-tooth cut in the middle of the sheet which separates into two strips, each having a straight edge and a saw-tooth edge.

The illustration shows how these strips are laid, producing the effect of diamond tiles.

It should be observed that no cracks remain between tiles as with shingles. Tiles are cemented. "Zolium" comes in handsome dark red, one side lighter than the other, so a color contrast is secured by turning alternate strips, and in slate color, both sides the same shade.

"Zolium" is a splendid fire protection, and is so recognized by leading cities, notably, New York, where it ranks with tin or tar and gravel. Each roll covers a square with a triple layer. Nails and cement are in each roll.



ILLUSTRATING HOW EASILY A BUTT CAN
BE MADE WITH "ZOLIUM"

"PARADUX" CANVAS-TOP ROOFING.

A perfect roof for verandas, roof gardens, or any surface that is to be walked on. It is made of canvas with a waterproof felt back and can be painted any color desired. It comes in 36" rolls containing two squares.

"IBEX" BUILDING PAPERS.

"Ibex" Building and Insulating Papers are made from tough, fibrous paper saturated and coated with waterproof and time-resisting compounds, non-conductors of heat and cold. It is packed in 36" rolls containing 1000 square feet.

"RUTHERFORD" BLACK WATERPROOF PAPER.

This is a high-grade rope paper coated on both sides with rubbery, waterproof gums. It is very serviceable and comes in 36" rolls containing 500 and 250 square feet.

“TUNALOID”
WATERPROOF-
ING FELT.

“Tunaloid” is a very high-grade, tough waterproofing felt for waterproofing tunnels, bridges, dams, foundations, and all masonry exposed to water under pressure.

The peculiar feature of “Tunaloid” is that it is coated on one side only. This permits the hot pitch to strike instantly into the raw felt, securing a perfect bond between the sheets.

Over eight million feet of “Tunaloid” have been used on the Pennsylvania Terminal in New York.

“RIPOLIN”
ENAMEL
PAINT, IM-
PORTED FROM
HOLLAND.

We are the exclusive Agents for the United States and Canada for “Ripolin” Enamel Paint.

This celebrated importation is made in white and seventy-eight shades and colors; also, in full gloss, semi-gloss, and dead flat finishes. It is the easiest enamel in the world to use; flows freely, leaving no brush marks, and contains no lead. The white does not turn yellow. Colors are remarkably permanent and unaffected by extremes of temperature, chemical or acid fumes.

“Ripolin” will not crack, check or hair-line. It covers thirty per cent more surface than any domestic enamel.

FULL GLOSS,
FLAT AND
SEMI-GLOSS.

The full gloss gives a beautiful tile-like effect to the surface upon which it is applied. It is absolutely pure white and retains its permanency; will not crack, check or discolor.

The flat “Ripolin” gives a dead flat or mat effect, entirely free from brush marks or laps. It is the most perfect flat enamel manufactured.

Semi-gloss is easily obtained by mixing in varying proportions, as desired; the full gloss and flat “Ripolin” having all the richness and velvety feel of a rubbed enamel finish, with a saving of more than fifty per cent expense of labor.

ORIGINAL
PROCESS.

“Ripolin” is manufactured in Holland, by the old Dutch process, which has never been duplicated in any other country.

INTERIOR
AND
EXTERIOR.

“Ripolin” Enamel Paint can be used indiscriminately for interior, exterior, and all marine work. This paint is unequalled for hospital work, where a smooth, hard and perfectly non-porous and durable surface is required.

An almost exact duplicate of tile may be obtained on hard plaster by scoring, and at one tenth of the cost of tile. It is especially adapted for use on fireproof wood, alignum and similarly treated materials, without cracking or scaling.

ECONOMICAL.

The price per gallon of “Ripolin” Enamel Paint is slightly higher than for ordinary enamel, but on the finished work it is much cheaper, owing to its enormous covering capacity.

“REX” ROOF
PAINT.

This is used for painting prepared roofing, iron works, etc. It is waterproof and very durable. It comes in black and red.

SPECIFICA-
TIONS SENT.

Write for our descriptive book containing pictures of buildings all over the country finished with “Ripolin”; also, Specifications.

CAUTION.

In order that imitations shall be avoided see that our trade-marks and firm name are on all goods.

THE CHATFIELD & WOODS CO.

Distributor of "Paracote" Permanent Roofing
CINCINNATI, OHIO

TELEPHONE, MAIN 953

MANUFACTURED BY THE CHATFIELD MFG. CO., CARTHAGE, OHIO

PRODUCTS.

CHATFIELD'S "PARACOTE" PERMANENT ROOFING, "FAULTLESS" and "AMERICAN" PREPARED ROOFING, BUILDING and SHEATHING PAPERS, TARRED FELT; "PARACOTE" WATERPROOFING COMPOUND, ROOFING PITCH and PAVING PITCH; "PARACOTE" DAMP-COURSE FELT; "CRESOLATED" SHINGLE STAINS (in all colors); ASPHALT and TAR ROOF COATINGS, ASPHALT PAINTS, and other BY-PRODUCTS of COAL TAR.

PROPERTIES AND ADAPTABILITY.

"Paracote" has for its basis an all-wool felt that is thoroughly saturated with a compound which makes it absolutely proof against gases, steam, alkalies, and the elements. "Paracote" is especially recommended for roofing warehouses, mills, factories, foundries, and is adaptable to all classes of buildings, whether the roof be flat or steep.

WATER- PROOFING.

For waterproofing and damp course it is unsurpassed, owing to its moisture-resisting qualities. If properly applied in several layers and cemented together it makes the most perfect material for preventing moisture in subcellars and subways. Chatfield quality has been synonymous with the best for over fifty years, and when you buy "Paracote" you buy the best.



TRADE-MARK

SIZE, PACKAGE, WEIGHTS, ETC.

"Paracote" is put up in rolls 32 inches wide, 41 feet in length, containing 108 square feet, a sufficient quantity to cover a space 10' x 10', or one square. For convenience, we can also put up "Paracote" in rolls containing 216 square feet. The cement necessary for seams, and the large-headed nails for applying "Paracote," are packed in the core of the roll, with directions for laying.

Shipping Weights

	1-Ply	2-Ply	3-Ply
"Paracote"	35 lbs.	45 lbs.	55 lbs.
"American" Tarred Roofing		40 lbs.	60 lbs.
"Faultless" Tarred Roofing		45 lbs.	70 lbs.

FACILITIES.

Special facilities for the execution of large orders.

Mixed cars are our specialty, as handling pitch, tarred felts, slaters' felt, 2 and 3 ply tarred roofing, we are thus enabled to make up mixed cars to the best advantage.

PRICES.

Prices and samples sent on application.
We solicit correspondence.



ROLL OF
"PARACOTE"

THE NATIONAL ROOFING CO.

MANUFACTURERS OF
Asphalt Roofing and Paint
FACTORIES AND GENERAL OFFICES
TONAWANDA, N. Y.

DISTRIBUTERS

BALTIMORE, MD., CLARKE ASPHALT ROOFING & PAINT Co., 546 Monument Street, East BOSTON, MASS., JOHN M. CARRECABE, 72 High Street
LOUISVILLE, KY., CENTRAL PAINT & ROOFING Co., 306 West Main Street
PITTSBURGH DISTRICT OFFICE: MORRIS AYRAULT, Manager, 503 Publication Building, Pittsburgh, Pa.

PRODUCTS.

PREPARED ASPHALT ROOFINGS surfaced with GRAVEL and FELDSPAR ROCK, MICA-BACK RUBBER ROOFING, ASPHALT ROOFING CEMENT, ASPHALT ROOF COATING and FELT.

For SPECIAL PAINTS and ROOF COATINGS see our name in General Index.

SUPERIOR QUALITY.

"Security," "Safety," and "National" Roofings are permanently water-tight and satisfactory on all classes of buildings and easily applied by any intelligent workman. We aim to make the roofing which lasts the longest without repairs or coating. All the roofings which we manufacture are absolutely free from coal tar in every form. Our genuine natural mineral asphalt, specially refined under our own formula, insures the highest possible standard, and longest life.

PATENT NON-LEAKING JOINT.

The six-inch joint (Fig. 2) welded by our patent process can not leak, prevents the joint cement dripping through roof boards and covers the nail heads, preventing their usual exposure.

USES.

"Security" or "Safety" brand for flat roofs, or up to half pitch. "National" brand contains a burlap making it adaptable for roofs of more than half pitch.

ORNAMENTAL PAINTING.

These brands, especially "Safety," have attractive appearance, but color can be changed by our colored "Asphaltus" Coating or "Permanent" Paint.

SURFACED RUBBER ROOFING, MICA BACK.

"Sparkloid" is a so-called rubber roofing, improved with a patented additional protection on both sides. Instead of having just the usual skin-coat finish, the upper side is protected with a thick, permanent, pliable layer of fire and weather resisting natural mineral asphalt, into which is embedded a smooth surfacing of fine crushed feldspar rock. The under side also is improved with our special asphalt and flake mica finish, which gives unequalled protection against fumes, gases, steam and fire from inside the building. This gives "Sparkloid" better value than other one-felt roofings. Made in three weights, 1, 2, and 3 ply.

COMPARATIVE DESCRIPTION.

Brand	Weight With Trimmings	Joint	Felts	Surfacing
"Security"	About 155 pounds	6" patent joint	2	White sea gravel
"National"	" 155 "	6" patent joint	2	White sea gravel
"No. 3 Safety"	" 125 "	6" patent joint	2	Crushed feldspar rock
"No. 4 Safety"	" 95 "	6" patent joint	2	Crushed feldspar rock
"Standard"	" 150 "	2" ungraveled	2	White sea gravel
"Liberty"	" 145 "	2" ungraveled	2	White sea gravel
"Diamond Grit"	" 125 "	2" without rock	2	Crushed feldspar rock
"Crystalite"	" 85 "	2" without rock	2	Crushed feldspar rock
"Royal"	" 68 "	2" lap allowed	1	Crushed feldspar rock
"Sparkloid"	" 42-52-75	2" lap allowed	1	Crushed feldspar rock

BUILT-UP ROOFS.

When it is desired to make a built-up roof, using one or more extra felts, we recommend substituting our asphalt saturated felts and mineral asphalt composition in place of coal-tar felts and tar-pitch composition, using "Security," "Safety," or "National" Brand roofing as the top or finishing course, under our specifications.

APPROVED BY FIRE UNDERWRITERS. SPECIFICATIONS.

All of the above mentioned brands except Royal and one-ply "Sparkloid" are approved by the National Board of Fire Underwriters.

Specify either "Security," "No. 3 Safety," or "No. 4 Safety," Mineral Asphalt Roofing, made with patent six-inch nail covering joint, manufactured by THE NATIONAL ROOFING CO., Tonawanda, N. Y.

ESTIMATES.

Estimates, catalogues, and samples showing a completed section of the patented six-inch joint, will be cheerfully furnished.

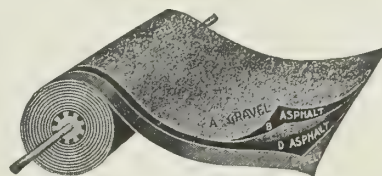


FIG. 1. ROLL OF ROOFING
Showing construction and the extended felt for Patent Joint

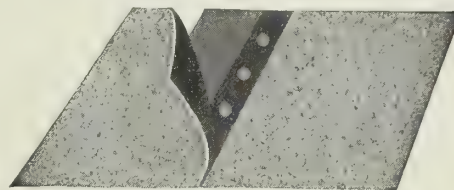


FIG. 2. SECTION OF ROOFING
Showing nail-covered feature of Patent Joint on "Security," "Safety" and "National" brands

J. G. HETZEL
 Manufacturer of Roofing Cement
 67 Maine Street
 NEWARK, N. J.

CABLE ADDRESS, "HETZEL, NEWARK"

NEW YORK, N. Y., LUDOWICI-CELADON Co., 156 Fifth Avenue
 PHILADELPHIA, PA., BERGER BROS., Arch Street
 CHICAGO, ILL., J. C. MCFARLAND, 27th Street and Fifth Avenue

ANTWERP, BELGIUM, ANTONIE GILLIS, 1 Rue Van Diepenbach

AGENTS

BOSTON, MASS., RICHARDS & Co.
 WAMPUM, PA., AMERICAN CEMENT TILE Co.
 LOS ANGELES, CAL., THE PARAFFINE PAINT Co.

PRODUCTS.

"HETZEL'S" ELASTIC ROOF CEMENT for all roofs, glass skylights, coping stones, etc.;
 "HETZEL'S" CELEBRATED IMPROVED ASPHALT SLAG ROOFING; "HETZEL'S" PIPE-JOINT
 COMPOUND; "HETZEL'S" DAMP-PROOF PAINT for brick walls; "HETZEL'S" ROOFING
 PAINT; "HETZEL'S" BLACK and GREEN ENAMEL PAINTS for boiler fronts and steam pipes;
 "HETZEL'S" ACID-PROOF PAINT for metal work.

"HETZEL'S"
 SLAG
 ROOFING.

"Hetzel's" celebrated improved asphalt Slag Roofing is used on flat roofs of all kinds, and on sloping roofs up to an angle of 45 degrees. This roofing will not run or burn, and has been in use for fifty years.

"HETZEL'S"
 RUBBER ROOF
 CEMENT.

"Hetzel's" Rubber Roof Cement which has been in general use throughout the United States and Europe for many years, is a compound, made from a secret formula, and is especially valuable for covering and repairing all holes, cracked joints, breaks, or leaks in roofs of all kinds, and is also used for pointing around chimneys, skylights and dormer windows, for repairing coping stones, gutters, wood and stone work which is required to be made water-tight, and for laying and bedding slate and tile roofs.

"Hetzel's" Rubber Roof Cement is sold in any quantity, and is supplied in brown, black, green, and red colors. It is also made to order to suit every purpose, and is an ideal Slaters', Tinnners' and Tile Roofers' cement. It is kept moist by being covered with water or oil, does not become hard, stiff, or dry, is very adhesive and sticks to anything, and after being applied forms a tough leather-like skin over the top.

ADVANTAGES.

"Hetzel's" Rubber Roof Cement is equally well adapted for use on slate, tin, asbestos, glass, wood and metal roofs, is permanent, does not run or loosen from joints or cracks, and is not affected by any extreme of temperature or climatic changes. It does not harden, and preserves its complete elasticity even when exposed to extreme heat, cold, dryness or humidity.

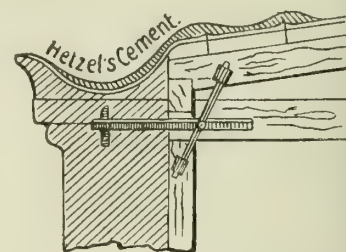
DIRECTIONS.

"Hetzel's" Rubber Roof Cement is applied cold, with a trowel, and it is necessary that the surface should be thoroughly cleaned and very dry before the cement is put on.

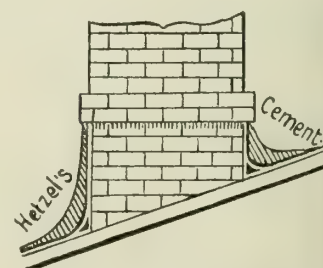
A coat of paint may be put on over the cement if desired, without causing any injury or affecting in any way the quality or durability of the cement.



TRADE-MARK



ROOF AND GUTTER
 Section showing application of
 "Hetzel's" Rubber Cement



CHIMNEY AND ROOF
 Showing application of
 "Hetzel's" Rubber Cement

SPECIFICATION.

"All roofing cement to be 'Hetzel's' Rubber Roof Cement, manufactured by J. G. HETZEL, Newark, N. J."

ADAPTABILITY.

SLATE ROOFS—The employment of "Hetzel's" Rubber Roof Cement for the construction and repair of slate roofs has become general in America and Europe. No hooks are required, the slates being held together by the cement alone, and even when the slates break or the nails work loose or fall out the slates adhere and are held firmly in place. The cement does not dry out and is useful for laying slate on iron or steel purlins, and if the underside of the slates are pointed to the metal they will never drop out.

Old slate roofs are repaired very cheaply by use of this cement. The slates can be attached to the roof by means of the cement which is applied to the underside of the slates. This method holds the slates firmly in place and reduces the cost of repairs to a minimum.

METAL ROOFS—"Hetzel's" Rubber Roof Cement is used for repairing all metallic roofs and can be applied in places where solder can not be used.

The small holes are easily covered up by applying the cement with a trowel to the thickness of about one quarter of an inch. For the larger holes a coat of cement is applied to the edge, the hole then being covered with lead, zinc or linen; and it is proved by experience that repairs made in this manner will last for twenty years.

GLASS ROOFS—"Hetzel's" Rubber Roof Cement replaces with advantage the putty employed in the construction of greenhouses, conservatories and glass roofs of all kinds, and insures a perfectly waterproof construction.

TILE ROOFS—"Hetzel's" Rubber Roof Cement is used for pointing up ridge rolls, hips and valleys, laying and bedding tiles, and, properly applied, the cement holds the tiles permanently in place and prevents all snow, rain and wind from penetrating beneath.

WALL COVERING—The great simplicity in the application of "Hetzel's" Rubber Roof Cement makes it useful for closing up the joinings and cracks in the covering of walls. It commonly happens that the water which infiltrates at these joinings and cracks is the cause of the humidity of the wall. A simple application of this cement with a trowel is sufficient to make the covering of walls perfectly water-tight. Flashing in all kinds of walls can be pointed with this cement.

GAS PIPE—The cement adheres to metal and is used for gas-pipe joints. It will not harden and prevents the pipe from rusting.

TESTIMONIAL.

The following is a translated extract from one of many letters we have received from Europe, indorsing "Hetzel's" Rubber Roof Cement:

"ANVERS, May 6, 1908.

"In reply to your letter of April 1st, we have the honor to let you know that our chief officers declare, having used for several years the product called 'Hetzel's' Rubber Cement and Paint:

"The thick product is very convenient to close escapements in gutters and roofs and to join the blue stone.

"The lighter product is recommendable to rub in glass roofs and for carpenters' work of windows.

"Employed constantly since 1889 for painting and keeping in order the roofs and hanging gutters of the Antwerp docks, these products have given good results.

"The Secretary (Signed) POSSEMIERS"

"The Alderman (Signed) VICTOR DESGUIN"

REFERENCES.

A few of the many buildings where "Hetzel's" Rubber Roof Cement has been used include the following:

Singer Building, New York, N. Y.; Metropolitan Museum of Art, New York, N. Y.; General Electric Company, Schenectady, N. Y.; Vanderbilt Buildings, Biltmore, N. C.; all of the Government Buildings, Washington, D. C.; Waterbury Clock Company, Waterbury, Conn.; Prudential Insurance Company, Newark, N. J.; City Hall, Post Office, Court House, Library and all School Buildings in Newark, N. J.

Many Railroads have used "Hetzel's" Rubber Roof Cement for Stations and Power-Houses, including the New York Central, at Albany, N. Y.; the Erie, at New York, N. Y., Alfred, N. Y., Franklin, Pa., Jamestown, N. Y., Paterson, N. J., Rutherford, N. J., and Salamanca, N. Y.; the New York, Ontario & Western, at Ellenville, N. Y., Kingston, N. Y., and Napanoch, N. Y.

"Hetzel's" Rubber Roof Cement is in use on all of the Railroads and Gas Company Buildings in Antwerp, Belgium, and in many other parts of Europe.

KEASBEY & MATTISON COMPANY

GENERAL OFFICES AND LABORATORIES

AMBLER, PA.

SOLE SELLING AGENTS FOR

ASBESTOS SHINGLE, SLATE & SHEATHING CO.

BRANCH OFFICES

LONDON, ENG.
NEW YORK, N. Y.
BOSTON, MASS.
CHICAGO, ILL.
NEW ORLEANS, LA.
CLEVELAND, OHIO
CINCINNATI, OHIO
ST. PAUL, MINN.
SEATTLE, WASH.



THE ONLY PLANT OF ITS KIND IN AMERICA

BRANCH OFFICES

WASHINGTON, D. C.
ST. LOUIS, MO.
PITTSBURG, PA.
MINNEAPOLIS, MINN.
ATLANTA, GA.
MILWAUKEE, WIS.
OMAHA, NEB.
PHILADELPHIA, PA.

PRODUCTS.

ASBESTOS BUILDING MATERIALS, including: ASBESTOS BUILDING LUMBER, for fire-proof ceilings, floors, partitions, walls and sheathing, roofing, portable buildings, smoke-jacks, electrical insulation and other purposes; ASBESTOS "CENTURY" SHINGLES or SLATES for roofing and sheathing; REINFORCED ASBESTOS CORRUGATED SHEATHING or ROOFING, for roofing, siding, awnings, etc., for factories, foundries, elevators, train sheds, rolling-mills, and other permanent structures.

ADVANTAGES.

Asbestos Building Lumber consists of sheets of hydraulic cement reinforced in every direction with interlacing asbestos fibers kneaded throughout the cement while still in plastic condition. The resulting mass is formed into sheets and compacted by hydraulic pressure.

Being made entirely of hydraulic cement and asbestos, Asbestos Building Lumber is unequaled for all classes of building construction, as well as for roofing. It is unaffected by dampness, moisture, frost, freezing or heat. It is impervious to any action of climate or atmosphere, and to the ravages of time. While extraordinarily tough and hard when first made, owing to its ingredients and the process of manufacture, it takes on an added toughness and elasticity as the concrete matures with age, and practically doubles in tensile strength after exposure to the weather.

REMARKABLE FIRE RETARDANT.

Asbestos Building Lumber has passed all the tests of the National Board of Fire Underwriters, Chicago, Ill. It proved itself fireproof in every sense of the word as understood in building construction. It does not disintegrate or exfoliate when exposed to fire or freezing. It will not burst or fly to pieces when a stream of cold water is turned on it, although raised to a red heat.

ELECTRICAL INSULATING QUALITIES.

The electrical and insulating qualities of Asbestos Building Lumber are very high and can not be ignored by architects or engineers. It is being largely used for electrical installation under cars, so that "short circuits" may not injure cars or occupants.

UTILITY.

Asbestos Building Lumber is suitable for walks, pavements, steps, sheathing, roofing, doors, partitions, fire-proofing, framing, bus-bar doors, ceilings, vaults, refrigerators, bottoms in autos, garages, portable buildings, etc. In fact its uses are unlimited.

STANDARD SIZES, THICKNESSES AND COLORS.

The standard sizes of Asbestos Building Lumber or Sheathing are 42 x 48 inches, and 42 x 96 inches, in all thicknesses from $\frac{1}{8}$ to $\frac{5}{8}$ inch. The standard color is Newport Gray. Irregular sizes and shapes, such as curves or angles, are cut or made to order, for which an additional charge is made.

REINFORCED ASBESTOS CORRUGATED SHEATHING.

Reinforced Asbestos Corrugated Sheathing is exactly the same as Asbestos Building Lumber, except that it is corrugated and is reinforced with $\frac{3}{4}$ -inch woven-wire netting, which insures the greatest strength both lineal and transverse, requiring no maintenance. It is handled the same as corrugated iron, but lasts forever. It is fireproof and waterproof.

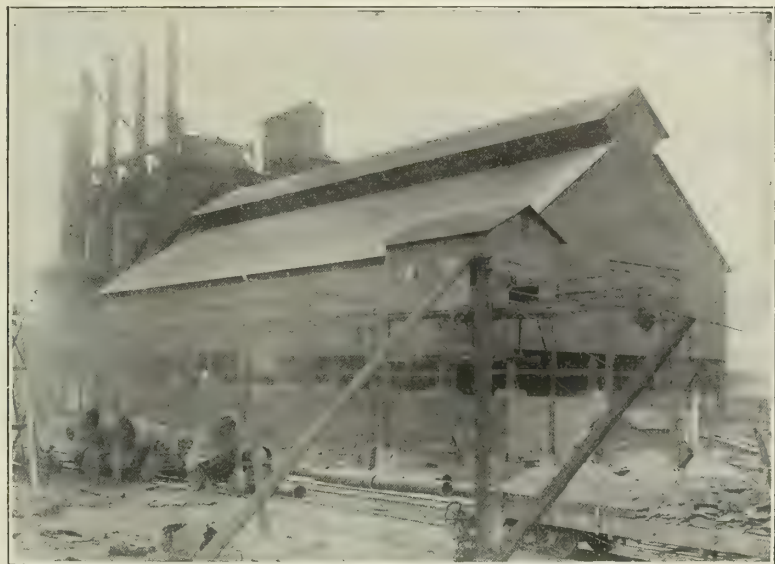
UTILITY.

See Paragraph "Products" on preceding page.

Reinforced Asbestos Corrugated Sheathing is superseding the use of corrugated iron. It may be applied in the same manner as corrugated iron, either laid directly upon the purlins in roof and held in place by clips which encircle the purlins, placed at distances of 12 inches apart; or nailed directly upon wood nailing strips; or nailed to wood supports or rough board sheathing.



APPLICATION OF REINFORCED ASBESTOS CORRUGATED SHEATHING ON CAST HOUSE OF SHENANGO FURNACE CO., SHARPSVILLE, PA.



VIEW OF CAST HOUSE OF SHENANGO FURNACE CO., SHARPSVILLE, PA., COMPLETED ROOF



BENNETT RESIDENCE, PABST FARMS, OCONOMOWOC, WIS. FERNEKES & CRAMER, Architects. Roofed with Asbestos "Century" Shingles

SIZES,
THICKNESS,
WEIGHT.

The standard thickness is $\frac{3}{16}$ inch, and it is $27\frac{1}{2}$ inches wide by 4, 5, 6, 7, 8, and 10 feet lengths. The standard corrugation is $2\frac{1}{2}$ -inch pitch. The weight averages two pounds per square foot.

ASBESTOS
"CENTURY"
SHINGLES.

Asbestos "Century" Shingles are of the same composition as Asbestos Building Lumber, and are formed into shingles or slates $\frac{1}{8}$ inch thick, in a great variety of shapes and several sizes.

ADVANTAGES.

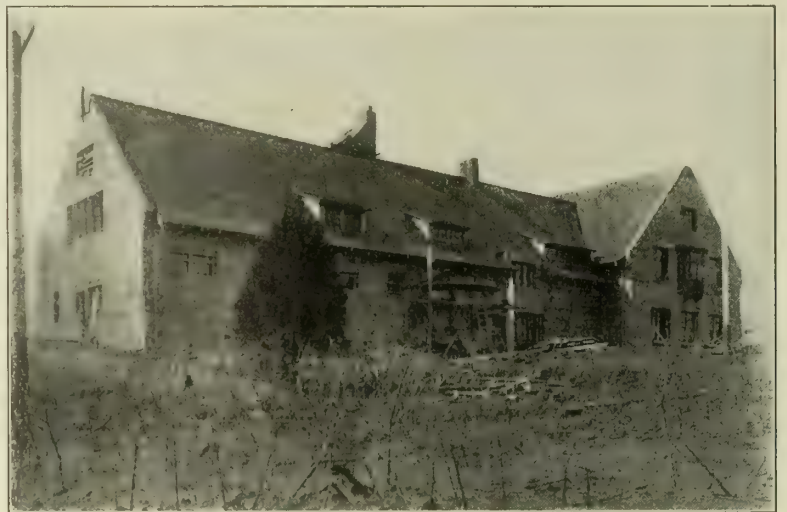
Asbestos "Century" Shingles are fireproof, weather-proof, time-proof and immeasurably superior to any other roofing materials. They grow tougher and more elastic with exposure to the weather. Owing to the enormous pressure under which they are manufactured, they absorb when fresh and first applied only about five per cent of their weight of water, thus forming a roofing tile of excellent quality. After exposure to the action of the elements or atmosphere for a year or more the cement hydrates and crystallizes on the asbestos fiber, forming the Asbestos "Century" Shingles into an absolutely impermeable roof covering which defies climatic changes and irregularities. Asbestos "Century" Shingles do not crack or exfoliate when exposed to fire; even when chilled by a stream of cold water while heated red hot. Nor do they split at the nail holes and fall out when frozen and thawed.

ECONOMY.

The first cost of Asbestos "Century" Shingles is no greater than that of any other roofing regarded as first-class, and there is no succession of upkeep bills for repairs or painting. On account of their lightness in weight the Asbestos "Century" Shingle effects a material saving in the roof framing, as a much lighter construction can be used than that designed to carry tile or slate roofs.

APPEARANCE.

The Asbestos "Century" Shingles have a distinctive appearance when laid French method and make a specially attractive roof, being pleasing to the eye. The French method is universally used in France, Germany, Russia, and other European countries. The Shingles are made in their natural color, Newport Gray, Indian Red, and natural Slate color.



Private Stable



Boyle Residence

BUILDINGS ON PABST FARMS, OCONOMOWOC, WIS.

FERNEKES & CRAMER, Architects. Roofed with Asbestos "Century" Shingles

BUILDING
LAWS AND
FIRE
UNDER-
WRITERS'
REQUIRE-
MENTS.
FACILITIES.

Asbestos "Century" Shingles, Asbestos Building Lumber, and Reinforced Asbestos Corrugated Sheathing are made in strict accordance with the building laws of all the large cities and towns of the United States, and conform to all the requirements of the National Board of Fire Underwriters.

The large amount of money invested by the Asbestos Shingle, Slate & Sheathing Co., and the KEASBEY & MATTISON COMPANY in this business, is sufficient evidence that we have unequaled facilities for manufacturing our products, and insures prompt and careful execution of all orders.

NOTE.

"K. & M." products are used in every civilized country.
"K. & M." is a synonym for quality.

SPECIFICA-
TIONS.

Specifications for Asbestos "Century" Shingles or Roofing laid in the French Method (as per Blue Print No. 21013), are as follows:

Sheathing—Slates to be applied over a tight sheathed roof. Roofing purlins and trusses are to be covered with well seasoned (specify wood) boards not more than 9 inches wide, tongued and grooved, driven up hard and tight, and well surface-spiked to rafters.

Waterproofing—Over these boards lay waterproofing paper manufactured by KEASBEY & MATTISON COMPANY, tacked on with 4 inches lap, and on hips and valleys with at least 1 foot lap.

Asbestos "Century" Shingles—Over the waterproofing paper apply Asbestos "Century" Shingles No. 3 (specify size and color), as manufactured by the Asbestos Shingle, Slate & Sheathing Co., according to the French or Diagonal Method, as follows:

A cant or furring strip not less than $\frac{3}{16}$ inch thick and 1 inch wide (lath will do) to be nailed flush with the lower edge of roof board to give the Asbestos "Century" Shingles the proper cant. Apply one course of No. 16 Asbestos "Century" Shingles end to end laterally, overhanging the eaves $1\frac{1}{2}$ to $1\frac{3}{4}$ inches, over which apply one course of No. 46 Asbestos "Century" Shingles, entirely covering the No. 16 to break joints. Lay Starter No. 35 Asbestos "Century" Shingles over this, exposing one half the lower double course, as shown by detail on manufacturers' print, known as "Blue Print No. 21013." Balance of roof to be covered with No. 3 (color) Asbestos "Century" Shingles, 16×16 inches, laid diagonally as directed and exposed 13×13 inches to the weather. Each shingle to be nailed with two $1\frac{1}{2}$ -inch Galvanized Iron Needle-Pointed Nails as indicated by nail holes in the shingles, and No. 3 to be fastened down at the tip with "K. & M." Patented Copper Storm Nails, as shown by detail on manufacturers' print, known as "Blue Print No. 21106." All No. 3 shingles to be laid showing diagonal lines on a 45-degree angle with eaves. Hips and ridges to be covered with Asbestos "Century" Ridge and Hip Roll, same to be properly flashed and fastened in place to hip and ridge pole, rabbetted to fit hip or ridge and of sufficient height, with regular copper fasteners made for this purpose.

Flashing—At all hips, valleys, chimneys, and against all vertical surfaces, except as otherwise specified, flash and counterflash with each course of slate, using

Alternate Flashing—For a distance of inches from eaves, hips, valleys, chimneys, vertical surfaces, etc., lay the Asbestos "Century" Shingles in elastic (slater's) cement, and at all such eaves, hips, valleys, chimneys, and against all vertical surfaces, except as otherwise specified, flash and counterflash with each course of slate, using

If No. 8 Shingles are to be used, the overhang at the eaves is 1 inch to $1\frac{1}{4}$ inches. First course to be No. 21; Second course, No. 47; Starter, No. 36.

If No. 13 Shingles are to be used, the overhang at the eaves is 1 inch. First course to be No. 26; Second course, No. 48; Starter, No. 37.

Specifications for the Asbestos "Century" Shingles laid in the American or Slate Laid Method: As for natural slate, except that head lap is only 2 inches instead of usual lap for natural slate.



TRADE-MARK



WAGON SHED ON PABST FARMS, OCONOMOWOC, WIS.
FERNEKES & CRAMER, Architects. Roofed with Asbestos "Century" Shingles

STANDARD ASPHALT & RUBBER COMPANY

"Sarco" Composition for Roofing, etc.

205 La Salle Street

CHICAGO, ILL.

CABLE ADDRESS, "SARCO"

PRODUCTS.

"SARCO" ROOFING CEMENT	"SARCO" INSULATING COMPOUND
"SARCO" ELASTIC ROOF COATING	"SARCO" VARNISH GUM
"SARCO" ASPHALTIC PAVING CEMENT	"SARCO" MINERAL RUBBER
"SARCO" ROAD COMPOUND	"SARCO" MASTIC
"SARCO" ASPHALT FILLER	"SARCO" MATRIX
"SARCO" MINERAL RUBBER PIPE COATING	"SARCO" PROTECTIVE COATINGS
"SARCO No. 6" WATERPROOFING	

DESCRIPTION.

"Sarco" products are 99.7% pure asphaltic bitumen. They are of a rubbery character; tough, adhesive and extremely durable. All "Sarco" products are water, acid, and alkali proof, and possess a long range of ductility. They are unaffected by extreme ranges of temperature. They are absolutely uniform and reliable. Where it is desired to protect any character of construction from the effects of water or dampness "Sarco" products will be found exactly suited to your needs.

All products manufactured by us are marketed under the "Sarco" brand, and each and every package is so labeled. They possess qualities that make them especially desirable for roofing and waterproofing work of any character. They are employed also for constructing the high-grade "Sarco" Mastic Floors.



ADVANTAGES.

It is an especial advantage in construction work of any kind to know that you can place absolute reliance upon the materials being used. "Sarco" products have a record of never having failed to meet requirements, and in a number of tests have shown themselves to possess qualities superior to those demanded. We give below a test conducted for impermeability of "Sarco" products.

TEST FOR IMPERMEABILITY.

A piece of ordinary ducking was coated by spreading $\frac{1}{4}$ -inch "Sarco" Waterproofing thereon and then placed against a strong grating arranged in a testing machine provided with a pump for pumping ice water, in which there was floating crushed ice. These specifications called for the waterproofing material (specimens being submitted for test by all the principal producers) to withstand a pressure of 10 pounds to the square inch without the coating becoming brittle and cracking and without any water passing through the coating at this pressure and temperature (10 lbs. at 32° Fahr.), nor should it melt below 225° Fahr.

All competing samples broke at or below 7 pounds' pressure. "Sarco" Waterproofing stood the 10-pound pressure without any defects. Upon this showing it was determined to let this remain under pressure for twenty-four hours; at the end of which time an examination showed absolutely no permeability. In order to ascertain the point at which this material would break down, the pressure was increased to the full capacity of the pump (300 pounds), at which point the packing gave out, while the waterproofing remained intact.

APPLICATION.

"Sarco" products can be applied according to the specifications now in general use for the class of work to which they are adapted, with a few exceptions. For Roofing it is not necessary to use so great a number of layers of felt, which is quite an advantage, reducing the cost of the roof. For waterproofing we would very much desire to learn the conditions, as our extended experience in this line often enables us to offer suggestions that result in reducing the cost of construction.

FACILITIES FOR CO-OPERATION.

We maintain an Engineering Department for the purpose of preparing estimates of cost, etc. They will, if desired, offer suggestions or prepare complete plans and specifications for any piece of construction contemplated. We believe you will find this a very

valuable aid, as we have prepared the plans for some of the largest undertakings in the waterproofing line that have ever been attempted. "Sarco" methods make certain the obtaining of the desired results.

SPECIMEN SPECIFICA- TION FORMS.

Roofing—Roof to be laid on wood sheeting. Lay one-ply 6-lb. dry wool felt, and over this one-ply 8-oz. burlap. Mop with hot "Sarco" Roof Coating, so as to pass through the burlap; saturate it and thoroughly bond it to the felt below. Lay one-ply 16-lb. saturated asphalt felt. Mop with hot "Sarco" Roof Coating. Mop with second coat of "Sarco" Roof Coating. Lay cap sheet of 16-lb. saturated asphalt felt. Mop on heavy coat of "Sarco" Roof Coating, and finish with washed roofing gravel. "Sarco" materials to be furnished by the STANDARD ASPHALT & RUBBER COMPANY.

Concrete Surfaces—See that the concrete is thoroughly dry and free from loose dirt and all foreign matter. Apply one coat of "Sarco" Concrete Primer brushed on the surface of the concrete. After this apply a heavy coat of "Sarco No. 1" Waterproof Coating.

Where the conditions are severe apply coat of "Sarco" Concrete Primer and a hot swab coat of "Sarco No. 6" Waterproofing, and reinforce with from one to five ply burlap or felt, as conditions warrant. Swab each layer of felt thoroughly with a hot application of "Sarco No. 6"; or, if burlap is used make certain the swab coat has thoroughly penetrated the meshes of the burlap and bonded it to the previous layer. For roof surface, finish with washed roofing gravel.

"SARTAC" DAMP- PROOFING.

This is a "Sarco" coating to be applied cold; it is black in color and does not dry, but remains "tacky." The base used in this coating is Mineral Rubber, such as large producers of rubber goods use for compounding with natural rubber. When applied on an unfinished wall surface, it offers an absolute protection from dampness or deliquescent salts, to the plaster finish. It should be applied with brushes, and a sufficient quantity used to completely fill all pores of the surface on which it is applied. "Sartac" is unaffected by water or any of the chemical properties of fireproof tile, masonry or concrete. There will be no need to use furring strips to anchor the plaster as it will form a perfect bond with the coat of "Sartac." Time will not change its character or efficiency.

"SARCO" MASTIC FLOORS.

"Sarco" Mastic Floors are built of our high-grade "Sarco" Mastic combined in proper proportions with our "Sarco" Matrix and Grit. We have no general specification for this floor, as we prepare a separate specification for each floor we build. This is necessary for the reason that different conditions require different grades of floor.

Before preparing a specification for mastic floors we require information on the following points: Area to be floored; whether the surface to be covered is wood or concrete; whether the floor is to be built on new or old surface; the class of traffic it will receive; the maximum load it will carry; the average temperature of the room.

With this information we are prepared to furnish a reliable estimate of cost, and will prepare complete specification for the work. It is not necessary that we build the floor, as the work can be performed by common labor if supervised by a competent foreman who will follow our specification.

INQUIRIES.

We solicit inquiries regarding our products and methods, and will give prompt and courteous attention to any communication requesting information on any point.

PRICES.

Prices of material or completed work will be furnished on request.

REFERENCES.

The following are a few of the buildings where "Sarco" products have been used:

Union Meat Co., Portland, Ore.
Kingan Packing Co., Baltimore, Md.
Armour & Co., Chicago, Ill.
Armour Packing Co., Kansas City, Mo.
Geo. A. Hormel & Co., Austin, Minn.

Phelps Publishing Co., Springfield, Mass.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Texas Brewing Co., Fort Worth, Texas
Pope Building, Cleveland, Ohio
J. Ogden Armour's Residence, Lake Forest, Ill.

"Sarco" Waterproofing and "Sarco" Mastic will be used exclusively on the new Northwestern Terminal Station, Chicago, Ill.

THE STANDARD PAINT COMPANY

Manufacturers of Ruberoid Roofing

100 William Street
NEW YORK, N. Y.



BRANCH OFFICES

CHICAGO

KANSAS CITY

BOSTON

PHILADELPHIA

ATLANTA

SAN FRANCISCO

MONTREAL, CANADA, THE STANDARD PAINT COMPANY OF CANADA, LTD.

LONDON, ENGLAND, THE RUBEROID COMPANY, LTD.

HAMBURG AND BERLIN, GERMANY, RUBEROID GESELLSCHAFT, M. B. H.

PARIS, FRANCE, SCE. ANE DES TOITURES ET ISOLANTS

PRODUCTS.

RUBEROID ROOFING, RUBEROID FLOORING, RUBEROID DAMP-PROOF CLOTH, RUBEROID DAMP-COURSE. Also GIANT, P & B, and HERCULES BUILDING, SHEATHING, and INSULATING PAPERS; METAL PRESERVATIVE, DAMP-PROOFING and ACID-RESISTING PAINTS, as described elsewhere in this Catalogue, for which see our name in General Index.

RUBEROID ROOFING.

Ruberoid Roofing, the only permanent roofing, with permanent colors, is the pioneer weather-proof, elastic and fire-resisting roofing. It is made of the finest quality of selected wool felt, thoroughly saturated with Ruberoid Gum, a patented composition of waterproof, acid-proof and fire-resisting ingredients, used only in the manufacture of Ruberoid Roofing. It is suitable for every class of building: churches, dwellings, factories, barns, outbuildings of all kinds, and can be used on either flat or pitched roofs with equally satisfactory results.

It is made in Slate Color, Red, Brown, Green and Bronze.



RUBEROID
ROOFING

PROPERTIES.

Ruberoid Roofing is waterproof, weather-proof and extremely durable. It does not melt, crack, rot or corrode, as it contains neither tar, paper nor rubber. It is fire and acid resisting to a remarkable degree. Burning brands will not ignite it. It is tasteless and odorless, so that water running from it can be used for domestic purposes, and it is not affected by heat or cold or climatic conditions of any kind.

DURABILITY.

That the first Ruberoid roofings applied on buildings over eighteen years ago are still giving satisfactory service, is indisputable proof of its unequaled durability.

COMPARATIVE ADVANTAGES.

A Ruberoid roof lasts longer and costs less than metal or shingle roofs. It does not require painting when first applied, and costs very little to keep in good condition. It will not rust like metal, crack or rot like shingles, or soften up and run like tar roofings. Being a non-conductor of heat, it keeps buildings warm in winter and cool in summer.

GRADES AND USES.

Ruberoid Roofing is furnished in four thicknesses as follows:

Half-ply	For poultry houses, sheds, etc.
One-ply	For barns, outbuildings, etc.
Two-ply	For dwellings, warehouses, stores, etc.
Three-ply	For factories, dwellings, etc.
Colored, Red, Brown, Bronze and Green,	
	For Public Buildings, Dwellings, etc.

Full directions for applying Ruberoid accompany each roll.

SPECIFICATIONS.

Specifications should read as follows:

"Building to be roofed with (one-ply, two-ply and three-ply or colored) Ruberoid Roofing to be applied according to directions furnished by THE STANDARD PAINT COMPANY of New York."

WEATHER-
PROOFING
CONCRETE
ROOFS.

Ruberoid Roofing is especially adapted for weather-proofing concrete roofs and has been used most successfully both in this country and abroad for that purpose. Owing to its expanding and contracting properties, it is not affected by ordinary cracking of the concrete or even by the normal "settling" of the foundations of the buildings to which it is applied. Its moderate price and great durability make it an ideal material for this class of work, and far superior to tar and gravel roofing.

Specifications will be furnished upon application.

RUBEROID
COLORED
ROOFINGS.

Ruberoid Roofing is also made in the following colors: Red, Brown, Green and Bronze, for use on buildings where decorative effect is desired. These colors are permanent, being impregnated in the body of the roofing and will last for years. Colored Roofings are all made one thickness.

Ruberoid Colored Roofings have all the merits of the regular or Slate-color Ruberoid, with the added attraction of rich and permanent colors. They are the *only* permanent roofings with permanent colors.

RUBEROID
DAMP-
COURSE.
PROPERTIES.

For damp-proofing and waterproofing foundations, walls and cellar floors of new buildings, Ruberoid Damp-Course is well adapted.

It is made of the finest and strongest wool felt obtainable, which is thoroughly saturated by a special process with the celebrated Ruberoid Gum. It contains no short-lived ingredients, and is proof against acids, alkalies and earth gases and water or moisture of any kind.

ADVANTAGES.

Ruberoid Damp-Course contains no tar, is not affected by acids, alkalies or earth gases, and never becomes hard or brittle; hence it will not crack or flake off after years of service, as it does not deteriorate with time.

RUBEROID
FLOORINGS.

Ruberoid Flooring is a permanent, durable and sanitary covering for floors, adapted for use in residences, hospitals, sanitariums, churches, lodge rooms, factories, stores, etc., or for any interior where oil cloth, cork carpet, or linoleum would ordinarily be used. Ruberoid Flooring will last for years. It possesses the distinct advantage of being absolutely waterproof, including the backing, which has been treated by a special waterproofing process, and is of such dense structure that it will not absorb grease or the drippings in kitchens. From a sanitary point of view it is a decided step in advance of linoleums and oil cloths, for it dispenses with the canvas backing which is absorbent, forms a lodging place for germs and is the first portion of the sheet to disintegrate. Ruberoid Flooring is highly fire-resisting and may be used with safety around stoves and heaters, inasmuch as burning embers will not ignite it. Ruberoid Flooring is made in the following colors: Red, Green, Brown, Bronze and Slate. It is manufactured in a heavy and extra heavy grade, and is put up in 4/4, 6/4 and 8/4 widths.

RUBBERTEX CLOTH AND PAPER COMPANY

MANUFACTURERS OF
"Lonabond" Textile Ready Roofing
Commercial National Bank Building
CHICAGO, ILL.

BRANCH OFFICES
NEW YORK, N. Y., 142 Fifth Avenue
DETROIT, MICH., 707 Trussed Concrete Building
ST. LOUIS, MO., 518 Granite Building

FACTORIES
CLEARING, ILL.
MEDARYVILLE, IND.

PRODUCTS. Patented "RUBBERTEX" PRODUCTS including "LONABOND" TEXTILE READY ROOFING;
"RUBBERTEX" WATERPROOF BAGS for Cement, Lime, etc.; "RUBBERTEX" WATERPROOF-
ING for Bridges, Subways, Tunnels, etc.; "RUBBERTEX" WATERPROOF ASPHALT PAINT;
"RUBBERTEX" WATER and ACID PROOF BELTING; "RUBBERTEX" COLD WATER and STEAM
SHEET PACKING.

"RUBBER- "Rubbertex" is the most remarkable waterproof cloth on the market, being not only
TEX." absolutely waterproof but also oil-proof, acid-proof, rot-proof and almost wear-out-proof,
and it will outwear any other waterproof cloth of the same weight.
"Rubbertex" treatment of cloth increases its tensile strength 50 to 75 per cent. This
treatment is a complete saturation. By it every fiber in the cloth is reached, and while other
water-proofing processes tend eventually to weaken and disintegrate the material so treated,
"Rubbertex" acts as a preservative and actually increases the life of the fabric. It is not
affected in any way by atmospheric conditions or changes and can be used under conditions
that no other fabric will stand. Fumes do not affect it and it is in fact almost indestruc-
tible.

TESTS. Robert W. Hunt & Co. of Chicago, Ill., made the following report of tests of ordinary
oznaburg and of oznaburg which had been given the "Rubbertex" treatment, the test being
made May 1, 1909. Each specimen tested was two inches wide and of seven ounce material.

	UNTREATED			TREATED		
Specimen No.	1	2	3	4	5	6
Maximum load, pounds	128	120	122	142	150	140
Actual tensile strength per inch width	64	60	61	71	75	70

"LONA- The base of "Lonabond" roofing is a medium-weight duck, thoroughly saturated with
BOND" our preparation and coated one side with the same material as the filler. It is not affected
TEXTILE by extreme heat or cold, and will not break under any conditions of the weather. The material
READY used as a filler and coating has a melting point of 250° Fahr., so that the sun heat has
ROOFING. no effect on it. "Lonabond" will not contract or expand, as proved by tests on both flat and
steep roofs. This roofing is just as durable without paint, though it will hold paint and may
be painted for decorative purposes. "Lonabond" roofing can be laid with nail heads cov-
ered, without the use of either tin caps or cement, thus protecting the nail heads from rust,
and preventing the possibility of leaks. It can also be laid with one and one half inch lap
with ⁹/₁₆-inch head nail and no caps.

DURABILITY The filler in the cloth is an absolute protection against rot, giving it a durability that is
AND incomparable; and while we believe it is good for fifteen or twenty years, we have no hesita-
GUARANTEE. tion in guaranteeing it for ten years without any painting whatsoever.

WATER- "Rubbertex" Waterproof Cement Bags should be specified by architects and engi-
PROOF neers, for particular work, because of their absolutely preventing any deterioration in the
CEMENT cement from the time it leaves the mill.
BAGS.

ESTABLISHED 1892

THE UNION PAPER & TWINE CO.

Roofing and Building Papers; Roofing Paints and Twine

115-137 St. Clair Avenue, N. W.

CLEVELAND, OHIO

BUFFALO, N. Y.

ERIE COUNTY BANK BUILDING

DETROIT, MICH.

46-50 LARNED STREET, WEST

PRODUCTS.

"LEATHEROID" ROOFING; ROOFING and BUILDING PAPERS; WRAPPING, PRINTING, DETAIL DRAWING, and SPECIAL PAPERS of all kinds; PAPER BAGS; TWINES and CORDAGE; STATIONERY; TOILET PAPERS and FIXTURES. ROOFING PAINTS.

TRADE-MARK.

The trade-mark as shown above is registered and has been used by us for a great many years.

"LEATHER- OID" ROOFING.

"Leatheroid" Roofing is made of the highest grade of absolutely pure long-fiber wool felt only, carefully saturated with the best and most durable materials known to the science of roofing manufacture. After thorough saturation, insuring life and durability to "Leatheroid" Roofing, it is carefully coated on both sides with our own compound, which forms a perfect "skin" for the protection of the felt. Thus it will be seen that "Leatheroid" does not need painting and recoating when applied, making it economical to apply, with no sacrifice to durability.

"LEATHER- OID" COLORED ROOFING PAINTS.

The use of prepared roofing is frequently objected to on account of the color being undesirable. We have overcome this with our colored "Leatheroid" Roofing Paints. These are furnished in red, green, maroon, brown, and black.

For country houses, pavilions, halls, garages, stables, and all kinds of structures where artistic effect and durable color are desired, we recommend the use of our Colored "Leatheroid" Paint.

WATER- PROOFING.

"Leatheroid" Roofing is a thoroughly reliable damp-coursing, on account of its moisture resisting qualities.

WIDTH, WEIGHTS, PACKING, PRICES, ETC.

"Leatheroid" Roofing is made in three thicknesses: 1, 2, and 3 ply and 32 inches wide. This is the proper width to prevent buckling and insures a good job of roofing. Rolls contain 41 linear feet or full 108 square feet, sufficient to cover one square 10 x 10 feet. We can also furnish double-length rolls when desired. Necessary nails and lap cement are safely packed inside of roll, together with full directions for applying. Great care is used to insure against damage in transit.

"LEATHEROID" ROOFING

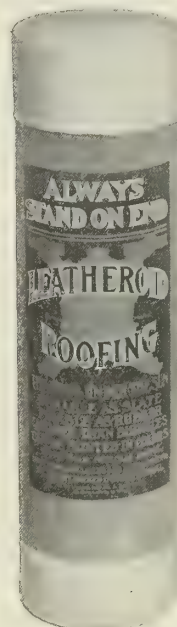
1-Ply, 35 pounds per square	\$2.00
2-Ply, 45 pounds per square	 2.50
3-Ply, 55 pounds per square	 3.00

"LEATHEROID" PAINT

Barrels, 50 to 52 gallons, per gallon	\$1.25
½ barrel, 30 gallons, per gallon	 1.30
Cans, 5 to 10 gallons, per gallon	 1.40
Cans, 1 gallon, per gallon	 1.50

**LEATHEROID
ROOFING**

TRADE-MARK



"LEATHEROID"
ROOFING



ELYSIUM SKATING RINK, EUCLID AVENUE AND 107TH STREET,
CLEVELAND, OHIO

Covered with "Leatheroid" Roofing, painted red with Red "Leatheroid" Paint

SHIPMENTS. SAMPLES AND INFORMATION.

Shipments can be made promptly, usually on date of receipt of order.

We solicit correspondence. Samples sent when asked for and all inquiries answered.

AMERICAN SHEET AND TIN PLATE COMPANY

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PITTSBURGH, PA.

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UNITED STATES STEEL PRODUCTS EXPORT CO., NEW YORK, N. Y.

PRODUCTS.

Manufacturers of SHEET and TIN MILL PRODUCTS of every description: BLACK SHEETS for all purposes; W. DEWEES WOOD COMPANY'S CLEANED, REFINED, SMOOTH FINISH and PATENT PLANISHED IRON; "WELLSVILLE" POLISHED, "APOLLO BEST BLOOM," and "CHARCOAL HAMMERED BLOOM," GALVANIZED SHEETS; TRUNK IRON; "MORTON" POLISHED STEEL; "AMERICAN COKE and CHARCOAL" BRIGHT TIN; TINNED DAIRY STOCK; "AMERICAN OLD STYLE," "AMERICAN NUMETHOD," "MF" and "U. S. EAGLE" TERNE PLATES; CONTINUOUS ROOFING TIN; CORRUGATED SHEETS for ROOFING and SIDING; FORMED STEEL ROOFING MATERIAL; FORMED METAL SIDING; "CAMBRIDGE" RIGID REVERSIBLE METAL LATH, and MONEL METAL SHEETS.



VANDERGRIFT WORKS, VANDERGRIFT, PA.

The largest Sheet Mill in the World. Annual capacity, 135,000 gross tons

SUPERIOR QUALITY.

On the following pages we furnish some general information relative to the well-known products made by us. The standing and superior quality of these are so thoroughly appreciated by the building trades throughout the country that it is not necessary for us to go into a detailed account of their points of merit.

REGARDING OUR TERNE PLATES.

"MF," aptly called "The Terne which turns the elements," is one of the most popular roofing plates on the market and deservedly so because of the satisfactory results it has been giving to users everywhere for the past half-century.

The black plate is made of the best material; is selected, pickled, annealed and re-squared by experts, and before being subjected to the tinning bath is boiled in pure palm oil, which prepares the plate for the coating of pure tin and new lead and removes all impurities which otherwise might adhere to the surface.



32 POUNDS COATING

"MF" Ternes are tough and pliable, absolutely square and easily joined; the coating is thick and even, free from pinholes and will permit of the sharpest bend without breaking. As a labor saver and as a protection against water, wind, and fire, "MF" Ternes are unexcelled.

In addition to "MF" we also highly recommend our "Numethod" Ternes, where a less expensive product is desired. These are furnished in 20, 30 and 40 pounds' coating per case of 20 x 28, and we claim that, compared with other plates of the same weight of coating, these are absolutely the best plates on the market. This claim is based on the fact that the coating is uniformly distributed, as Terne plate is only as good as that part on which there is the least coating. This feature is important, as it meets the Government specifications for evenly coated plates, which can be obtained only by our new method finishing process.

"APOLLO"
GALVANIZED
SHEETS.

These sheets enjoy a most favorable reputation in all parts of the world. The most modern scientific methods are used in their manufacture; also, carefully selected raw materials. The non-corrosive coating is always reliable, the sheets are true to gauge, uniform in working qualities and trustworthy in every respect. For standard sizes, gauges, weights, etc., send for our Pocket Reference Book which contains the desired information.

CORRUGATED
SHEETS.

The corrugated is the strongest form of sheet metal known. The sheets do not suffer from expansion or contraction, but impart strength and rigidity wherever applied. This is an ideal product for roofing, siding, culverts, sheds, barns, shops, outbuildings; in fact, any place where a neat, durable, fireproof yet inexpensive building material is desired. Can be furnished either plain, painted or galvanized in the following corrugations:

$\frac{5}{8}$ ", $1\frac{1}{4}$ ", 2", $2\frac{1}{2}$ ", 3", and 5"; in lengths of 5, 6, 7, 8, 9, 10 and 12 feet, with a covering width of 24".

Special $2\frac{1}{2}$ " Corrugated—As we often have a call for special sizes of Corrugated Sheets, we are prepared to furnish the following sizes in lengths of 5, 6, 7, 8, 9, 10 and 12 feet: $2\frac{1}{2}$ " x $\frac{5}{8}$ "; full width, $27\frac{1}{2}$ "; covering width, 25" when lapped one corrugation.

$2\frac{1}{2}$ " x $\frac{3}{4}$ "; full width, 26"; covering width, 24" when lapped one corrugation.

We also make $2\frac{1}{2}$ " corrugations $1\frac{1}{4}$ " deep; especially adapted to floors and fireproof construction.

$2\frac{1}{2}$ -INCH PATENT EDGE—The outer corrugations of this product are higher than the others. This insures a perfectly tight joint and prevents water from rising over the lap. These sheets are made of the same material and are furnished in the same lengths as our standard sheets. The covering width is 24 inches.

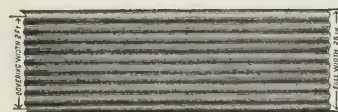
GENUINE REWORKED IRON CORRUGATED SHEETS—Where iron instead of steel roofing is desired we recommend the use of our well-known Reworked Iron Corrugated Sheets, which are made in the same sizes as the standard pattern.

FORMED
SIDING
MATERIALS.

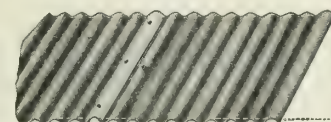
The demand for a durable, attractive, yet inexpensive building material, fireproof, yet light, strong, and rigid, has been fully met in our Formed Siding Materials. These are particularly adapted to mills, shops, factories, store fronts and country building construction.

INSTRUC-
TIONS.

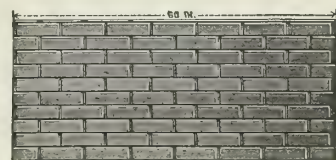
PLAIN AND ROCK-FACED BRICK SIDING—To get the best effect from the use of these forms care should be exercised in applying, seeing that all lines are continuous and plumb. When in place, give the surface a coat of good brick-red paint, then



CORRUGATED SHEETS



$2\frac{1}{2}$ " PATENT EDGE



PLAIN BRICK SIDING



ROCK-FACED BRICK SIDING

paint the mortar a grayish white. Be careful that the red used dries to the proper color and is neither too dead nor too brilliant.

DETAILS.

PLAIN BRICK SIDING AND ROCK-FACED BRICK SIDING are made from No. 26 gauge and lighter, black, painted or galvanized sheets, 28 x 60 inches. Size of each brick $2\frac{4}{5} \times 8\frac{1}{4}$ inches.

WEATHERBOARD SIDING is made from No. 22 gauge and lighter, black, painted or galvanized sheets. Standard lengths, 5, 6, 7, 8, 9 and 10 feet; maximum length, 12 feet; covering width, 24 inches.

BEADED CEILING OR SIDING is made from No. 24 gauge and lighter, black, painted or galvanized sheets. Standard lengths, 5, 6, 7, 8, 9 and 10 feet; maximum length, 12 feet; covering width, 24 inches. Beads are 3 inches from center to center.

ROCK-FACED STONE SIDING—Size of single stone, 7 x 12 inches and $9\frac{1}{3} \times 20$ inches. Made from No. 26 gauge and lighter, black, painted or galvanized sheets, 28 x 60 inches.

CONTINUOUS
ROOFING
TIN.

Made from standard size Terne Plates.

We can furnish any of our regular grades of Terne Plate which carry from 8 pounds to 40 pounds coating, including "Numethod," "MF," and "U. S. Eagle N. M." in the shape of Rolls 10", 14", 20" and 28" wide, containing one or two squares, painted with best iron oxide and linseed oil paint on both sides, on one side, or unpainted, as may suit the convenience of customers. Sheets of 14" x 20" or 20" x 28" are seamed together by a double lock seam, which gives strength and rigidity to the material, permits expansion and contraction and the tight fold makes soldering unnecessary for most purposes. If desired, however, the double-locked seam will be soldered at an extra charge.

METAL LATH.

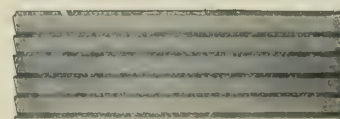
We manufacture the "Cambridge" Rigid Reversible Metal Lath which is favorably known to the architectural profession, and is well adapted to every purpose for which metal lath can be used.

FORMED
ROOFING
MATERIALS.

V-CRIMPED ROOFING is made from No. 20 gauge and lighter, black, painted or galvanized sheets. Standard lengths, 5, 6, 7, 8, 9 and 10 feet; maximum length, 12 feet; covering width, 24 inches. Wood sticks furnished if desired.

THREE V-CRIMPED ROOFING is made from No. 20 gauge and lighter, black, painted or galvanized sheets. Standard lengths, 5, 6, 7, 8, 9 and 10 feet; maximum length, 12 feet; covering width, 24 inches. Wood sticks furnished if desired.

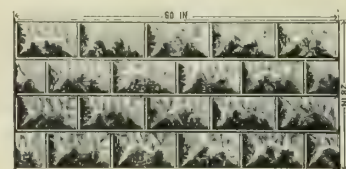
PRESSED STANDING SEAM ROOFING is made from No. 24 gauge and lighter, black, painted or galvanized sheets. Standard lengths, 5, 6, 7, 8, 9 and 10 feet; maximum length, 12 feet; covering width, 24 inches. Cleats furnished unless otherwise ordered.



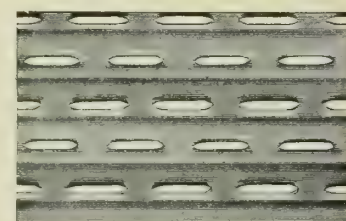
WEATHER-BOARD SIDING



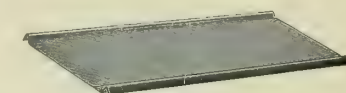
BEADED CEILING OR SIDING



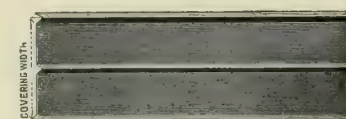
ROCK-FACED STONE SIDING



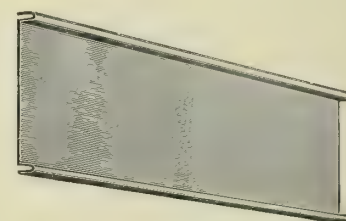
"CAMBRIDGE" RIGID REVERSIBLE METAL LATH



V-CRIMPED ROOFING

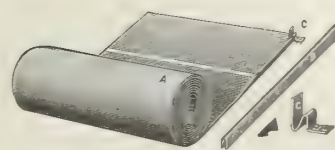


THREE V-CRIMPED ROOFING



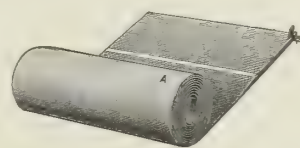
SEAM ROOFING, PRESSED STANDING

ROLL AND CAP ROOFING is made from No. 24 gauge and lighter, black, painted or galvanized sheets, 26 inches wide. Each roll contains 50 lineal feet, and when applied in the usual manner will cover 100 square feet of surface. Caps and cleats furnished unless otherwise specified. Cross locks are single-seamed, but double-seamed locks can be furnished.



ROLL AND CAP ROOFING

PLAIN OR SELF-CAPPING ROLL ROOFING is made from No. 24 gauge and lighter, black, painted or galvanized sheets, 26½ inches wide. Each roll contains 50 lineal feet, and when applied in the usual manner will cover 100 square feet of surface. Cleats furnished if desired.

PLAIN OR SELF-CAPPING
ROLL ROOFING

MONEL METAL SHEETS.

Monel Metal is a natural alloy of nickel, iron and copper in guaranteed proportions 68 to 72 per cent nickel, 1½ per cent iron and the balance copper, and is used as a roofing to supplant copper sheets. It is as *non-corrosive* as pure nickel, has relatively *smaller expansion and contraction* changes than copper, while the tensile strength is about three times as great.

Monel Metal Sheets are ductile, flexible, easily worked, and can be drawn, bent, spun or polished. They are particularly adapted to roofing public buildings, railroad terminals, mercantile and manufacturing establishments and high-grade residences; also, for cornices, metal window frames, ventilators, skylights, etc.; in fact, in any place where a non-corrosive metal is of paramount importance. These are manufactured exclusively by our Company and are furnished in gauges 10 to 30 inclusive.

INSTRUCTIONS AS TO ORDERS.

Prices and additional information can be procured by writing to the general offices, or to any of the district sales managers.



PENNSYLVANIA RAILROAD TERMINAL, NEW YORK, N. Y.
Largest Railway Terminal in the World. Roofed with Monel Metal Sheets

ASBESTOS PROTECTED METAL COMPANY

HOME OFFICE AND WORKS

CANTON, MASS.



TRADE-MARK
Reg. U.S. Pat. Office

WESTERN UNION CODE
CABLE ADDRESS, "ASPROMET, BOSTON"

DOMESTIC BRANCH OFFICES

ATLANTA, GA.
BALTIMORE, MD.
BIRMINGHAM, ALA.
BOSTON, MASS.
BUTTE, MONT.
CHARLESTON, S. C.
CHICAGO, ILL.
CLEVELAND, OHIO

DENVER, COLO.
DULUTH, MINN.
EL PASO, TEXAS
GOLDFIELD, NEV.
HOUGHTON, MICH.
KANSAS CITY, MO.
MEMPHIS, TENN.

MOBILE, ALA.
MINNEAPOLIS, MINN.
NEW ORLEANS, LA.
NEW YORK, N. Y.
NORFOLK, VA.
PHILADELPHIA, PA.
RICHMOND, VA.

SALT LAKE CITY, UTAH
SAN FRANCISCO, CAL.
SAVANNAH, GA.
SCRANTON, PA.
SEATTLE, WASH.
ST. LOUIS, MO.
WILMINGTON, N. C.

FOREIGN BRANCH OFFICES

BUENOS AYRES, ARGENTINE REPUBLIC

HAVANA, CUBA

LONDON, ENGLAND

SAN JUAN, PORTO RICO

PRODUCTS.

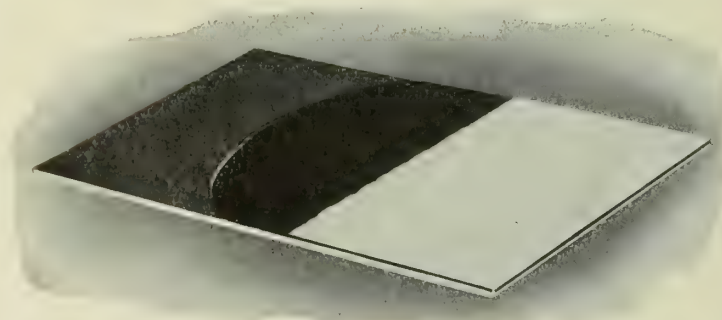
Manufacturers of ASBESTOS PROTECTED METAL in all forms for Building Purposes, including CORRUGATED ROOFING SHEETS, BEADED SIDING SHEETS, CLAPBOARD SIDING, RIDGE CAPPING; also, GALVANIZED IRON and COPPER FASTENERS and LEAD WASHERS.

ASBESTOS PROTECTED METAL.

The gray surface represents the steel core. The black surface represents a coating of special asphaltum compound, applied to the steel core under great heat and pressure. The white surface shows pure asbestos felt firmly imbedded in the asphaltum compound.

NOTE—The coating of asphaltum compound equals in thickness at least five coats of heavy protective paint. The finished product is of the same construction on both sides of the sheet.

The steel core or body being hermetically sealed within the Asphaltum Compound is impervious to the attacks of moisture, acids and gases of all kinds, thus giving it absolute protection from the corroding attack of the various destructive agents to which an exposed building material is subjected. The asbestos covering will not rot or deteriorate and presents an unbroken, pure mineral surface, which is absolutely fireproof. Does not require painting or treatment.



DETAILS OF CONSTRUCTION OF ASBESTOS PROTECTED METAL

USES.

Among the uses of Asbestos Protected Metal are the following:

ROOFING AND SIDING—Railroad and manufacturing buildings, coal tipples, tobacco warehouses, farm buildings, bungalows, automobile garages, car barns, chemical plants, and boiler houses.

INTERIOR FINISH—Ceilings, walls, panels, fireproof partitions and doors, fireproof and vermin-proof floor linings, elevator shaft and penthouse linings, acid and warm-air flues.

STEAMBOATS—Fireproof and permanent ceiling and wall finish.

RAILROAD AND TRACTION SERVICE—Roofing, head-lining and paneling for steam and electric passenger cars, inside box-car roofs, controller box linings and general insulation.

CORRUGATED ROOFING SHEETS.

Corrugations, $2\frac{1}{2}$ inches wide, $\frac{5}{8}$ inches deep.

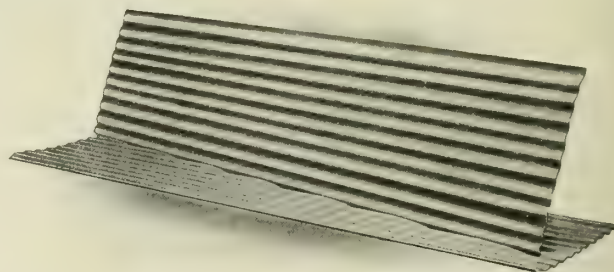
Width, 27 inches.

Stock lengths, 96 inches and 120 inches.

Special lengths to order.

Gauges, Nos. 20 to 28.

Can also furnish Curved Corrugated Sheets.



CORRUGATED ROOFING SHEETS

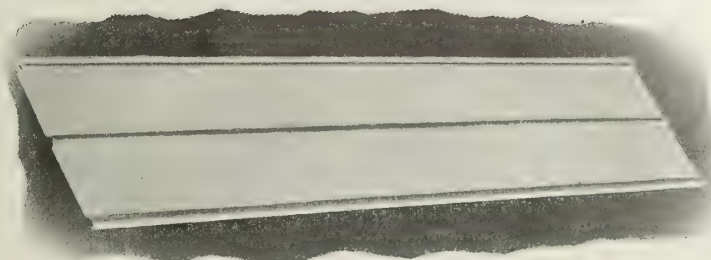
BEADED
SIDING
SHEETS.

Bead, $1\frac{1}{2}$ inches wide, $\frac{1}{2}$ inch deep.

Width, 28 inches.

Stock lengths, 96 inches and 120 inches. Special lengths to order.

These sheets may also be used for roofing, by laying with half oval wood strips over wood sheathing.



BEADED SIDING SHEETS

CLAPBOARD
SIDING.

Gauges, Nos. 22 to 28.

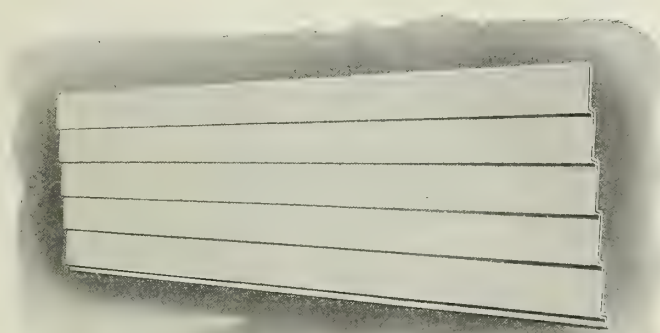
Face, 5 inches.

Depth of break, $\frac{1}{2}$ inch.

Width, 26 inches.

Length, 60 inches.

Gauges, Nos. 22 to 28.



CLAPBOARD SIDING

RIDGE
CAPPING,
ETC.

Flat ridge Capping wings 7 in. x 7 in. x 2 ft. 6 in., roll 3 in. diameter. In gauges Nos. 28, 26 and 24.

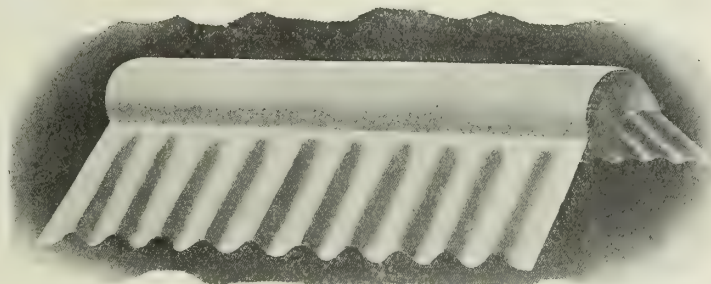
Corrugated Ridge Capping, wings 7 in. x 7 in. x 2 ft. 2 in., roll 3 in. diameter. In gauges Nos. 28, 26 and 24.

Flat Flashings, regular size $7\frac{1}{2}$ in. x $7\frac{1}{2}$ in. x 2 ft. 6 in. long. In gauges Nos. 28, 26, 24 and 22.

Corrugated Side Wall Flashings. Standard $2\frac{1}{2}$ in. corrugations. Size 6 in. x 9 in. x 60 in. In gauges Nos. 28, 26 and 24.

Corrugated End Wall Flashings. Standard $2\frac{1}{2}$ in. corrugations. Size $7\frac{1}{2}$ in. x $7\frac{1}{2}$ in. x 2 ft. 2 in. In gauges Nos. 28, 26 and 24.

Special Interior Finish. Flat sheets in any sizes up to extreme dimensions of 30 in. x 144 in.



CORRUGATED RIDGE CAPPING

COLORS.

All forms of Asbestos Protected Metal are manufactured in terra cotta, gray and white colors or any combination of these.

FASTENERS.

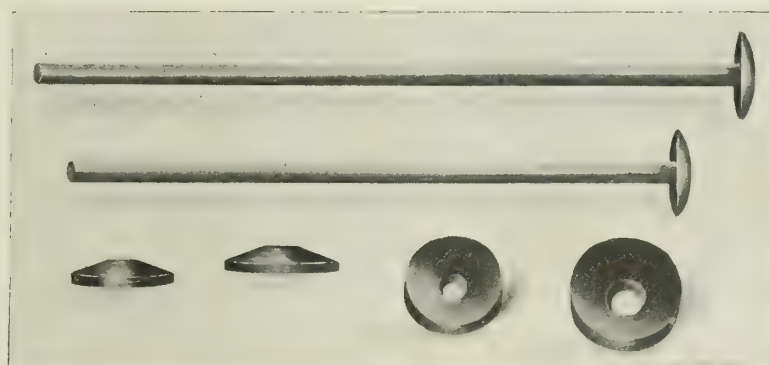
Furnished in galvanized iron or copper wire, in gauges Nos. 10 and 8 and in lengths 6 to 14 inches.

LEAD
WASHERS.

Sizes, $\frac{5}{8}$ - and $\frac{3}{4}$ -inch diameter.

NAILS.

Special Concave Head Galvanized Roofing Nails. Lengths, $\frac{7}{8}$ inch to 2 inches.



FASTENERS AND WASHERS

WEIGHTS.

APPROXIMATE WEIGHTS OF ASBESTOS PROTECTED METAL SHEETS IN LBS. PER 100 SQUARE FEET

Gauge of Steel Core	FLAT		CORRUGATED		BEADED		CLAPBOARD SIDING	
	Net	Shipping	Net	Shipping	Net	Shipping	Net	Shipping
No. 28	83	97	96	114	88	102	93	110
" 26	110	126	125	146	113	129	121	140
" 24	137	157	157	182	142	162	152	177
" 22	172	194	195	223	176	200	189	216
" 20	197	220	224	255				

CORTRIGHT METAL ROOFING CO.

50 North Twenty-Third Street

PHILADELPHIA, PA.

WESTERN OFFICE
CHICAGO, ILL., 134 Van Buren Street

PRODUCTS.

Manufacturers of CORTRIGHT METAL SLATES; VICTORIA SHINGLES; IMPERIAL SHINGLES; ORIENTAL SHINGLES; RIDGE-COPING; HIP COVERING; VALLEYS, etc.

CORTRIGHT
METAL
SLATES.

We have given the name "Slates" to the style of covering shown in Fig. 1 because the manner of laying and the effect produced very closely resemble slate roofing.

CORTRIGHT
VICTORIA
SHINGLES.

The most prominent feature of the Victoria Shingles (Fig. 2) is the embossing, which is very high and distinct enough for its ornamental character to be clearly seen from the ground. These shingles are suitable for roofing all first-class structures, and are specially desirable where the effect of clay tile is desired and great weight is objectionable.

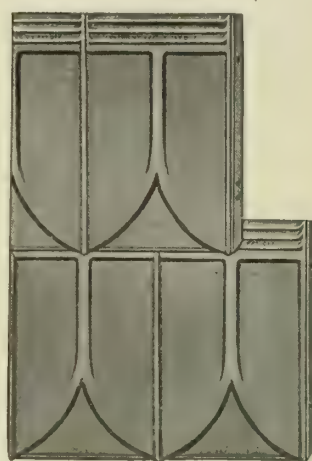


FIG. 1. GROUP OF CORTRIGHT METAL SLATES SHOWING METHOD OF LAYING

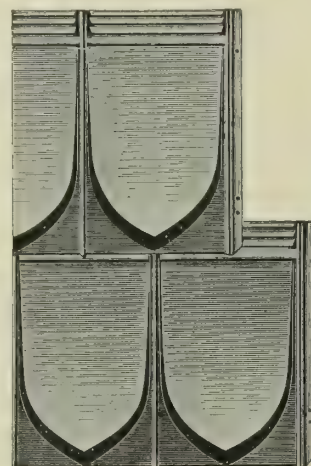


FIG. 2. GROUP OF CORTRIGHT VICTORIA SHINGLES SHOWING METHOD OF LAYING

CORTRIGHT
IMPERIAL
SHINGLES.

The Imperial Shingle (Fig. 3) is somewhat similar to the Metal Slate, but is larger in size and intended for use in covering barns, freight houses, and other large structures.

CORTRIGHT
ORIENTAL
SHINGLES.

The embossing on our new pattern, the Oriental Shingle, is higher than that of the Metal Slate, but not as prominent as the Victoria Shingle. This makes a saving in cost, and it is sold at a very slight advance over the price of our Metal Slate.

DESCRIPTION.

Cortright Metal Shingles are cut from heavy sheets of tin stamped into shapes and patterns that have become standard. The important feature is the device by which the shingles or slates are locked together. (See Fig. 4.) This roofing, by reason of this special feature, automatically expands or contracts without the slightest injury to the material or its absolutely storm-proof tightness. The characteristics of each design are very sharp, strong, and uniform, so that whatever the height of the building, ornament remains a feature of the roof.

MATERIAL
USED.

We use only a fine quality of roofing-tin, which is either painted or galvanized after stamping, thus insuring a thorough coating on both sides and in all the folds, and freedom from raw or cracked exposed edges. The Metal Slates, the Victoria, Imperial, and Oriental Shingles are all made of the same quality of material. One is just as serviceable and just as good as another. The variation is only an effort to meet the demands of individual taste and to produce the artistic effects sought by architects.



FIG. 3. CORTRIGHT IMPERIAL SHINGLE



Showing first position in laying Slate or Shingle on roof



Showing Slate or Shingle laid in place

FIG. 4. SIDE LOCK, FULL SIZE

HOW DISTIN-
GUISHED.

Every genuine Cortright Metal Shingle is stamped "CORTRIGHT REG. U. S. PAT. OFF."



A HANDSOME RESIDENCE ROOFED WITH CORTRIGHT VICTORIA SHINGLES

TRIMMINGS.

We furnish all trimmings, that is, Valleys, Ridge-Coping, and Hip-Covering necessary to complete the roof. These goods like the Shingles are all made of high-grade material, and we can not guarantee satisfactory results unless they are used.

COMPARATIVE
COST.

There will, perhaps, be some difference in the first or original cost between Cortright Metal Shingles and either slate, wood shingles, or plain tin; but when the extra years of service they will give are considered, they are the most economical covering obtainable.

PRICES AND
DELIVERY.

We have found that it is much more satisfactory to our customers to know just what our roofing will cost them delivered at destination, and as there is so much variation in freight rates we usually quote prices for the goods delivered, all charges prepaid.

FURTHER
DETAILS.

Any additional information desired will be promptly furnished on request.

FOLLANSBEE BROTHERS CO.

MANUFACTURERS OF

Highest Quality Roofing Tin, Hammered Open-Hearth Base Exclusively

GENERAL OFFICES

PITTSBURGH, PA.

BRANCHES

LOUISVILLE, KY., 14th and Walnut Streets
CLEVELAND, OHIO, 1111 Superior Viaduct
MILWAUKEE, WIS., 279-289 Oregon Street
BUFFALO, N. Y., Seneca and Hamburg Street
NORFOLK, VA., Boush Street and Brooke Avenue
CHICAGO, ILL., 427 Commercial National Bank Building

MEMPHIS, TENN., 346 Randolph Building
ROCHESTER, N. Y., 21-23 South Ford Street
INDIANAPOLIS, IND., 108 S. Alabama Street
NASHVILLE, TENN., 148 Second Avenue, North
DETROIT, MICH., 608 Warren Avenue, West
COLUMBUS, OHIO, 11 East Town Street

NEW YORK, N. Y., 71 Nassau Street

ADDITIONAL DISTRIBUTING AGENCIES

ST. LOUIS, MO., STOCKHOFF SUPPLY Co.
KANSAS CITY, MO., T. H. PREST SUPPLY Co., 1928 Grand Avenue

GRAND RAPIDS, MICH., WM. BRUMMELLER'S SONS Co.
DES MOINES, IOWA, LUTHE HARDWARE Co.

PRODUCTS.

Our manufacture includes ROOFING TIN—Bright Tin (both coke and charcoal plates) and Sheet Steel—in all finishes. We are also factors in GALVANIZED SHEETS, STEEL ROOFING, SHEET COPPER, ZINC, SOLDER, GALVANIZED CONDUCTOR and EAVES-TROUGH.

METHOD OF MANUFACTURE.

We are giving special attention to the manufacture of high quality Roofing Tin, using as a base or body Hammered Open-Hearth Black Plate exclusively, following the best methods in vogue in the Welsh mills years ago, when these imported plates were giving such universal satisfaction. In order to insure at all times the uniformly high quality of Open-Hearth Bars which we demand, we have erected, in addition to our Sheet and Tin Mills, our own Open-Hearth Furnaces. We have found however that this larger expenditure, enlisting as it does a capital of more than \$1,000,000, is justified by the superior working and wearing qualities which the brands of our manufacture are showing.

There is no doubt whatever but that the Hammered Open-Hearth process, permitting as it does, the elimination of the excess of those destructive elements, phosphorus and sulphur, a result not obtainable by the Bessemer process of other American manufacturers, combined with the care and attention given to all the details of manufacture, the high quality of coating, etc., has given to our brands a durability fully equal to the old imported roofing-plates.

The following named brands are especially worthy of your attention:

SCOTT'S
EXTRA
COATED.



This remarkable brand has now passed its twenty-fourth year of successful activity, and is to-day a better plate than ever before, possessing not only the heaviest and richest coating, but also the Hammered Open-Hearth base or body described.

It has always stood high with the best architects and roofers in all sections, and there are thousands of roofs made from it which are in as good condition now as when they were first put on.

This brand is an old, well-tried favorite of the United States Government, through its various departments, army, navy, etc., the most prominent railroads, and the great public and educational institutions throughout the land, whose requirements are exacting.

For your protection every sheet is stamped with the name of the brand and thickness, facsimile of the stamp being shown herewith.



FOLLANSBEE
BANFIELD
PROCESS,
GUARANTEED
FOR FIFTEEN
YEARS.



TRADE-MARK

To meet the demand for a roofing tin that can be accepted without question as to its quality, or without any risk being assumed by either architect, owner or roofer—a distinct advantage to all—and to show not only our ability as manufacturers of the very best grades of roofing tin, but our entire confidence in that ability as well, we offer the special brand named herewith which we fully warrant. We place a copy of our guarantee in every box,



TRADE-MARK

and any buyer or user can have it on demand, in writing, over our official signature. It reads exactly as follows:

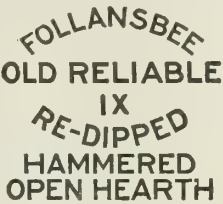
“We guarantee Follansbee Banfield Process Roofing Tin painted with pure linseed oil and Venetian red iron oxide, soldered with rosin, will wear for not less than fifteen years, or will be replaced at our expense.”

It is confidently assumed that our general standing and long record as reputable, successful manufacturers are quite sufficient to fully assure those interested as to the integrity and value of this agreement, and that it will be kept faithfully, as any other made by this company. Every sheet is stamped with our name, address, year of manufacture, brand and thickness, for perpetual identification, any time, any place.

OLD RELIABLE
RE-DIPPED.



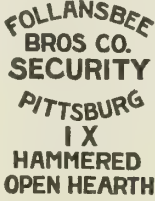
Old Reliable Re-Dipped compares favorably in coating with the 40-lb. coated plates of other manufacturers and jobbers. Its Hammered Open-Hearth base, moreover, gives it a durability which the competitive plates do not possess. After having been on the market for many years it is now a greater favorite than ever before, the quality and the brand being synonymous—Old Reliable.



FOLLANSBEE
SECURITY.



Follansbee Security is designed for moderate-priced work—the best quality it is possible to produce at the reasonably low price at which it is sold. It is made carefully and well, of selected materials.



FOLLANSBEE
PURE IRON
OLD STYLE.



TRADE-MARKS

Follansbee Pure Iron Old Style is guaranteed pure iron, made throughout in Wales, for us especially, by very reliable manufacturers, according to methods in practice over fifty years.



TRADE-MARKS

SPECIAL
NOTICE.

All our brands are marked plainly with the name and thickness, IC or IX, the latter being intended for gutters or other work requiring extra strength or weight of body. IC is for general roofing or ordinary use, and carries the same amount of coating as the IX.

CORRECT
METHOD OF
APPLYING.

In order to obtain best results from a tin roof, insist that the following conditions be observed as part of the tin-roofing Specifications:

All tin shall be laid on selected waterproof paper. (Tar paper and other qualities containing acids prohibited.) No nails shall be driven through the sheets. All solder used shall be strictly half and half. Rosin only shall be used as a flux for soldering, and all rosin must be removed from seams before painting. All tin shall be painted one coat on under side and two coats on upper side with Venetian red oxide of iron paint ground and mixed in pure linseed oil. Lower coat to be applied in the shop and thoroughly dry before sheets are laid. First upper coat applied immediately after roof is completed, second coat three days later. All painting shall be done with a hand brush and well rubbed in, and shall be part of the roofing contract.

The roofers shall wear rubber shoes and no unnecessary walking over the roof or using the same for storage of other material will be allowed. All workmanship guaranteed for one year.

By observing the foregoing conditions a roof of good tin will be made more durable, easy to maintain, comparatively inexpensive, and it is the best known protection against fire and lightning.

SAMPLES AND
PAMPHLET.

A hanger, showing samples of our various brands, will be sent free on request.

We will also be pleased to mail free to any address, on request, a copy of our pamphlet on “Tin Plate Making,” showing the various methods employed in the manufacture of roofing tin since the beginning of the industry.

MEURER BROS. COMPANY

Manufacturers of Roofing Specialties

569-577 Flushing Avenue

BROOKLYN, N. Y.

AGENCIES AND STOCKS

NEW YORK, N. Y.
DENVER, COLO.
PORTLAND, ORE.
LOS ANGELES, CAL.

SALT LAKE CITY, UTAH
SAN FRANCISCO, CAL.
LOUISVILLE, KY.
SEATTLE, WASH.

PACIFIC COAST REPRESENTATIVE
A. H. McDONALD
SAN FRANCISCO, CAL., 185 Stevenson Street

PRODUCTS.

Manufacturers of High-Grade Guaranteed Brands of ROOFING TIN, FIRE-DOOR FLUSHING TIN, METAL SPANISH ROOFING TILE, METAL MISSION TILE, METAL SHINGLES, HIP and RIDGE ROLLS and ANCHOR VENTILATORS.

Sole importers of "MEURER'S" GENUINE TINNED IRON SHEETS.

MEURER'S
GENUINE
TINNED IRON
SHEETS
(IMPORTED).

Meurer's Genuine Tinned Iron Sheets are a heavily coated plate on a base of pure re-hammered charcoal iron, manufactured in Wales and furnished the trade in original boxes. They are coated with palm oil, by hand, in old-style open pots. Only prime plates come to this country. These plates have been in use over twenty years on private, public and government buildings throughout the United States, and we have never had a complaint. With care they will last a lifetime.

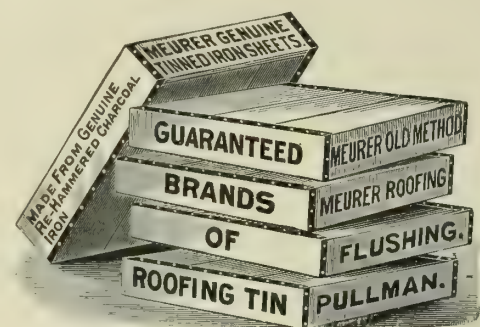


FIG. 1. GUARANTEED BRANDS OF ROOFING TIN

DOMESTIC
MANUFACTURE.

Our steel base plates are all coated on a base of high-grade puddled steel and are well known for their lasting qualities.

MEURER
OLD METHOD.

Meurer Old Method, as its name denotes, is a hand-dipped, palm-oil plate made in old-style open pots. Carries 40 pounds of rich coating and is the best plate made.

MEURER
ROOFING.

Meurer Roofing is made the same way as Old Method, except it is dry finished and has a large, handsome mottle. Carries 40 pounds of coating and differs only from Old Method in the finish.

FLUSHING.

Flushing is a dry-coated plate very rich in tin, has a small, beautiful mottle, carries 25 pounds of coating and is one of the best plates made of medium grade.

PULLMAN.

Pullman is an oil-finished plate; carries 20 pounds of coating. One of the best for cheap work.

CALIFORNIA.

California is a handsome mottled plate made expressly for Western coast trade. Carries 15 pounds of coating and is very popular.

FIRE-DOOR
FLUSHING.

Fire-Door Flushing, IC, for fire doors and shutters, is made at our own works under exact specification of the National Board of Fire Underwriters. Terne plates, 14 x 20, stamped with brand and thickness.

UNIQUE
METAL
SHINGLE.

Unique Metal Shingles (Fig. 2) are different from all other metal shingles in that they do not break joints. The lines are all straight, giving the appearance on the roof of ribs. Having our patented high-wall side-lock they never leak even on a low pitch. Made in tin painted, tin galvanized, zinc and copper. The galvanized are stamped out of terne plates, then galvanized, thus insuring no scaled edges to rust out.

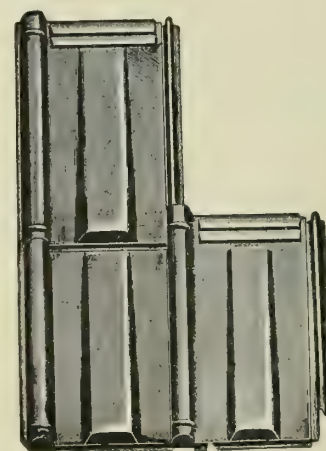


FIG. 2. "UNIQUE" SHINGLE

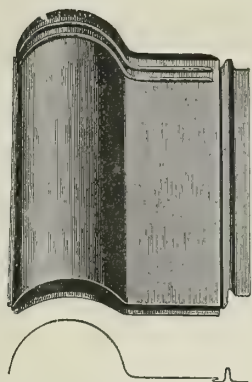


FIG. 3. METAL SPANISH TILE, SHOWING HIGH-WALL SIDE-LOCK

METAL
SPANISH
ROOFING
TILE,
TIFFANY
DESIGN.

Meurer's Metal Roofing Tile (Fig. 3) produces that most desirable of all architectural effects, viz., lights and shadows, as is demonstrated in the picture (Fig. 4). The nose is square, thereby casting a deep shadow. Round off or bevel the nose and you lose the shadow. This starting tile was designed by the late Stanford White, for the Tiffany building. The end is recessed, thereby producing a deep shadow, and giving a clean, sharp, clear-cut eave line. This starter is the only one of its kind made and is patented.

METAL
MISSION
TILE.

Our New Metal Mission Tile (Fig. 5) is a perfect reproduction of the old California Clay Mission Tile and was designed especially for mission buildings. It is bold and handsome and the only one of its kind made. The starting tile is also recessed, giving the same clear-cut sharp eave line and light and shadow effect as our Tiffany starter.

SIDE LOCK.
MATERIAL
AND AP-
PLICATION.

Our tiles all have our patent high-wall side-lock, making it impossible for them to leak. Made in tin painted, tin galvanized, zinc and copper. Our shingles and tiles are as easily put on as wood shingles or slate and require no soldering except at valleys.

HIP AND RIDGE
COVERING.

Suitable finials, hip and ridge rolls are made for our shingles and tiles.

ANCHOR
VENTILATORS.

As an automatic ventilator the Anchor (Fig. 6) stands alone. It is the only ventilator that works at the low wind velocity of $1\frac{1}{4}$ miles an hour. Its exhaust capacity is very great. This, added to the fact that from its peculiar construction it is absolutely storm-proof, renders it the most perfect of all ventilators. Made with glass tops it combines the advantage of skylight and ventilator. Made principally in galvanized iron and copper. Send for our book on "Automatic Ventilation and Tests." It is free.

SPECIFICA-
TION.

When in want of the best goods of their class specify any of the above, not forgetting the word "Meurer," and insist on getting them.



FIG. 4. CURVED ROOF OF PIEDMONT ART GALLERY, OAKLAND, CAL.

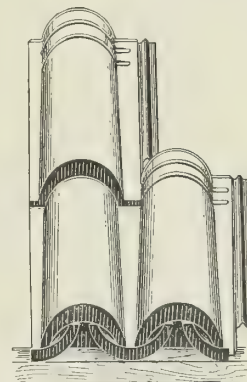


FIG. 5. METAL MISSION TILE

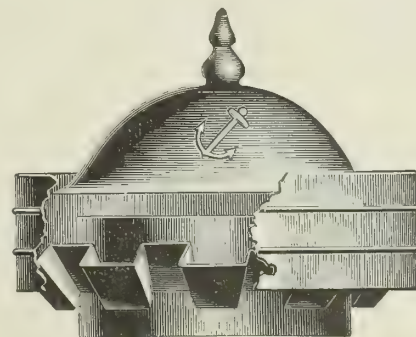


FIG. 6. "ANCHOR" VENTILATOR, METAL TOP

NATIONAL ASSOCIATION OF MASTER SHEET METAL WORKERS OF THE UNITED STATES

OFFICERS

President, EDWIN L. SEABROOK, 2213 Chestnut Street, Philadelphia, Pa.

First Vice-President, S. SPIRO, Birmingham, Ala.

Second Vice-President, JOHN BOGENBERGER, Milwaukee, Wis.

Third Vice-President, FRANK P. SMITH, Norfolk, Va.

Fourth Vice-President, FRANK J. HOERSTING, Dayton, Ohio.

Secretary, OTTO GOEBEL, 523 Columbus avenue, Syracuse, N. Y.

Treasurer, W. A. FINGLES, Baltimore, Md.

TRUSTEES

ALBERT B. FRANKLIN, Boston, Mass.

P. H. LENDERKING, JR., Baltimore, Md.

W. W. BOSBURY, Parkersburg, W. Va.

E. W. RICHARDS, Philadelphia, Pa.

THOS. LEE, Cincinnati, Ohio

T. P. WALSH, San Antonio, Tex.

ALFRED HOLTMAN, Kansas City, Mo.

THOS. F. BLACK, Brooklyn, N. Y.

ROBERT J. BRALEY, Providence, R. I.

LOCAL ASSOCIATIONS

NORFOLK, VA.

MILWAUKEE, WIS.

PHILADELPHIA, PA.

PARKERSBURG, W. VA.

WILMINGTON, DEL.

SYRACUSE, N. Y.

CUMBERLAND, MD.

READING, PA.

BALTIMORE, MD.

ERIE, PA.

WASHINGTON, D. C.

INDIANAPOLIS, IND.

KANSAS CITY, MO.

CAMDEN, N. J.

ROCHESTER, N. Y.

ST. JOSEPH, MO.

BROOKLYN, N. Y.

CLEVELAND, OHIO

HARTFORD, CONN.

TOLEDO, OHIO

PORTLAND, ORE.

LOGANSPOUT, IND.

PEORIA, ILL.

BUFFALO, N. Y.

BIRMINGHAM, ALA.

DAYTON, OHIO

BOSTON, MASS.

TRENTON, N. J.

SAN ANTONIO, TEX.

LOUISVILLE, KY.

LAFAYETTE, IND.

FORT WAYNE, IND.

OMAHA, NEB.

PROVIDENCE, R. I.

MINNEAPOLIS, MINN.

CINCINNATI, OHIO

HARRISBURG, PA.

GALVESTON, TEX.

HOUSTON, TEX.

SAN FRANCISCO, CAL.

ROANOKE, VA.

TERRE HAUTE, IND.

MEMPHIS, TENN.

FORT WORTH, TEX.

NEW ALBANY, IND.

TAMPA, FLA.

DALLAS, TEX.

DULUTH, MINN.

ATLANTA, GA.

SPOKANE, WASH.

NASHVILLE, TENN.

NEW ORLEANS, LA.

YOUNGSTOWN, OHIO

COLUMBUS, OHIO

WHEELING, W. VA.

SPRINGFIELD, OHIO

SAVANNAH, GA.

EVANSVILLE, IND.

LITTLE ROCK, ARK.

SALT LAKE CITY, UTAH

MANSFIELD, OHIO

Names and addresses of the Secretaries of these Local Associations will be sent upon application to the office of the President, 2213 Chestnut Street, Philadelphia, Pa.

OBJECT OF THE ASSO-CIATION.

This Association has as its object the advancement of the sheet-metal working trade and the maintenance of a high standard for tin-roofing work in this country.

Its membership is composed of Master Sheet-Metal Workers in leading cities throughout the United States.

PUBLICA-TIONS.

Architects are invited to subscribe for the "Master Sheet Metal Workers' Journal," the official organ of the Association. Subscription price, fifty cents yearly. The Association also issues a "Tin Roofer's Handbook," an illustrated treatise on the subject of tin roofs, containing standard working specifications, comparison of tin with other forms of roofing, etc. A copy of this is sent free to any one.

Application for these publications should be made to President Edwin L. Seabrook, 2213 Chestnut Street, Philadelphia, Pa.

TIN ROOFING FACTS FOR ARCHITECTS' USE.

This is equally well adapted for covering a flat deck or a vertical wall, also for covering domes, turrets, and as metal sheathing for wooden surfaces of every form. It is soft, pliable, and easily shaped to conform to the surface it covers. Standing-seam tin roofs are recommended where the pitch is more than two inches to the foot. Flat-seam tin roofs should be used to cover any surfaces of lesser pitch.

COST.

A roof of good first-class tin, laid with good workmanship, will cost about eight to ten cents per square foot for the completed roof, including painting. This figure will vary somewhat according to the locality, size and character of the roof. This first cost represents an investment in a high-grade article, adding permanently to the value of the building. At this figure a roof is secured that can be expected to last in good condition as long as the building stands. That is the record of good tin roofs in all parts of the United States. Any sheet-metal worker or tin roofer can readily submit close estimates of the cost of a good tin roof.

MAINTENANCE.

A good tin roof properly applied, following the Standard Working Specifications of the NATIONAL ASSOCIATION OF MASTER SHEET METAL WORKERS (see "Tin Roofers' Hand Book"), will require no further attention except an occasional coat of paint, and no repairs under ordinary service. A new tin roof should be given another coat of paint one year after it is laid, another coat of paint three years later, and after that subsequent painting will be necessary only at four to five year intervals or longer, as the roof ages and the paint-skin thickens. The cost of subsequent painting should not be over fifty cents per 100 square feet, and will probably be considerably less in those cases where a large expanse is to be covered.

DURABLE.

Everywhere in this country old tin roofs are found in practically as good condition as when first laid. In the older cities such roofs are found giving first-rate service after upward of seventy-five years' wear. Roofs of this character are readily obtainable to-day if judgment is used in selecting the tin, and competent workmanship employed. Manufacturers can readily supply the same durable tin where the architects' specifications require the roofer to use it. Roofs of good tin put on in recent years show the same satisfactory results after ten, fifteen and twenty years' service.

WEATHER-PROOF.

A tin roof covers the upper surface of the building with a continuous unbroken sheet of durable metal, proof against all attacks of the weather. Driving rain and snow, fog and moisture can not penetrate it. High winds can not tear it loose if it is put on in accordance with standard practice. A well-laid tin roof seals the upper surface of the building against any ingress of the elements.

FIREPROOF.

The value of a tin surface as a protection against fire has long been recognized. Tin-covered fire-doors and shutters are the highest type recommended by the authorities. Tin roofs have recently been rated as the highest form of roofing for use on sheathing boards, by a ruling of the National Fire Protection Association.

A tin roof laid in accordance with the standard practice prevents the passage of flames and will often hold together intact even until the collapse of the building, preventing the upward rush of the flames. This feature alone has frequently confined a fire within the building where it originated. Fire has been known to leap across a tin roof and set fire to a tar and gravel roof, forty feet distant.

LIGHTNING-PROOF.

We have no authentic instance of a tin-roofed house damaged by lightning. The expanse of metal on the surface of the building, frequently connected with the ground by means of metal downspouts, constitutes an ideal form of protection against lightning. This feature alone has influenced the use of roofing tin in many cases for covering buildings susceptible to attack by lightning.

NEAT.

A particularly neat, attractive appearance is secured by the use of tin, especially where laid with standing seams. Where desired the metal can be formed over strips of any shape to give an added architectural effect.

CLEAN AND SANITARY. NOT AFFECTED BY HEAT OR COLD.

Tin roofs are especially recommended for use where rain-water is collected in cisterns. This is an important consideration for a roofing material in this country. Tin roofs are equally popular in the Northwest with its extremely low temperatures in winter, as well as in the Southern States where the tin is exposed to the scorching heat of summer. The slight expansion and contraction of the metal are taken care of by the cleats used to fasten it to the roof, which allow sufficient play.

LIGHT IN WEIGHT.

Although often overlooked, this is an important advantage of tin roofs, as the following table of weights of various roofings shows.

WEIGHT PER SQUARE (100 SQUARE FEET)	
Tin, 1C thickness, standing seam, 65 pounds.	Four-ply Slag, 525 to 575 pounds.
Copper, 125 pounds.	Slate, ³ / ₁₆ inch, good grade, 650 to 700 pounds.
Shingles, spruce and pine, 400 pounds.	Tile (Spanish), 800 to 850 pounds.
Three-ply Slag, 350 to 450 pounds.	Tile (shingle), 1200 to 1800 pounds.

A sufficient saving can often be made in the cost of a lighter construction of roof framing or supporting walls to more than offset the higher cost of tin over cheap but heavy roofing materials. For covering large expanses of surface such as auditoriums, drill-halls, factories, warehouses, etc., good tin is the ideal form of roofing.

EASILY REPAIRED.

In case of accidental damage to a tin roof permanent repairs can be made quickly and cheaply without allowing serious damage to the building, no matter what the weather conditions may be. Many forms of roofing can only be repaired in clear weather.

QUALITY.

The same durable quality of former years is obtainable to-day in the leading brands of manufacturers of established reputation and experience. The difference in quality between the best brands and cheap grades is very much wider than in former years, due to inventions and labor-saving machinery that have made possible the production of tinplate at a very low cost. Such tin is unsuitable for roofing purposes, although frequently used under severe price competition. Failure of this cheap material has thrown discredit on tin roofs in many localities. Roofers who prefer to use good material are frequently unable to do so on competitive work where specifications permit the use of cheaper brands.

The architect is therefore requested, in the interest of all parties concerned, to select a brand of tin of established make and the highest grade of that manufactured, and to require the use of this brand exclusively. An exclusive specification has distinct advantages to all parties concerned. The roofer is protected from competition that aims to substitute cheaper material; the property owner is furnished with a satisfactory roof of the standard desired by the architect, and the architect secures bids based on a single standard and is protected against that subtle form of competition which aims to offer some substitute or imitation of the specified article, claimed to be just as good.

SPECIFICA- TION.

To insure satisfactory tin-roofing work the architect is requested to select carefully his make of tin and to use the form of specification for Tin Roofing Work issued by this Association. This specification has been adapted for architects' use from the Standard Working Specification of this Association, and represents the best practice in laying tin roofs. The use of the following clause is recommended:

"Work to be done in exact accordance with the Standard Working Specifications of the NATIONAL ASSOCIATION OF MASTER SHEET METAL WORKERS, as given in the 'Tin Roofers' Handbook.'"

Architects have it in their power to secure thoroughly satisfactory tin-roofing work if they will give the skilled master sheet-metal worker a reasonable meed of protection against incompetent workmen, as outlined above.

ARCHITECTS' SPECIFICA- TION FORM FOR TIN- ROOFING WORK.

"All tin used on this building shall be brand. No substitute for this brand will be allowed. Use 1C thickness for the roof proper, decks, etc., and IX thickness for valleys, gutters and spouts, as required by design. One coat of red lead, iron oxide, metallic brown or Venetian red paint with pure linseed oil shall be applied to the under side of the tin before laying.

For Flat-Seam Roofing—Edges of sheets to be turned one half inch; all seams to be locked together and well soaked with solder. Sheets to be fastened to the sheathing-boards by cleats spaced eight inches apart; cleats to be locked into the seams and fastened to the roof with two one-inch barbed wire nails; no nails to be driven through the sheets.

For Standing-Seam Roofing—Sheets to be put together in long lengths in the shop, cross seams to be locked together and well soaked with solder; sheets to be made up the narrow way in the rolls and fastened to the sheathing-boards by cleats spaced one foot apart.

Valleys and Gutters to be formed with flat seams well soldered, sheets to be laid the narrow way.

Flashings to be let into the joints of the brick or stone-work, and cemented. If counter flashings are used, the lower edge of the counter-part shall be kept at least three inches above the roof.

Solder to be of the best grade, bearing the manufacturer's name, and guaranteed one half tin and one half lead—new metals. Use rosin only as a flux.

Caution—No unnecessary walking over the tin roof or using same for storage of material shall be allowed. In walking on the tin care must be taken not to damage the paint or to break the coating of the tin. Rubber-soled shoes or over-shoes should be worn by the men on the roof.

Painting Tin Roof—All painting of the tin work to be done by the roofer, using red lead, iron oxide, metallic brown or Venetian red paint with pure linseed oil; no patent dryer or turpentine to be used.

All paints to be applied with a hand brush and well rubbed on. Tin to be painted immediately after laying. A second coat shall be applied in a similar manner, two weeks later.

No deviation from these specifications shall be made unless authority is given in writing by the architect. Only a first-class roof will be accepted."

Extra copies of this specification may be obtained upon application to the President's office, 2213 Chestnut Street, Philadelphia, Pa.

THE NATIONAL SHEET METAL ROOFING CO.

"Walter's" Metal Shingles and Tiles

339-45 Grand Street
JERSEY CITY, N. J.

PRODUCTS.

"WALTER'S" METAL SHINGLES and TILES.

DESCRIPTION.

These Metal Shingles and Tiles are made in three qualities of material:

Painted I. C., full-weight, perfect charcoal roofing-tin; galvanized I. C., full-weight, perfect charcoal roofing-tin; and 12 and 14 oz. copper.

The "Excelsior" and "Octagon" Tiles have the "Walter's" Lock, which has been in use for the past twenty-six years.

GALVANIZED.

The Galvanized Shingles and Tiles are stamped from I. C. full-weight, perfect charcoal roofing-tin, and are galvanized after being stamped or formed. The process is to dip the shingles in open kettles of molten zinc and permit as much of the zinc to adhere to the shingle as possible. These shingles are heavily coated with zinc; there are no cracks or abrasions in the coating nor bare edges not coated.

PAINTED.

The Painted Tin Shingles are painted by the dipping process, whereby they receive a thorough coating over the entire surface, including the various folds in the lock.

ADVANTAGES.

"Walter's" Patent Metal Shingles and Tiles insure a storm- and wind-proof roof; they are always ready to be applied, and do not require skilled labor to apply them; they will not rust on the under side. Have one sixth the weight of slate and one half that of wood. They are fireproof, and houses covered with them are accepted by all fire insurance companies at less rates than houses covered with combustible material. Full provision is made for contraction and expansion of the metal as well as the ventilation of under side of roof. They are accepted as the most durable manner of applying metal for roofing purposes.

GUARANTEE.

Our Galvanized Shingles and Tiles are guaranteed to make an absolutely rust-proof roof without the protection of paint.

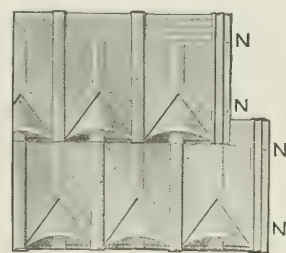
Roofs covered with these shingles twenty-four years ago are in perfect condition to-day.

CORRESPOND- ENCE INVITED.

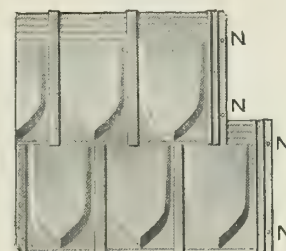
Architects and others desiring further information, prices, and references are respectfully invited to write to THE NATIONAL SHEET METAL ROOFING CO.



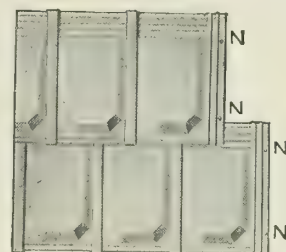
"WALTER'S" METAL SHINGLES
As applied on a cottage roof



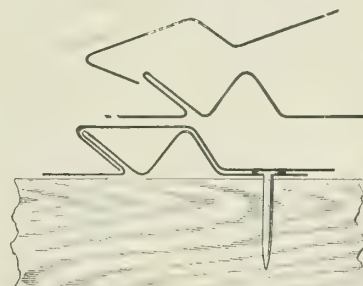
"WALTER'S" STANDARD
SHINGLES



"WALTER'S EXCELSIOR"
TILES



"WALTER'S OCTAGON"
TILES



SECTIONS
Showing self-locking feature

N. & G. TAYLOR COMPANY

ESTABLISHED 1810. ONE HUNDREDTH YEAR

Manufacturers of Tin Plate of All Kinds

GENERAL OFFICES

Mariner and Merchant Building, Chestnut and Third Streets

PHILADELPHIA, PA.

FURNACES, ROLLING MILLS and BLACKPLATE PLANT
CUMBERLAND, MD.

TIN PLATE WORKS
PHILADELPHIA, PA.

PRODUCTS.

Manufacturers of ROOFING-TIN and BRIGHT TIN of all kinds; BLACKPLATES for Tinning, Enameling, Stamping, etc.; also, makers of OPEN-HEARTH STEEL INGOTS, BILLETS, BLOOMS, SHEET-BARS, etc.

BRANDS OF ROOFING-TIN.

"Taylor's Target and Arrow," formerly known as Taylor's "Old Style," "Taylor's Roofing-Tin, Redipped," and "Taylor's Columbia, Extra Coated."

All these brands are resquared and stamped with the name of the brand and thickness. Full description of products, samples, and booklets on tin roofing, will be gladly sent on request. Only the highest grade of roofing-tin is described in our catalogue.

"TARGET AND ARROW" ROOFING-TIN.

This brand represents the old-time extra-heavily coated, strictly hand-made roofing-tin that we have been selling for more than sixty years. It is the oldest brand on the market, and its value as a permanent roofing material has been proven by the only sure test, the test of time. The high quality of the "Target and Arrow" brand has been constantly maintained fully up to the old-time standard, and no expense or pains are spared to make this the best roofing-tin to be had at any cost. Our experience of nearly one hundred years in this business is concentrated in our "Target and Arrow" brand of tin. We have record of many old roofs of our tin which have outlasted the buildings. We offer the same durable tin to-day.

IMITATIONS AND TRADE- MARKS.

This brand, formerly known as Taylor's "Old Style," has many imitations. Architects can guard against the use of these substitutes by specifying Taylor's "Target and Arrow" tin. Each sheet of the genuine article is stamped with the trade-mark here shown. We were the first to stamp tin plates in this manner, many years ago, for the protection of the buyer.



ADVANTAGES.

A "Target and Arrow" tin roof has many advantages over other kinds of roofing. It is very light in weight (65 pounds per 100 square feet), perfectly clean, neat in appearance, and easily applied. If it becomes damaged, permanent repairs can be quickly and cheaply made. A roof of this tin is not affected by heat or cold. It gives complete protection against storms, fire, and lightning.

A roof of this tin covers the upper surface of the building with an unbroken sheet of durable metal, protecting the roof from flying sparks, embers, radiant heat, and even flames from a nearby fire. Tin-covered wooden fire-doors and shutters have been adopted as the highest standard type by the National Fire Protection Association. A tin roof gives the same protection to the upper part of a building. Proofs of the above will be furnished upon application.

TRADE-MARK
Stamped on each sheet
of "Target-and-Arrow"
Old Style Tin. Registered

"COLUMBIA,
EXTRA
COATED"
ROOFING-TIN.

This is a standard high-grade "extra-coated" plate and should be specified in cases where the best tin is not required. It is well made, of first-class materials—palm-oil flux, open-hearth base, but carries less coating than the "Target and Arrow" brand, and applied by extra-coating machinery. It is not hand-dipped.

DURABILITY.

Good tin has been found to provide the most durable roof that can be obtained. Such roofs have been found in good condition after more than ninety years' service, and apparently good for an indefinite time to come. Where good tin is used, and the work done right, the roof can be expected to last as long as the building stands, with no further attention except an occasional coat of paint at three to five-year intervals, depending upon local conditions. The roofs of cheap tin that fail to uphold this standard of durability only serve as a contrast to the value of good tin, properly applied.

COST AND
ESTIMATES.

A "Target and Arrow" tin roof costs, at Philadelphia, about ten cents per square foot for the finished roof. Estimates will vary according to the nature of the work, shape of the roof, the location, current price, etc. Any roofer can estimate on this tin, securing it promptly from any of our numerous agencies, or direct from us.

STOCKS.

"Target and Arrow" tin is carried in stock by wholesale hardware supply houses in all large cities. We also carry stocks in warehouse at important distributing points. Name of nearest agent or dealer sent on request. No part of the United States is far from a source of supply.

SPECIFICA-
TION FOR
ARCHITECTS'
USE.

The following form of tin roofing specification has been adapted for architects' use from the Standard Working Specifications of the National Association of Master Sheet Metal Workers. Architects are asked to require tin roofers to follow these specifications in laying first-class roofs:

Tin Roofing Work—All tin used on this building shall be Taylor's "Target and Arrow" brand. No substitute for this brand will be allowed. Use IC thickness for the roof proper, decks, etc., and IX thickness for valleys, gutters and spouts, as required by design.

One coat of red oxide or metallic brown paint shall be applied to the under side of the tin before laying.

For flat-seam roofing, edges of sheets to be turned one half inch; all seams to be locked together and well soaked with solder. Sheets to be fastened to the sheathing-boards by cleats spaced eight inches apart, cleats locked into the seams and fastened to the roof with two one-inch barbed wire nails, no nails to be driven through the sheets.

For standing-seam roofing, sheets to be put together in long lengths in the shop, cross seams to be locked together and well soaked with solder; sheets to be made up by the narrow way in the rolls and fastened to the sheathing-boards by cleats spaced one foot apart.

Valleys and gutters to be formed with flat seams well soldered, sheets to be laid the narrow way.

Flashings to be let into the joints of the brick or stone work, and cemented. If counterflashings are used, the lower edge of the counterpart shall be kept at least three inches above the roof.

Solder to be of the best grade, bearing the manufacturer's name, and guaranteed one half tin and one half lead—new metals. Use rosin only as a flux.

Caution—No unnecessary walking over the tin roof or using same for storage of material, shall be allowed. In walking on the tin care must be exercised not to damage the paint nor break the coating of the tin. Rubber-soled shoes or overshoes should be worn by the men on the roof.

Painting Tin Work—All painting of the tin work to be done by the roofer, using metallic brown, iron oxide, or Venetian red paint, with pure linseed oil, no patent dryer or turpentine to be used.

All paints to be applied with a hand-brush and well rubbed on. Tin to be painted immediately after laying. A second coat shall be applied in a similar manner, two weeks later.

No deviation from these specifications shall be made; they must be carried out in every particular. Only a first-class roof will be accepted.

THE CHAPMAN SLATE COMPANY

MINERS AND SHIPPERS OF

Roofing Slate
BETHLEHEM, PA.

QUARRIES AT
CHAPMAN QUARRIES, PA.

AGENCIES

PHILADELPHIA, PA., ANDREW SCHULZ, 1748 Erie Avenue

POTTSTOWN, PA., S. S. DAUB

PRODUCT.

We manufacture ROOFING SLATE exclusively.

DESCRIPTION.

The Quarries of this Company were opened in 1850, and THE CHAPMAN SLATE COMPANY are now the largest producers of Roofing Slate in the country. The "William Chapman" Slate is of superior quality, dark blue in color, hard, close-grained and tough; absorbs no moisture, and will not fade, discolor nor decompose. The present product is taken from a depth of over 200 feet, thus securing the very best material for roofing slate. "William Chapman" Slate makes the best roof of any material known.

ADVANTAGES.

The superiority of "William Chapman" Slate as a roofing material has become well established. For toughness, color and durability it is not excelled by any; and the roof that is covered with first quality "William Chapman" Slate requires less repairs than that covered with any other. In transportation there is no loss by breakage of our slate.

Since considerable inferior slate is being put out and represented as the genuine "William Chapman" Slate from our quarries, we have instituted the practice of labeling from one to two per cent of each shipment of slate. This label, facsimile of which is given herewith, states the quality, whether No. 1, B's, or No. 2 Slate.



"WILLIAM CHAPMAN"
SLATE LABEL

SIZES AND WEIGHTS.

Our stock sizes of slate are about $\frac{3}{16}$ of an inch thick, and weigh about 660 pounds to the square when laid with the regular three-inch lap.

The stock sizes are:

Size of Slate, inches	Number of Pieces in each square	Size of Slate, inches	Number of Pieces in each square
6 x 12	534	10 x 18	192
7 x 12	457	10 x 20	170
7 x 14	375	11 x 20	155
8 x 14	328	11 x 22	138
8 x 16	277	12 x 22	126
9 x 16	247	12 x 24	115
9 x 18	214	14 x 24	98

FACILITIES.

We can ship anywhere, and have already shipped to nearly every State in the Union, as well as to Mexico, England and France.

We are prepared to fill orders of the biggest kind, our present capacity being 6,000 squares per month.

CO-OPERATIVE SERVICE.

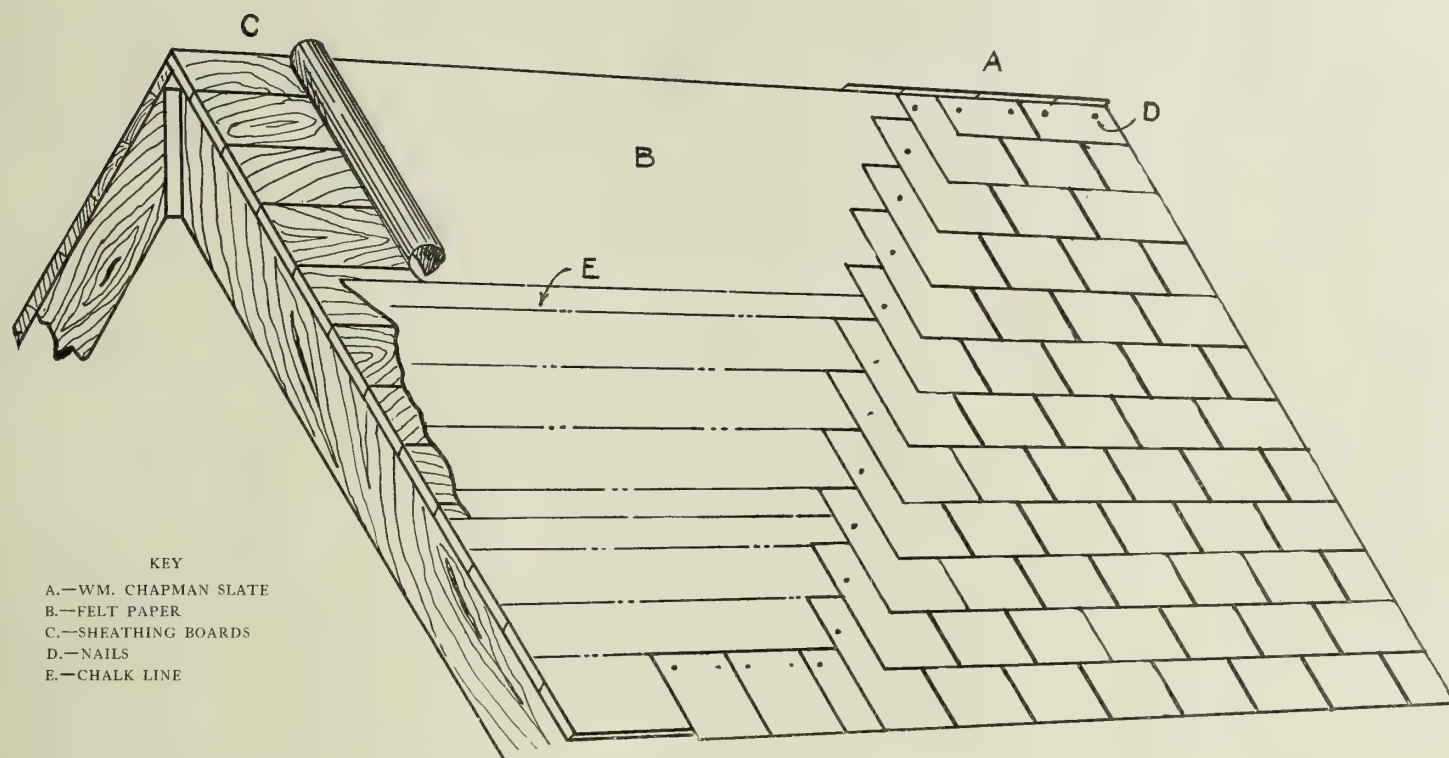
We will gladly assist architects, contractors, or any one who may be interested; and invite correspondence.

SPECIFICATIONS.

We suggest the following specifications:

Cover all roofs with No. 1 "William Chapman" Slate, size (as best adapted to different buildings). Give full 3 inches under-lap and provide two (galvanized or

copper) nails to each slate. In steel construction, when slate is used direct on steel purlin, use copper nails which should be bent along the lower part of flange of angle or purlin, each row of slate to break joints with the adjoining row. Slate at the ridges, valleys, edges, etc., to be cut so that their bond will be uniform with the rest.



KEY
A.—WM. CHAPMAN SLATE
B.—FELT PAPER
C.—SHEATHING BOARDS
D.—NAILS
E.—CHALK LINE

METHOD OF LAYING ROOFS WITH THE "WILLIAM CHAPMAN" SLATE

REFERENCES.

"William Chapman" Slate is specified by most of the leading architects in the country; we give a partial list of buildings covered with our slate:

BUILDING	LOCATION
Brooklyn Bridge Buildings	New York, N. Y.
Central Park Buildings	New York, N. Y.
Gilsey House	New York, N. Y.
Holy Trinity Church	New York, N. Y.
Isabella Heimuth, Residence	New York, N. Y.
Long Island Historical Society Buildings	Brooklyn, N. Y.
Metropolitan Opera House	New York, N. Y.
Monastery	Hoboken, N. J.
Mutual Life Insurance	Philadelphia, Pa.
P. & R. Freight Station, Subway	New York, N. Y.
Roman Catholic Cathedral	Philadelphia, Pa.
Roman Catholic Church of the Epiphany	New York, N. Y.
Staats Zeitung Building	Albany, N. Y.
State Capitol	Hartford, Ct.
State Capitol	New York, N. Y.
St. George's Church	New York, N. Y.
St. Vincent Hospital	New York, N. Y.
U. S. Military Academy Buildings	West Point, N. Y.

THE NAMES OF SOME OF OUR CLIENTS ARE ALSO GIVEN HEREWITH

Bethlehem Steel Co.	Bethlehem, Pa.
C. M. Taylor & Co.	Philadelphia, Pa.
Coleraine Iron Co.	Philadelphia, Pa.
Consolidated Gas Co.	New York, N. Y.
Midvale Steel Co.	Philadelphia, Pa.
Vulcan Iron Works	Wilkesbarre, Pa.
Wm. C. Allison & Sons	Philadelphia, Pa.
Wm. Sellers & Co.	Philadelphia, Pa.

GENUINE BANGOR SLATE COMPANY, INC.

Roofing and Structural Slate

EASTON, PA.

CABLE ADDRESS

"RSBROWN," EASTON, PA.

ADDRESS ALL COMMUNICATIONS TO THE MAIN OFFICE, DRAKE BUILDING, EASTON, PA.

FOREIGN BRANCH OFFICES

BELFAST, IRELAND
BREMEN, GERMANY
CARDIFF, WALES

COPENHAGEN, DENMARK
CORK, IRELAND
DUBLIN, IRELAND

FRANKFORT-ON-THE-MAIN,
GERMANY
HAMBURG, GERMANY

MELBOURNE, AUSTRALIA
PERTH, WEST AUSTRALIA
SYDNEY, AUSTRALIA

PRODUCTS.

We are the miners and shippers of "GENUINE BANGOR" SLATE for Roofing and Structural purposes.

DESCRIPTION.

"Genuine Bangor" Slate is obtained from natural rock, the veins of which vary in thickness and are of unknown depth. It is quarried in blocks weighing several tons, then split and cut into sizes adapted for roofing and structural purposes.

PHYSICAL
PROPERTIES
OF "GENUINE
BANGOR"
SLATE.

Maximum fiber stress per square inch, 7,671 pounds.

Shearing stress per square inch, 2,192 pounds.

Modulus of rupture per square inch, 9,000 to 10,000 pounds.

Elasticity: Ultimate deflection in tests with regular stock, 0.270 to 0.313 inch.

Coefficient of expansion, 0.000005.

Non-porosity: Laboratory tests show an absorption of but 0.099% to 0.303%.

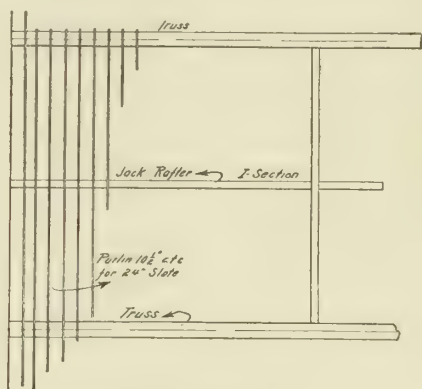


FIG. 1. ARRANGEMENT OF STEEL FRAME FOR SLATE ROOF

In Fireproof Steel Construction, when trusses are spaced more than 10 ft. center to center

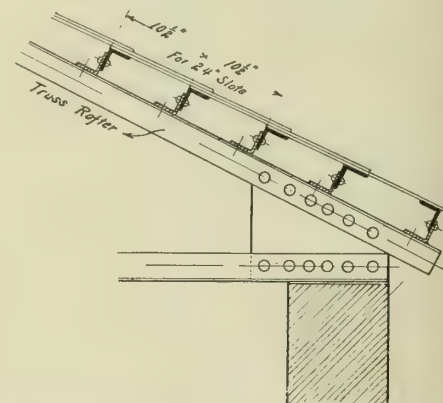


FIG. 2. GENERAL ARRANGEMENT OF ANGLE PURLIN FOR SLATE ROOF
In Fireproof Steel Construction

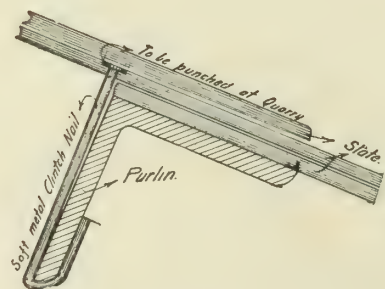


FIG. 3. DETAIL OF SLATES AND NAILING
In Fireproof Steel Construction

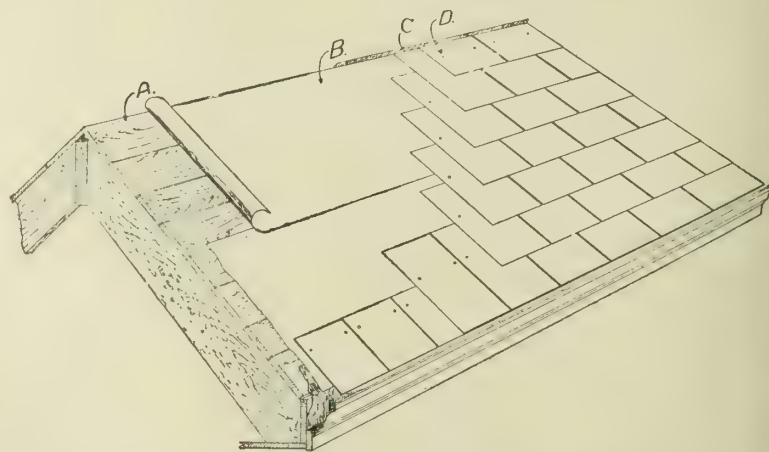


FIG. 4. SLATE LAID ON SHEATHING BOARDS
A, Sheathing. B, Felt Paper. C, "Genuine Bangor" Slate. D, Nails

Thus it will be seen that "Genuine Bangor" Slate is one of the densest and strongest stones, and that it excels all other stones in transverse strength, elasticity and non-absorption.

ADVANTAGES.

For the above reasons it is *unequaled as roofing material*.

It makes the most durable roof, lasting for centuries. It never needs paint or any other preservative; hence it is the most economical roof. It does not burn. It does not corrode. It does not absorb impurities (a decided advantage where rain-water is gathered in cisterns). The smooth surface of a slate roof does not retain snow or similar loads. Every piece of slate is a separate unit that need not fit into any seam or groove or lock of any adjoining piece. Thus a "Genuine Bangor" Slate roof possesses an unequalled elasticity. Its rich architectural appearance makes it valuable also from an ornamental point of view.

ADAPTABILITY.

"Genuine Bangor" Roofing Slate is suitable, in any climate, for any building with a pitched roof or a flat roof. It is used on public buildings, churches, residences, schoolhouses, railroad stations, factories and utility buildings of all kinds, such as steel and iron mills, foundries, round-houses, machine-shops, warehouses, grain elevators, barns, stables, sheds, etc.

CO-OPERATIVE SERVICE.

We are at all times pleased to give aid in the way of advice or information regarding "Genuine Bangor" Slate to architects, contractors and others, upon receipt of request at our main office. To further this co-operation we invite correspondence.

FACILITIES.

We are the producers of "Genuine Bangor" Roofing and Structural Slate. We ship our product to all points in the United States, Canada, and Mexico, as well as to the various ports of Great Britain, its colonies, and

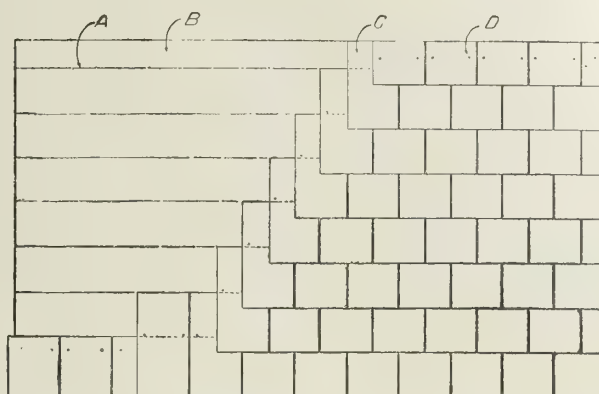


FIG. 5. USUAL METHOD OF MARKING HEAD LINES PREVIOUS TO LAYING SLATE

A, Chalk Line. B, Felt Paper. C, "Genuine Bangor" Slate. D, Nails

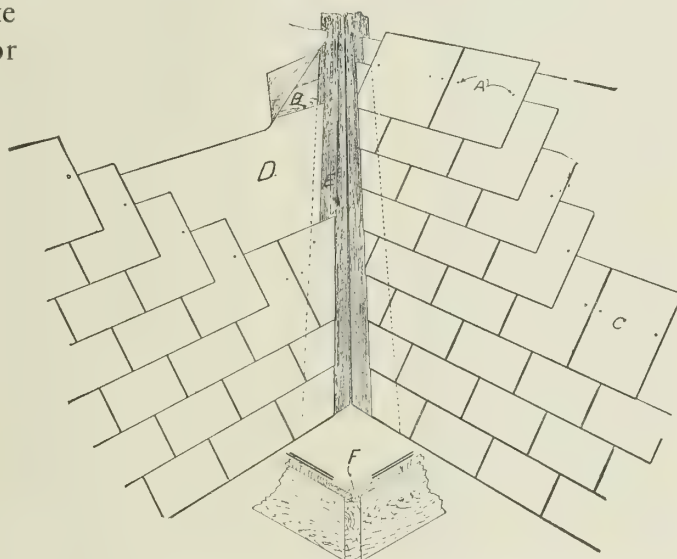


FIG. 6. DETAIL OF SLATING AT OPEN VALLEY

A, Nails. B, Sheathing. C, "Genuine Bangor" Slate. D, Felt Paper. E, Tin or Copper. F, Proper Shape of Metal

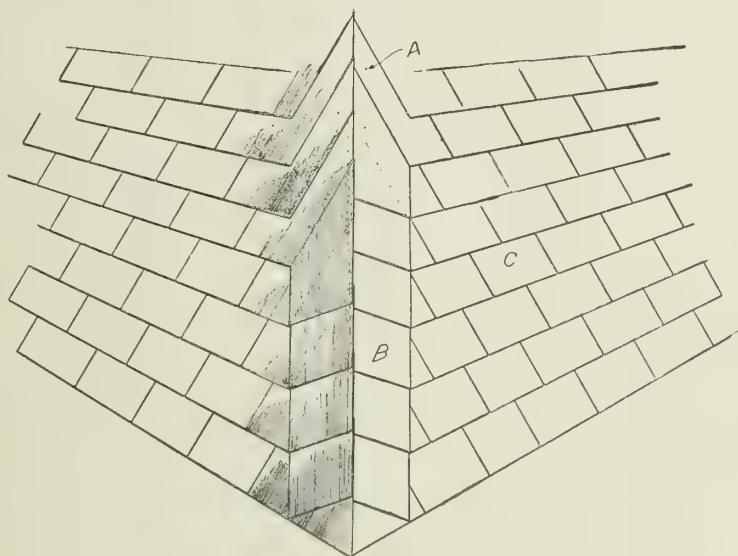


FIG. 7. DETAIL OF SLATING AT HIP

A, Nails. B, Boston Hip

Continental Europe. No contracts are too large, none too small for us. Large stocks and private railroad sidings in all our stock-yards facilitate prompt shipments.

SIZES AND WEIGHTS.

“Genuine Bangor” Roofing Slate is split to a thickness of about five to the inch, and is cut into sizes as per accompanying table. This table also shows how much should be exposed to the weather on the roof, allowing three inches to lap (the rule in lathing), the number of pieces in each square, and the quantity of nails required to lay. A “square” of slate, the standard of measurement, is a sufficient number of any size of slate to lay 100 square feet of roof, allowing for the standard 3” lap. A square of “Genuine Bangor” Roofing Slate when laid on the roof with standard 3” lap, will not exceed 650 lbs. in weight. A carload may be any quantity from 65 to 125 squares.

When specifying for roofs of casting-houses, mills, foundries, factories, machine-shops, warehouses, barns, stables, etc., we recommend what is known as wide sizes—14” and 12” wide, by 24”, 22”, 20”, 18”, and 16” long.

When specifying for public buildings, churches, schoolhouses and residences, we recommend the narrow width—10”, 9”, 8”, 7”, and 6” wide, by 20”, 18”, 16”, 14”, and 12” long.

PRICES.

Prices will be furnished for delivery to any railway point in the United States, Canada or Mexico, or to any port for export. “Genuine Bangor” Roofing Slate is sold either f. o. b. at quarry, or f. o. b. destination; if for export, f. o. b. vessel at tide-water, or cost, inclusive of insurance and freight, to any port.

WARRANTY.

Our Warranty is furnished with each shipment as a protection to architects and purchasers against substitution; guaranteeing the slate furnished to be our well-known “Genuine Bangor” Roofing Slate shipped by the GENUINE BANGOR SLATE CO., Inc., Easton, Pa., U. S. A.

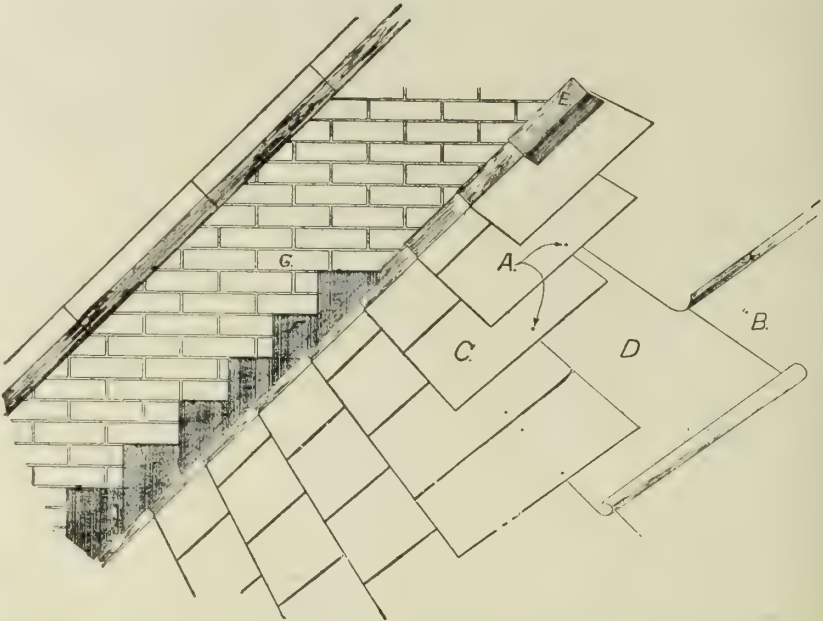


FIG. 8. SLATING AND FLASHING AGAINST FIRE OR PARTY WALL
A, Nails. B, Sheathing. C, Slate, “Genuine Bangor.” D, Felt Paper. E, Flashing. F, Counter Flashing. G, Brick Wall

TABLE OF SIZES				
Size of slate, inches	Number in each square	Exposed when laid and distance of lath	Nails to square, 3d Galvanized	
			Lbs.	Ozs.
24 x 14	98	10½	1	
24 x 12	115	10½	1	2
22 x 12	127	9½	1	4
22 x 11	138	9½	1	6
20 x 12	142	8½	1	6
20 x 10	170	8½	1	11
18 x 12	160	7½	1	9
18 x 10	192	7½	1	14
18 x 9	214	7½	2	1
16 x 12	185	6½	1	13
16 x 10	222	6½	2	3
16 x 9	247	6½	2	7
16 x 8	277	6½	2	12
14 x 10	262	5½	2	9
14 x 8	328	5½	3	3
14 x 7	374	5½	3	11
12 x 8	400	4½	3	15
12 x 7	457	4½	4	8
12 x 6	534	4½	5	4



FIG. 9. FACSIMILE OF WARRANTY

TRADE-MARK.

Upon request we also place on the slate our well-established trade-mark, as shown herewith. This stands for "The Roof that outlives the building without paint or repairs."

SPECIFICATIONS.

As a suggestion for specifications for laying our slate on pitched roofs we offer the following form written by one of the leading architects:

The slopes of the roofs shall be covered with No. 1 "Genuine Bangor" Slate, held in place by two (either galvanized or copper, usually 3d) slate nails to each slate. When slate is used direct on steel or iron purlins, use copper nails, which should be bent along the lower part of flange of angle or purlin. (See Fig. 3.)

Size of slate to be ———, (see table of sizes, also remarks on sizes best adapted for different buildings). Each alternate course above to overlap by 3" the alternate course below. Each row of slate to break joints with the adjoining row. Slate at the ridges, valleys, edges, etc., to be cut so that their bond will be uniform with the rest, and the slate on one side of ridge shall project and finish without cresting. The valleys shall finish close.

"GENUINE
BANGOR"
SLATE
LOGICALLY
COMPARED
WITH
OTHER
ROOFINGS.

United States Government specifications provide for a top layer of slate on a concrete roof $4\frac{1}{2}$ " thick. Metal roofings are protected with "mineral" paint. Composition or ready roofings are coated with a top layer of gravel, pebbles, flint, etc. This points logically to the desirability of a mineral throughout roofing, like "Genuine Bangor" Slate, that has no combustible or perishable ingredients, no layers to come apart, no pebbles to wash off or dry out.

SLATE
ROOFS AS
FIRE PRO-
TECTION.

Authentic fire statistics prove that by far the largest percentage of fires occurs on or threatens roofs (chimney fires, neighboring conflagrations, etc.). In some communities (where shingles or other inflammable roofings predominate) this proportion is as high as 75 per cent.

All other fire causes average only from one to two per cent each.

It is a significant fact that the fire records of municipalities where slate roofs predominate are the most favorable, as shown by the foregoing tables, compiled from official annual fire reports.

"Genuine Bangor" Slate is found on all classes of buildings from humble dwellings to pretentious structures, in every state of the Union, as illustrated by the following partial list:

United States Metal Refining Works, Chrome, N. J.
New York State Reformatory, Elmira and Napinock, N. Y.
West Virginia Pulp and Paper Works, Piedmont, W. Va.
United States Powder Depot, Piccatinney, N. J.
Ironton Court House, Ironton, Ohio
Earlham College, Richmond, Ind.
State Normal School, Kirksville, Mo.
L. & N. R. R. Station, Ocean Springs, Miss.
Big Four Depot, Warsaw, Ind.

L. E. & W. Depot, Tipton, Ind.
Winona Park Hotel, Warsaw, Ind.
Ward School, Wabash, Ind.
Fourteen buildings, Feeble-Minded Asylum, Lincoln, Ill.
Presbyterian Church, Rochester, Ind.
First Reformed Church, Grand Haven, Mich.
Catholic Church, Marion, Ind.
United States Government Buildings, Ft. Ben Harrison, Ind.
Holy Trinity Church, Niagara Falls, N. Y.



FIG. 10. TRADE-MARK
Reg. U. S. Pat. Office

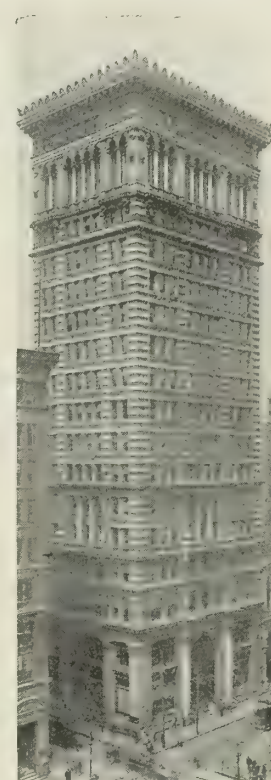


FIG. 11. ARROTT
BUILDING, PITTS-
BURG, PA.

Covered with Flat Slate
Roof

CITIES WHERE INFLAMMABLE ROOFS ARE KNOWN TO
PREDOMINATE

	Total Fires	Total Chimney and Roof Fires	Per Cent	Chimney Fires	Per Cent	Roof Fires from Chimney Sparks	Per Cent	Roof Fires from Other Sparks	Per Cent
Atlanta, Ga. . . .	579	238	41	72	12½	153	26.4	13	2.2
Chattanooga, Tenn. . . .	221	115	68	54	24	90	40.7	8	3.6
Jacksonville, Fla. . . .	283	126	44½	24	8	95	33.5	7	2.4
Knoxville, Tenn. . . .	195	56	29	14	7½	42	21.5	0	0
Wilmington, N. C. . . .	151	81	56	38	25	43	28.5	3	2

CITIES WHERE SLATE ROOFS ARE KNOWN TO
PREDOMINATE

	Total Fires	Total Chimney and Roof Fires	Per Cent	Chimney Fires	Per Cent	Roof Fires from Chimney Sparks	Per Cent	Roof Fires from Other Sparks	Per Cent
Allentown, Pa. . . .	71	11	15	9	12½	0	0	2	2.8
Akron, Ohio	174	33	17	15	8½	15	8.6	3	1.7
South Bend, Ind. . . .	72	54	75	40	54	7	9.7	7	9.7
Easton, Pa. . . .	68	5	7	5	7.3	0	0	0	0
Lima, Ohio	118	37	23	35	29.4	0	0	2	1.6

BUILDINGS
ROOFED
WITH
"GENUINE
BANGOR"
SLATE.

THE E. J. JOHNSON COMPANY

ESTABLISHED 1884

Roof Slates, Slate Blackboards, Structural Slate

38 Park Row

NEW YORK, N. Y.

 BRANCH OFFICE
 PITTSBURG, PA., 626 Park Building

 QUARRIES
 BANGOR, PA.
 NORTH POULTNEY, VT

PRODUCTS.

ROOF SLATES, SLATE BLACKBOARDS, STRUCTURAL SLATE, SLATERS' TOOLS, SNOW GUARDS.

ROOF SLATES.

We operate our own quarries, producing Black, Green, Purple and Red Roof Slates. "Out of the Ordinary" Roof Slates is our specialty. Consultation with architects for practical and "Out of the Ordinary" results is particularly invited.

STRUCTURAL SLATE.

We make Structural Slate for all purposes, including Treads, Platforms, Urinals, Bases, Lintels, Hearths, Grave Vaults, etc.

OLD EUROPEAN STYLE OF SLATE ROOFING.

This method was followed in European countries centuries ago, and is being introduced into this country through the suggestions of prominent architects. This method consists in using Roof Slates of random sizes and thicknesses, the largest size generally being 30" x 30" x 1" and the smallest 12" x 6" x $\frac{3}{16}$ ". The widths being random perpendicular joints are not in alignment but irregular as with wood shingles, breaking up the "set" appearance of the regular method; also, exposures are "graduated," the first courses generally showing 13½" to the weather, while succeeding courses up the roof keep gradually shortening until the top courses show 4½" to the weather.

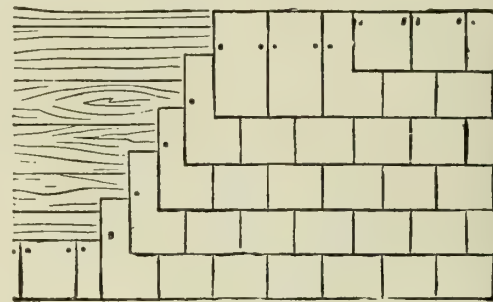


FIG. 1. ORDINARY METHOD OF LAYING SLATE

SPECIFICATIONS FOR ABOVE METHOD, WITH THE E. J. JOHNSON COMPANY'S SLATE.

Cover all sloping roofs with one thickness of heavy tarred roofing felt to be approved by architect, over which lay THE E. J. JOHNSON COMPANY'S Unfading Green Roofing Slate (or other color as may be desired) with nail-holes drilled and countersunk and in random widths and graduated lengths as follows:

Under eave course 17½" long by ½" thick; eave course 30" long by ½" thick, 13½" to weather; the next course 30" long by 1" thick, 13½" to weather; the next two courses 28" long by ¾" thick, 12½" to weather; the next three courses 26" long by ¾" thick, 11½" to weather; the next three courses 24" long by ¾" thick, 10½" to weather; the next three courses 22" long by ¾" thick, 9½" to weather; the next three courses 20" long by ¾" thick, 8½" to weather; the next three courses 18" long by ¾" thick, 7½" to weather; the next four courses 16" long by ¾" thick, 6½" to weather; the next four courses 14" long by ¾" thick, 5½" to weather; the next five courses, 12" long by ¾" thick, 4½" to weather. All slate to be fastened with galvanized wire nails of suitable lengths for the various thicknesses.

NOTE.—The above is for a roof with a 22-foot rafter. The arrangement may be varied to suit any length rafter; the thickness increased or decreased, or the cost reduced by using thinner slates, as the random and graduated effect would be obtained even though full ¾" slates were used entirely. A uniform length of slate throughout the roof with random widths is another scheme specially adapted to ¾" thickness. The color effect may also be varied by specifying for a solid color THE E. J. JOHNSON COMPANY'S Royal Purple, or for a variegated roof effect either THE E. J. JOHNSON COMPANY'S Unfading Mottled Purple and Green or a mixture throughout the roof of one third each Unfading Green, Royal Purple, and Unfading Mottled Purple and Green. This combination of colors is highly effective and distinctively "Out of the Ordinary." For a solid blue-black effect we supply the same thicknesses in our "Grand Central Bangor." We are prepared to offer other suggestions in color effects, and invite inquiries from architects.

Leading architects have pronounced our Unfading Green, Royal Purple, and Unfading Mottled Purple and Green as being particularly suited to this method, the colors supplying a soft tone and effective color scheme of a highly artistic character; and they specify them either in solid colors or mixed throughout the roof, the latter being specially effective in assisting to break up the regular or "set" effect of the ordinary slate roof.

PRICES AND WEIGHTS.

Prices and weights of special thicknesses of Unfading Green, Royal Purple, and Unfading Mottled Purple and Green f. o. b. quarry, including nail-holes:

3/16" thick per square	\$ 7.25	weight 750 lbs.	¾" thick per square	\$30.00	weight 3,000 lbs.
¼" thick per square	10.00	weight 1,000 lbs.	1" thick per square	40.00	weight 4,000 lbs.
⅜" thick per square	16.00	weight 1,500 lbs.	1½" thick per square	50.00	weight 5,000 lbs.
½" thick per square	20.00	weight 2,000 lbs.	1¾" thick per square	60.00	weight 6,000 lbs.

THE E. J. JOHNSON COMPANY'S SLATE BLACKBOARDS.

These we produce at our Grand Central Quarry located on the celebrated Bangor vein of slate. This slate rock is of a particularly tough, elastic nature and very close grained, the surface thereby being susceptible to a very smooth finish which is permanent; and in this particular we claim the highest standard, sparing no expense in our finishing cost to

obtain this result, and making no attempt to meet the prices of cheaply surfaced Blackboards. No slate rock in the country equals the rock of our Grand Central Quarry for Blackboard purposes. Our method of surfacing the slate is by hand-shaving; and our special method of perfect jointing enables a section of any length to be erected in the classroom where joints will not interfere with marking. Blackboards when crated and shipped are carefully marked with room and section number. (See our Blackboard pamphlet for full instructions covering the proper setting of Blackboards in the classroom.)

SPECIFICATIONS FOR ERECTING ABOVE.

In frames erected by carpenter (see Fig. 2) set THE E. J. JOHNSON COMPANY'S Grand Central Quarry Slate Blackboards high, and to be solidly backed wherever necessary with well-seasoned pine blocks thoroughly glued. All joints to be filled with good glue before bringing together. When glue at joints has thoroughly dried, scrape the surfaces of blackboards at joints to an even face, after which rub such scraped surface with a proper stone or shave with a knife to restore the perfect face of the slate.

Sections up to 5' 6" shall be in one piece; sections over 5' 6" and up to 11' in two pieces; sections over 11' and up to 15' in three pieces; sections over 15' and up to 20' in four pieces, and sections over twenty feet in pieces not less than four feet long and approximately even lengths.

NOTE.—Architects should insist upon every slate in the section being firmly backed so that when completed no slate may yield to pressure; that joints fit tight, and that surfaces of slates at joints be perfectly flush so that chalk marks may be readily made across the joint. All these desirable results are obtainable with THE E. J. JOHNSON COMPANY'S Grand Central Quarry Slate Blackboards.

REGULAR SIZES OF BLACKBOARDS.

Slate Blackboards are regularly made up 3' 0", 3' 6" and 4' 0" high, and often on special order 4' 6" and 5' 0". Any other height up to 5' 0" can be made on order. Thickness from $\frac{1}{4}$ " to $\frac{3}{8}$ ". Weight five pounds per square foot.

Double-faced Slate Blackboards are made for door panels.

SNOW GUARDS.

For a Wire Snow Guard to be scattered throughout the roof specify THE E. J. JOHNSON COMPANY'S "Style A" Wire Snow Guard either galvanized or copper. For very steep roofs use 125 to the square, while for a very flat pitch, 75 is sufficient.

Our Rail Guard (Fig. 3) is composed of our patent Standard in connection with $\frac{3}{4}$ " galvanized gas pipe (1" outside measure). These Standards are made of malleable and wrought-iron galvanized with a plate of same size and thickness as the slate used on the roof, and may be fastened to the roof with wood screws. Standards to be placed five feet apart along all eaves. They are made adjustable to fit any pitch of roof and for two, three, or four pipes.

CO-OPERATIVE SERVICE.

Requests from architects or others for practical information in our line will receive careful consideration. With trade connections throughout the country we are in a position to recommend practical contracting concerns in our line anywhere.

DELIVERED PRICES.

We will guarantee cost of transportation on our goods to any point upon application.

REFERENCES.

Among the buildings where our "Out of the Ordinary" Roof Slates have been used are:

BUILDING	ARCHITECT	BUILDING	ARCHITECT
Singer Building, New York, N. Y.	Ernest Flagg	Officers' Quarters No. 13, West Point, N. Y.	Cram, Goodhue & Ferguson
Residence of E. H. Harriman, Arden, N. Y.	Carrère & Hastings	Gymnasium Building, West Point, N. Y.	Cram, Goodhue & Ferguson
Hotel Astor, New York, N. Y.	Clinton & Russell	Physical Laboratory, Princeton University, Princeton, N. J.	H. J. Hardenbergh
College of City of New York, New York, N. Y.	George B. Post	St. Mary's Church, New York, N. Y.	Carrère & Hastings
Richmond Borough Town Hall, Stapleton, S. I., N. Y.	Carrère & Hastings	W. G. Ladd, Stable and Garage, Far Hills, N. J.	Guy Lowell
Old Colony Club, New York, N. Y.	McKim, Mead & White	Montclair Grammar School, Montclair, N. J.	Van Vleck & Goldsmith
Residence of John D. Rockefeller, Pocantico Hills, N. Y.	Delano & Aldrich	Dr. Barnsby's Residence, Scarborough, N. Y.	Hunt & Hunt
Christ Church, Bay Ridge, N. Y.	Cram, Goodhue & Ferguson	Union Dime Savings Bank, New York, N. Y.	Alfred H. Taylor
Sage Memorial Church, Far Rockaway, N. Y.	Cram, Goodhue & Ferguson	Christ Church, Greenwich, Conn.	Wm. F. Dominick
Officers' Quarters, No. 10, West Point, N. Y.	Cram, Goodhue & Ferguson	Holy Trinity Church, Westfield, Mass.	John Wm. Donohue
Officers' Quarters No. 11, West Point, N. Y.	Cram, Goodhue & Ferguson	Lenox High School, Lenox, Mass.	John Wm. Donohue
Officers' Quarters No. 12, West Point, N. Y.	Cram, Goodhue & Ferguson	Convent, Westfield, Mass.	John Wm. Donohue
		Holy Name Church, Springfield, Mass.	John Wm. Donohue
		Holy Family Church, Springfield, Mass.	John Wm. Donohue

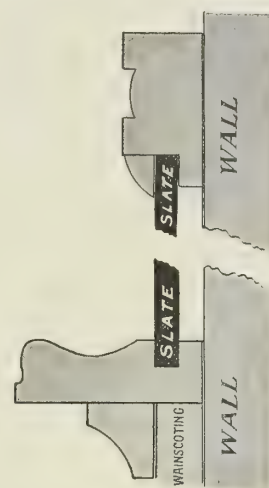


FIG. 2. METHOD FOR CONSTRUCTING SLATE BLACKBOARD FRAMES

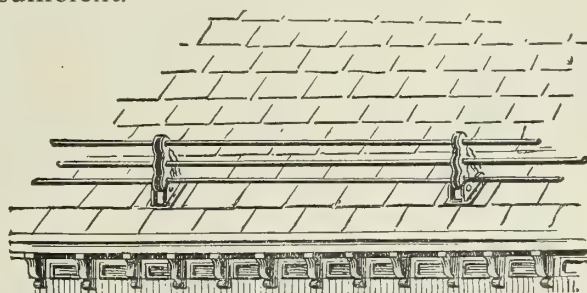


FIG. 3. RAIL SNOW GUARD

ROBERT L. JONES SLATE MFG. CO.

MAIN OFFICE AND QUARRIES

DELTA, PA.

ESTABLISHED IN 1878 BY ROBERT L. JONES

INCORPORATED IN 1907

PRODUCT. PEACH BOTTOM ROOFING SLATE.

SUPERIORITY. Rigid tests by the United States Government, as well as actual experience on numerous roofs all over America, have proven that for strength, toughness, uniformity and stability of color, and resistance to gases or climatic changes, the product of our quarry has no superior.

EQUIPMENT. The continued increasing demand for Peach Bottom Slate from this quarry has led us to install the most modern and improved methods for quickly converting the rock into the completed product, ready for the roof. Electricity has been called into service as a motive power, and our hoists, saw tables, and dressing machines are operated by this modern force. This, together with a corps of workmen who have been trained by long service in our employ, guarantees prompt shipments and accurate workmanship.

OPERATED MORE THAN A CENTURY. Our quarry has been in operation since 1805, and rock is now secured from a depth of 220 feet, thus showing that the experimental stage with us is long past. Orders placed with us are filled with the very first grade of the acknowledged best roofing slate in America.

REFERENCES. A list of a few of the buildings covered with our slate follows. To any of these we invite inspection:

United States Government Buildings, West Point, N. Y.
United States Government Buildings, Navy Yard, Brooklyn, N. Y.
United States Government Buildings, Navy Yard, Washington, D. C.
United States Government Buildings, Naval Academy, Annapolis, Md.
National Soldiers' Home, Danville, Ill.
Western Penitentiary, Pittsburg, Pa.
Carnegie Library, Allegheny, Pa.
Johns Hopkins University Buildings, Baltimore, Md.
Pennsylvania Railroad, Broad Street Station, Philadelphia, Pa.
Pennsylvania Railroad Union Station, Baltimore, Md.
Cambria Steel Co. Buildings, Johnstown, Pa.
Westinghouse Shops and Buildings, Wilmerding, Pa.
George Vanderbilt, Residence, Asheville, N. C.
William B. Astor, Residence, New York, N. Y.
Hon. Stephen B. Elkins, Residence, Elkins, W. Va.

SPECIFICATION.

For the past seventy-five years Peach Bottom Slate has been the Standard of selection in the specifications of the United States Government, as well as that of leading architects and engineers, because of its permanency of color and wearing qualities. For this length of time slate from our quarry has been used to comply with these specifications:

"Cover all roofs, dormers, and sides of same, and all porch-roofs, with best quality Genuine Peach Bottom Slate, quarried by ROBERT L. JONES SLATE MFG. CO., at Delta, Pa. All slates to be properly punched, and laid with not less than three-inch lap, secured with flat-headed, galvanized-wire (or copper) nails, two in each piece. Eaves and ridges to be doubled, and the slates at hip and valleys to be laid in first quality slater's cement for a distance of 18 inches.

Work to be done in a thorough and workmanlike manner, and subject to approval of (architect or owner). "

INQUIRIES.

All communications should be addressed to the Main Office at Delta, Pa.

THE PEACH BOTTOM SLATE COMPANY OF HARFORD COUNTY

A CORPORATION

DELTA, PA.

OFFICE AND QUARRIES
HARFORD COUNTY, MD.

POST OFFICE
DELTA, YORK COUNTY, PA.

PRODUCT. We manufacture, quarry and sell "PEACH BOTTOM" ROOFING SLATE exclusively.

DESCRIPTION. The "Peach Bottom" Slate region extends from the southwestern corner of Lancaster County, Pennsylvania, across the southeastern corner of York County, Pennsylvania, into Harford County, Maryland. No quarries are operated in Lancaster County, and the whole product now put on the market is from Harford County and the portion of York County immediately adjacent thereto, consequently "Peach Bottom" Slate can be secured only from one of the quarries operating in the immediate vicinity of Delta, Pa.

The whole length of the vein is only about eight miles and its width is from one fourth to half a mile, the Maryland end being the broader and occupied by the larger quarries.

The slate belongs to the Cambrian deposits, which are older and lower than the Silurian rocks to which all other Pennsylvania slates belong.

SUPERIORITY. Careful investigation by scientists has shown and use has demonstrated that the slates of the Cambrian formation are far superior in strength and weathering qualities to those of the Silurian age.

The subject has been carefully studied by Professor Mansfield Merriman, of the American Society of Engineers; Mr. Geo. P. Merrill, Curator of the Department of Geology, Smithsonian Institute, and by the United States Geological Survey, and the conclusion reached is that "Peach Bottom" Slate is the most valuable of all known slates for roofing purposes.

This conclusion is confirmed by the fact that we can show to-day pieces of our slate that for more than a century have been on the roofs of buildings; and the sun and rain, the frost and snow of a hundred years has left them unchanged in color and texture; so that by sight, touch and test they can not be distinguished from slate quarried within a year.

QUALITY. The slate, when manufactured, is stacked in the open, exposed to all storms and changes of temperature until sold, because we know that climatic conditions and changes of temperature cannot injure it; while the Silurian slates are all kept housed to prevent the change of color and the deterioration which with them follows exposure to the elements.

The investigation of Professor Merriman shows also that the capacity of the "Peach Bottom" Slate to resist shock or blow is four times that of any of the Silurian Slates.

SALIENT POINTS. "Peach Bottom" Roofing Slate is the most economical and satisfactory roofing material for dwellings, churches, schools, factories, warehouses, railroad stations, barns, and all other buildings, for the following reasons:—

- (1) It never wears out.
- (2) It does not crack or split, and is not easily broken by chance blows.
- (3) It does not corrode or change color when exposed to the weather or to the action of acids or fumes from chimneys.

(4) It can not burn, and it protects the building in case of foul chimneys or neighboring fires.

(5) It is easily and cheaply put on a roof.

(6) It needs no painting or preservatives of any kind, and when once properly put on a roof it remains until the building is destroyed.

(7) It enhances the beauty of any building upon which it is used.

UTILITY.

"Peach Bottom" Roofing Slate can be used with safety, economy, and satisfaction upon any building in any climate, whether the roof is pitched or flat; can be cut into any shape or any size to suit the requirements of the situation, and is readily and cheaply applied by any skilled mechanic.

SIZES AND WEIGHT.

"Peach Bottom" Roofing Slate is split into a thickness of about one fifth of an inch. The stock sizes are given in the annexed table, which also shows the number of pieces of each size needed to cover one square (10' x 10') of roof, allowing the standard lap of three inches.

Sizes	No. of Slates	Sizes	No. of Slates	Sizes	No. of Slates
24 x 14	98	24 x 13	106	24 x 12	115
22 x 13	117	22 x 12	127	22 x 11	138
20 x 12	142	20 x 11	155	20 x 10	170
18 x 11	175	18 x 10	192	18 x 9	214
16 x 10	222	16 x 9	247	16 x 8	277
14 x 9	291	14 x 8	328	14 x 7	374
12 x 8	400	12 x 7	458		

A square of "Peach Bottom" Slate will average on the roof 650 pounds in weight.

PRICES.

Prices range from \$4.00 to \$6.35 per square, f. o. b. Delta, for the stock sizes, the larger slates being the higher priced; and upon application, prices will be quoted for any special size, shape, and thickness, for slates drilled and countersunk, and for slates f. o. b. at any point where they may be needed.

CO-OPERATIVE SERVICE.

Correspondence is solicited in order that we may give any information or advice in regard to our slate to architects, contractors, or others interested. We are prepared to fill satisfactorily any contracts, large or small, given to us, and feel sure that the service rendered and the material furnished will prove satisfactory.

Examine and test our slate before selecting your roofing material.

CERTIFICATE OF GUARANTEE.

Upon request, we furnish with each shipment a certificate showing that the slate shipped is the product of our quarries. This guarantees to the purchaser that he is getting "Peach Bottom" Roofing Slate, and not an inferior Silurian Slate.

REFERENCES.

The United States Government uses our slates largely for public buildings all over the country. The various state, city, and county authorities put them on court houses, colleges, schools, jails, asylums, etc.; both the Pennsylvania and Baltimore & Ohio railroads cover their shops, railroad stations, and freight houses with them; they are also on thousands of private dwellings, both small and large, the owners realizing that a roof of "Peach Bottom" Slate makes the best appearance and is in the end the most economical.

UNITED PEACH BOTTOM SLATE COMPANY

DELTA, YORK COUNTY, PA.

BELL TELEPHONE

POSTAL TELEGRAPH

1734 — 1910

PRODUCT. "CERTIFICATE" PEACH BOTTOM ROOFING SLATE.

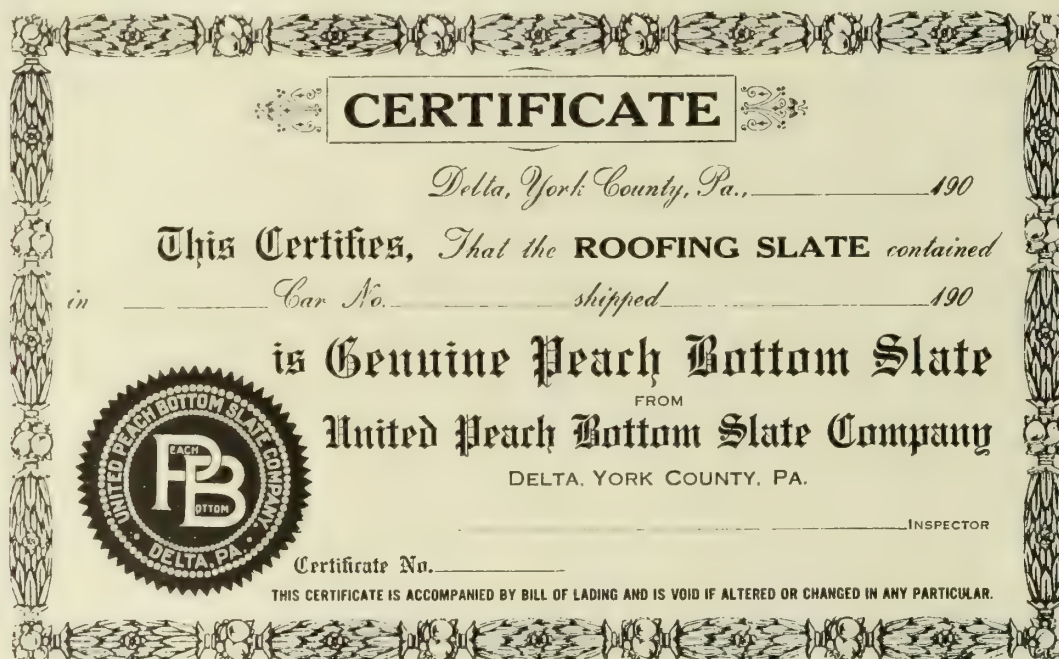
FACILITIES. The production of eight active quarries enables this company to insure immediate shipment of all demands for this product.

STANDARD. This Slate is the recognized Standard. Its superiority is very clearly emphasized in the reports of the United States Geological Survey, Bulletin No. 275.

GOVERNMENT TESTS.	Carbonate	Lime	Strength, pounds per square inch	Toughness	"Very sonorous. Impact tests show from 8.49 to 24.17 foot-pounds of work per pound of slate."
	None	0.155—		0.93	
		0.48	11,260		

See Bulletin No. 275, United States Geological Survey, exhaustive reports on all slates; and see SWEET'S 1908-1909, pages 424-425, for detailed report on tests of various slates.

CERTIFICATE. The simplest and most effective prevention of substitution of slates inferior to the kind specified is to require a



CERTIFICATE OF UNITED PEACH BOTTOM SLATE COMPANY

Please require Certificate when specifying Peach Bottom Slate.

SPECIFICATIONS.

"Cover all roofs (dormers and sides of same) and all porch roofs, with first-quality (No. 1) 'Certificate' Peach Bottom Slate, quarried at Delta, Pa. The slates are to be of sizes " x " or " x ", to be properly punched and laid with three-inch lap of third course over first, secured with flat-headed, galvanized-wire (or copper) nails, two in each piece. Eaves and ridges to be doubled, and all slates 18 inches on each side of valleys to be bedded in slater's cement. The slates are to be shipped direct from the UNITED PEACH BOTTOM SLATE COMPANY at Delta, Pa., to the contractor or slater, so that each bill of lading may be accompanied by a certificate from this company, which is to be surrendered to (Architect or Owner) before the slates are accepted. All work to be done in a workmanlike manner, and subject to approval of (Architect or Owner)."

NATIONAL SKYLIGHT AND VENTILATOR CO.

MANUFACTURERS OF

The "National" System of Steel Puttyless Skylights

ROCHESTER, N. Y.

PRODUCTS.

SKYLIGHTS, VENTILATORS, METAL SASH, FIREPROOF DOORS and WINDOWS, and SASH-OPERATING APPARATUS. (Patents allowed and pending.)

SPECIAL FEATURES OF THE "NATIONAL" SYSTEM.

Rolled-Steel Supporting Bars, combining maximum strength with minimum weight.
Expansion Clips, allowing the steel supporting bars to expand and contract and to move freely when affected by expansion or vibration, thus obviating the breakage of glass.

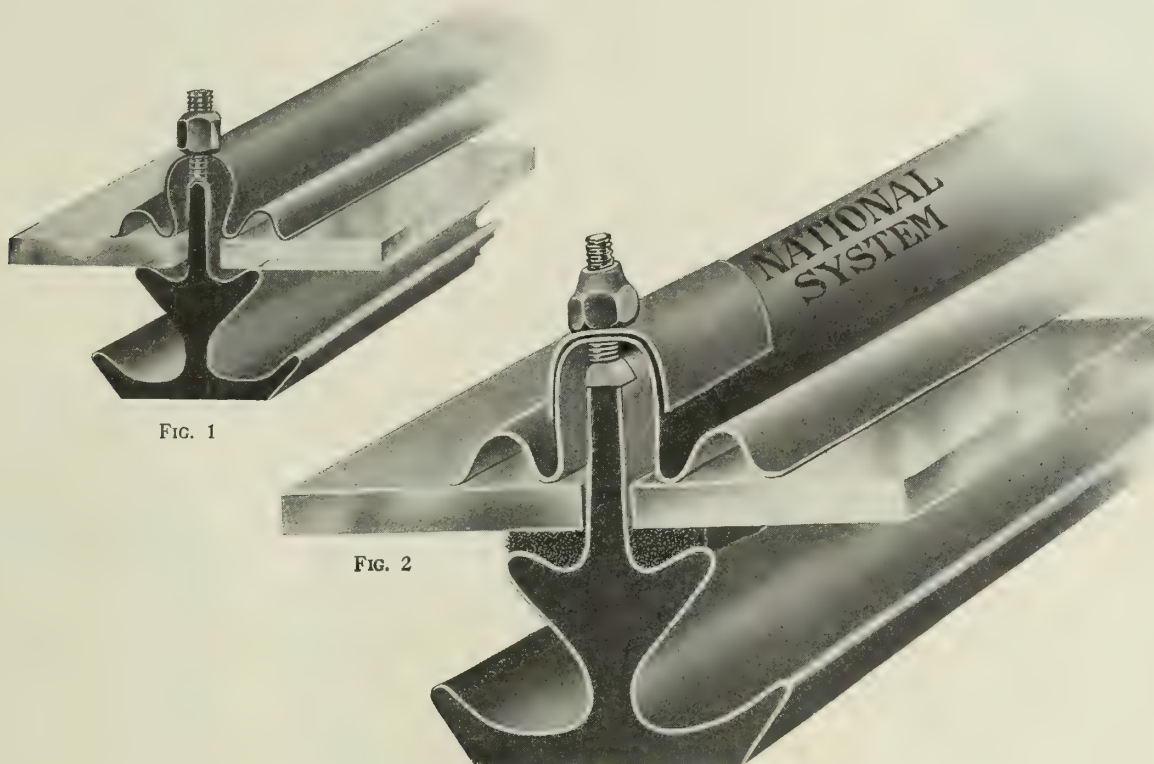


FIG. 1

FIG. 2

SECTION OF "NATIONAL" SKYLIGHT (TWO TYPES)

The supporting bar shown is supplied in any weight required by the span

Cross Condensation Gutters, furnishing a dust-proof spring joint between each lap of glass, as well as providing permanently flexible and yielding bearings for the glass and delivering the water of condensation into the supporting bars.

Setting of the Glass, so that each light is independent of every other, and left wholly free to move whenever affected by either expansion, contraction, or vibration.

Spring Surface-Bearing Caps, providing a broad surface bearing upon the glass in a resilient or spring-like manner, and forming a waterproof contact.

Puttyless Glazing, being wholly free from the use of putty, roof cement, or any other filling substance which would bind the glass, causing breakage, and which must of necessity crack and disintegrate in time, causing leakage and expensive repairs.

ADAPTABILITY.

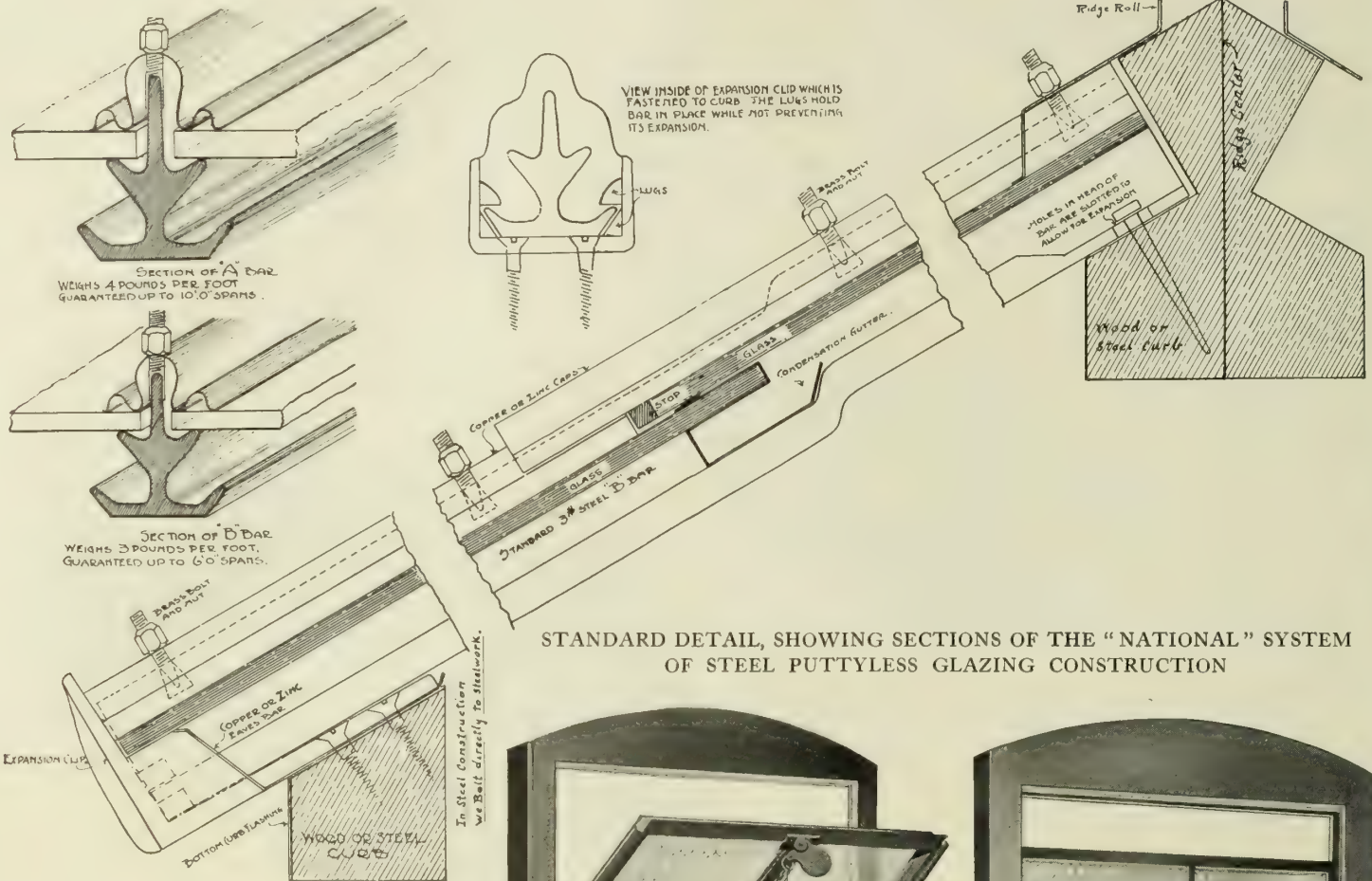
The special features of the "National" System of Steel Puttyless Skylights adapt them to be used with perfect results in factories, machine-shops, foundries, warehouses, railway terminals, libraries, dormitories, halls, museums, theaters, etc., and buildings of every kind.

COST OF
CONSTRUC-
TION.

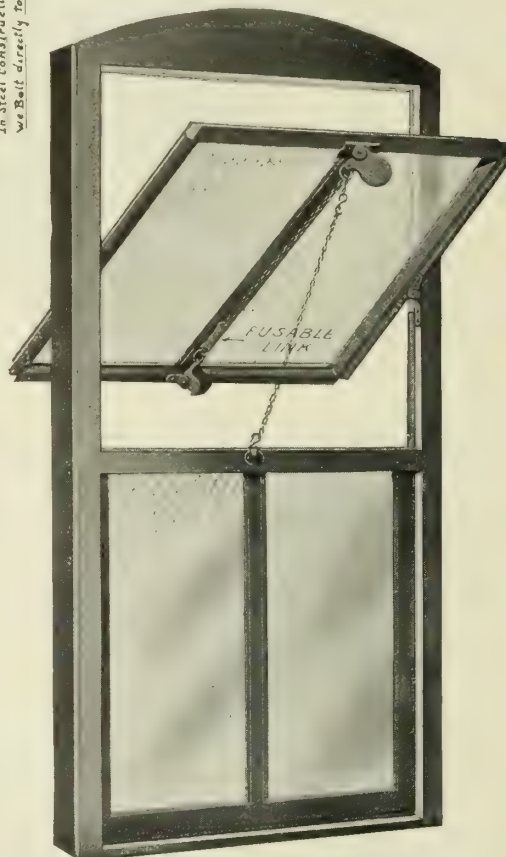
The cost of construction of the "National" System of Steel Puttyless Glazing is moderate, therefore it can be used wherever a permanent water-tight skylight or other steel and glass construction is required.

CO-OPERATIVE
SERVICE.

Estimates and sketches are at all times submitted, upon request.

FIREPROOF
WINDOWS.

Our Fireproof Windows and Doors meet all the requirements of the National Fire Underwriters' Association, and are made in all styles as specified. The Windows are all automatic in their action, closing in case of fire by the melting of a fusible link.

STANDARD AUTOMATIC PIVOTED
WINDOWSTANDARD DOUBLE-HUNG
WINDOW

AUTOMATIC
VENTILA-
TORS.

The "National" Automatic Ventilators are built in types for all purposes where ventilators are used, in the following styles: Stationary and revolving roof ventilators, window ventilators, etc. They are automatic in their action and can be opened and closed at will, either in part or in their entirety.



"NATIONAL" REVOLVING
VENTILATOR

With a guaranteed capacity three times as great as that of any stationary ventilator of equal size, with but a moderate additional cost. Made in sizes of 6 inches to 6 feet



"NATIONAL" STATIONARY
VENTILATOR

With either stationary or closing top. Closes automatically in case of fire by reason of the melting of a fusible link. Made in sizes 6 inches to 6 feet

P. DEISSLER & BRO.

MANUFACTURERS OF

The "Deissler" Improved Pivoted Ventilators

249 South Sixth Street

PHILADELPHIA, PA.

ESTABLISHED 1884

PRODUCTS.

"DEISSLER" IMPROVED PIVOTED VENTILATORS; also, WROUGHT-IRON SASH SIDE-HINGED CASEMENT VENTS, SKYLIGHTS, DOMES, and all other kinds of WROUGHT-IRON WORK used in the Leaded Glass Trade.

"DEISSLER" IMPROVED PIVOTED VENTILATORS.

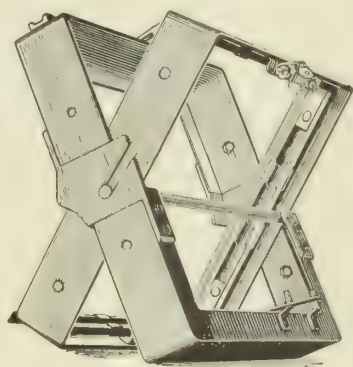
A long experience and personal knowledge of the faults of the old-style ventilators impressed us with the desirability of improvements, and we have succeeded in making and placing on the market a Pivoted Ventilator (see illustrations), simple and substantial in construction, and much easier to handle, install, or take out, admitting of easily repairing or altering windows before or after they are in place.

Our Ventilators can be used for leaded, wire, plate, or prism glass.

"Deissler" Ventilators are always reliable and are superior to all others.

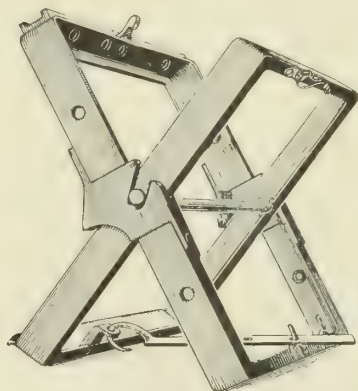
PRICES AND CATALOGUES.

Price-list will be furnished upon application. For full description of all our work send for catalogue.



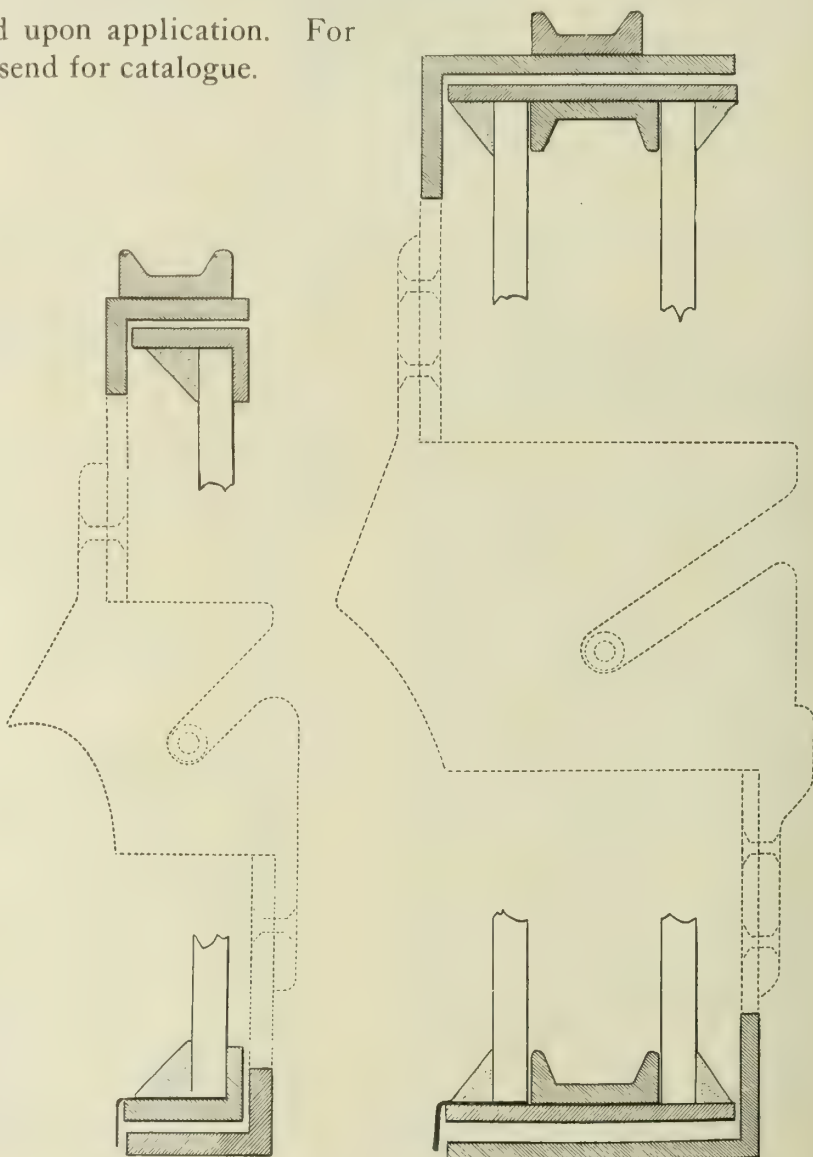
DOUBLE VENTILATOR FOR
STORM GLASS OUTSIDE
AND LEADED GLASS INSIDE

Patented Sept. 22, 1891, and
April 23, 1901



DOUBLE VENTILATOR FOR
SINGLE GLASS

Patented Sept. 22, 1891, and
April 23, 1901



End View, $\frac{3}{4}$ Size

End View, $\frac{3}{4}$ Size

"DEISSLER" IMPROVED PIVOTED VENTILATOR

REFERENCES.

The leading architects call for the "Deissler" Improved Ventilators in their specifications in order to be sure of getting the best. Leading glass stainers use them at home and abroad.

CASEMENTS.

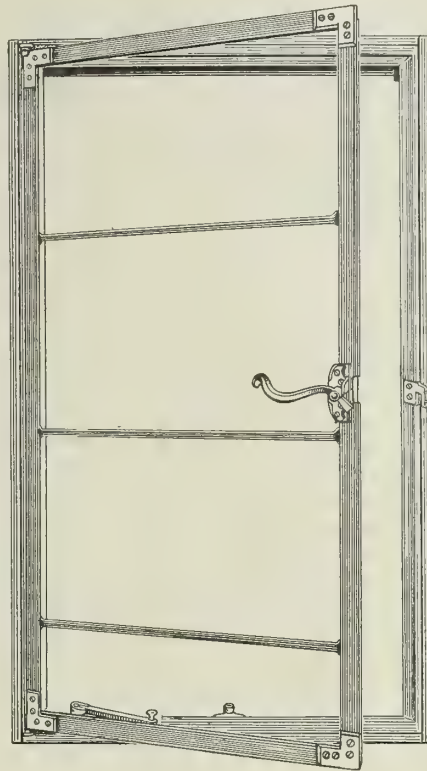
No. 24, Side-hung Casement, to open in, for single glass.

These Casement Frames are guaranteed weather-proof and work finely. The hardware on them is of solid brass.

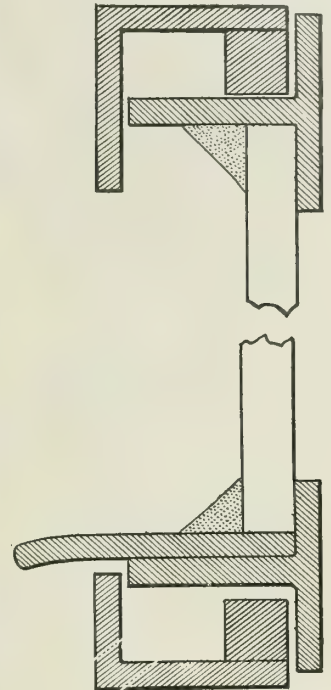
We would suggest that all iron work be first galvanized and then painted after having been put in place. They can be hinged to open right or left.

No. 25. Side-hung Casement, to open in, for storm glass outside and leaded glass inside.

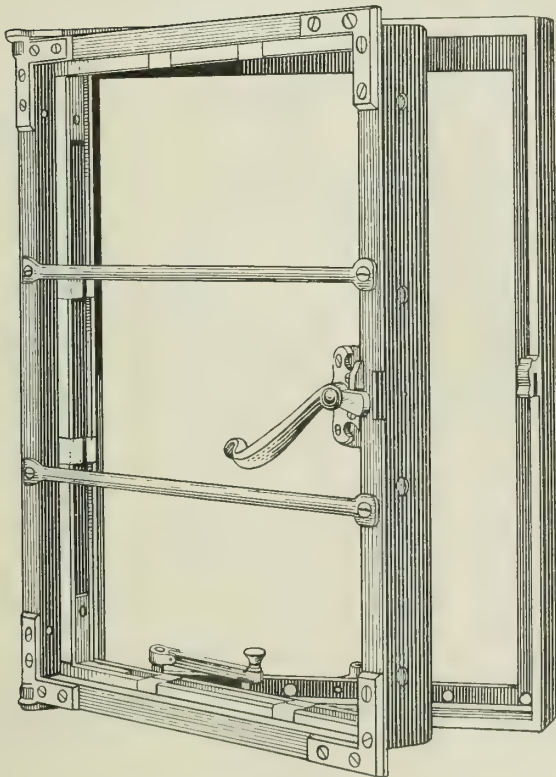
Send for price and our special "Casement" sheet.



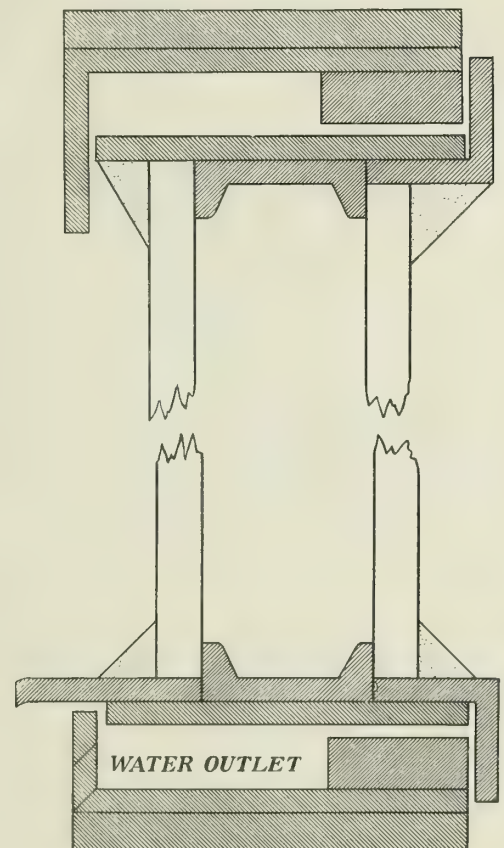
NO. 24. SIDE-HUNG CASEMENT



NO. 24. FULL-SIZED SECTION



NO. 25. SIDE-HUNG CASEMENT



NO. 25. FULL-SIZED SECTION

THE G. DROUVE COMPANY

MANUFACTURERS OF

"Anti-Pluvius" Puttyless Skylight and Lovell Window Operating Device

BRIDGEPORT, CONN.

TELEPHONE CONNECTION
WESTERN UNION CODEWESTERN OFFICE
CHICAGO, ILL., 40 Dearborn Street

PRODUCTS.

"ANTI-PLUVIUS" STEEL FIREPROOF PUTTYLESS SKYLIGHT and "LOVELL" WINDOW OPERATOR.

"ANTI-PLUVIUS" PUTTYLESS SKYLIGHT.

The "Anti-Pluvius" Skylight (patented January 2, 1906) can be erected by any one, anywhere. Details are shown. It is perfectly impervious against rain and dust, even in severest storms, without the use of putty or cement. The glass rests between cow-hair felt, providing a cushion resting surface with firm, elastic pressure to hold it in place and allow for expansion and movement of any kind. Each glass rests independently of every other, and never comes in contact with metal or rigid surface. A bridge (inverted steel U-bar) for use in cleaning and repairing skylight is an important and valuable feature of the "Anti-Pluvius" construction. The weight of a man is carried direct by the main bar without contact or pressure on the glass. The glass is raised above the bar and the non-contact of glass with the metal prevents sweating or condensation on the supporting bar. The lapping arrangement does away with cross-gutters and is especially interesting. The Skylight is constructed on the unit system. It is permanent, water-tight, fireproof, and repairs are reduced to a minimum. Flat, saw-tooth, double-pitch and hipped skylights for all classes of buildings.

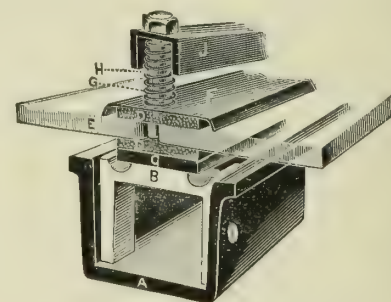


FIG. 1. DETAIL OF "ANTI-PLUVIUS" SKYLIGHT

- A, Steel supporting bar
- B, Stirrup
- C, Flatiron
- D-D, Felt
- E, Glass
- F, Sheet metal cap
- G, Coil phosphor bronze spring
- H, Brass stud
- J, Bridge (for walking on skylight)

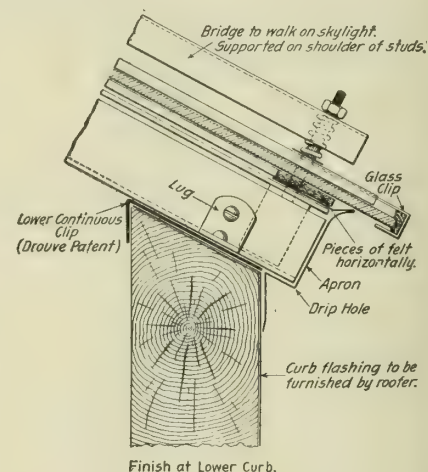
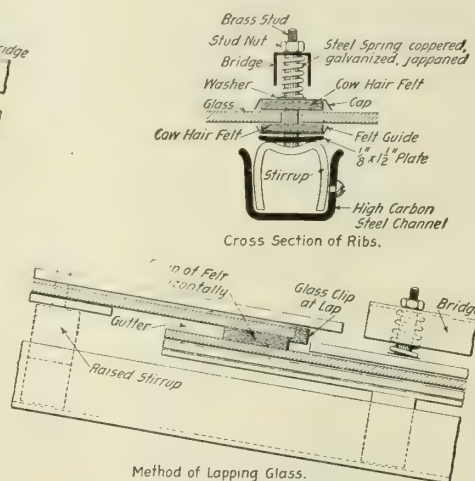
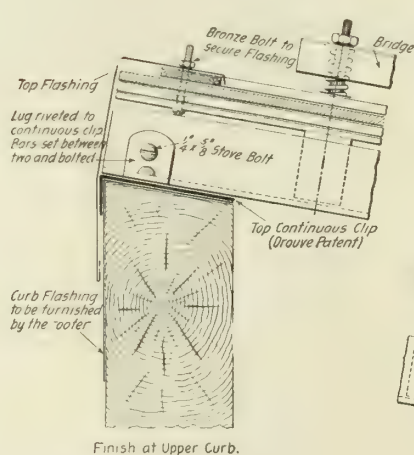


FIG. 2. DETAILS OF "ANTI-PLUVIUS" SKYLIGHT

INSTALLATIONS.

Some of our installations have run over 100,000 square feet. We specialize in this work and our experience is at your service.

A list of installations nearest to you will be sent on request. Over 3,000,000 square feet of "Anti-Pluvius" Puttyless Skylights are in use in the United States, Mexico, Panama, Germany, and Belgium.

ESTIMATES.

Estimates and all desired information will be cheerfully furnished.

**"LOVELL"
WINDOW
OPERATING
DEVICE.**

The "Lovell" Window Operator (Figs. 3 and 4) consists of two sliding rods operating in opposite directions, instead of the twist used in worm and gear. These rods are supported by steel extension brackets (Figs. 4 and 6) fastened to the mullions and have anti-friction rollers which act as guides for the rods. The power is supplied by pulling chain suspended over the large wheel. The operation is easy. The rack and pinion used provides a rolling motion. Two arms are attached to each window. Brass universal joints with steel rivets prevent arms binding or rusting. Two-section couplings connect arms to the main operating rods (Fig. 5). Wrought or steel pipe is used for rods and arms. The chain used to operate the wheel has a guide to keep it located, and it can be brought down the wall out of the way of crane runways, etc., to any position desired, by the use of idlers. Direct action is thereby secured from operating station.

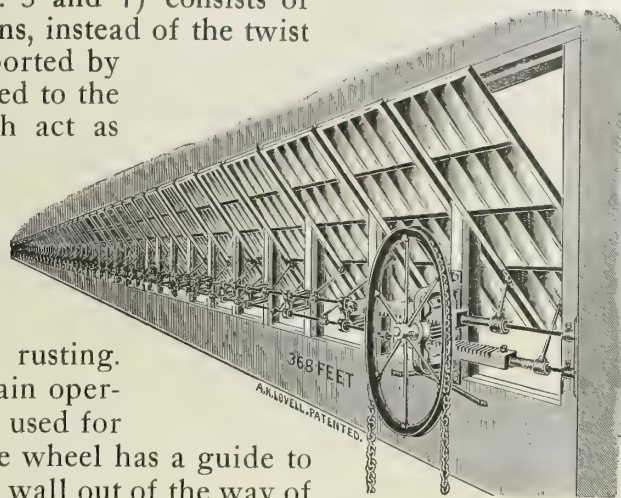


FIG. 3. "LOVELL" DEVICE APPLIED

ADVANTAGES.

The "Lovell" Window Operator (patented Feb. 5, 1907) will operate long lines of sash from one station. The push and pull principle is used, which provides an equal distribution of power in the opening and closing of windows. This device is applicable alike to vertical or horizontal arrangements and for runs of any length up to 500 feet. As little or as much ventilation as desired may be secured, and in case of fire an immediate closing of windows is possible.

ESTIMATES.

The "Lovell" device is sold by the lineal foot. Two arms to a window. One operating station is included with runs of a hundred feet or over. An extra charge is made for operating stations for shorter runs. Full instructions sent with every order. Easily erected. Prices quoted f. o. b. Bridgeport, or erected, as requested.

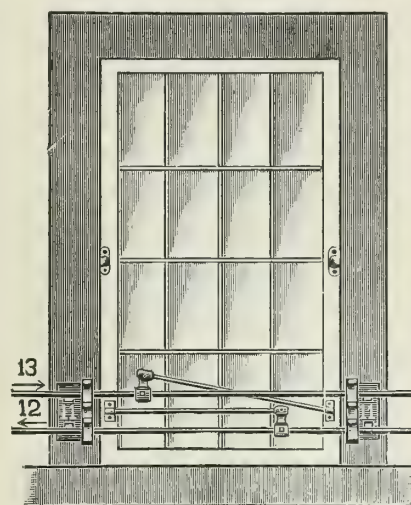


FIG. 4. FRONT ELEVATION OF ONE OF THE WINDOWS SHOWN IN FIG. 3

REFERENCES.

Some of the largest shops and mills in the country have been equipped with the "Lovell" device, and it is specified by the leading railroads of the country for new shop construction. The following is a partial list of installations:

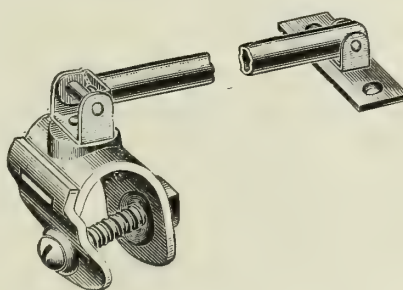


FIG. 5. ARM AND COUPLING

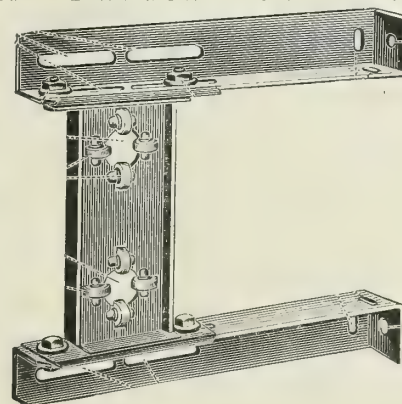


FIG. 6. STEEL EXTENSION BRACKET

INDUSTRIAL PLANTS

Orford Copper Co., Bayonne, N. J.
Crane Co., Bridgeport, Conn.
Singer Mfg. Co., Elizabeth, N. J.; South Bend, Ind.; St. John, N. B.
Winchester Repeating Arms Co., New Haven, Conn.
A. Leschen & Sons Co., St. Louis, Mo.
Chase Rolling Mills, Waterbury, Conn.

TEXTILE PLANTS

Marion Mfg. Co., Marion, S. C.
Pacolet Mfg. Co., Pacolet, S. C.
Durham Mills, Graham, N. C.

POWER PLANTS

Southern Power Co., Charlotte, N. C.
Omaha Electric Light & Power Co., Omaha, Neb.
Washington Water Power Co., Spokane, Wash.

RAILROADS

New York Central & Hudson River Railroad
Pennsylvania Railroad
Delaware, Lackawanna & Western Railroad
Lake Shore & Michigan Southern Railroad
Chicago, Burlington & Quincy Railroad
Atchison, Topeka & Santa Fe Railroad

ELECTRIC RAILROADS

Washington, Baltimore & Annapolis Railroad
Interborough Rapid Transit Co.

GOVERNMENT BUILDINGS

Fort Slocum, N. Y.
Fort Riley, Kans.
Fort Leavenworth, Kans.

THOS. W. IRWIN MFG. CO.

Manufacturers of Skylights

Craig and Rebecca Streets

ALLEGHENY, PA.

PRODUCTS.

We manufacture and erect IRWIN IMPROVED STRUCTURAL IRON, GALVANIZED IRON and COPPER SKYLIGHTS; also, VENTILATORS, GUTTERS, CONDUCTORS, RIDGE-ROLL, CORNICE, BLAST-PIPE, METAL WINDOW FRAMES and SASH.

IRWIN
SKYLIGHTS.

Irwin Skylights, the result of nearly forty years' experience in skylight production, are of three distinct styles—the comb, hipped and flat—adapted to every form of architecture. They afford absolute protection from the elements and give a maximum amount of light.

IRWIN
IMPROVED
STRUCTURAL
IRON
SKYLIGHT.

Our Improved Structural Iron Skylight Bar was designed to take the place of a rolled-steel bar, and has the approval of the most prominent engineers. The bars shown in Figs. 1 and 2 are made respectively of Nos. 10 and 14 O. H. full cold-rolled reannealed iron with $\frac{3}{4}$ " x $\frac{3}{4}$ " x $\frac{1}{8}$ " angle securely riveted to it, upon which the glass rests, well bedded in pure putty. Caps, curbs, and cross-bars are made of 16-ounce C. R. copper or galvanized iron. Brass bolts are used exclusively, sizes to 12 feet; an intermediate purlin is not necessary.

The Irwin System admits of unlimited extensions and is adapted to buildings of every sort or description.

CONSTRUC-
TION OF
CARNEGIE BAR
SKYLIGHT.

The Irwin Carnegie Copper Skylight Bar construction is of one piece of metal, so constructed that it will allow free movement due to unequal contraction and expansion of the metal and glass. The latter is cut small enough to give sufficient play between the upper ridges of the bars. The joints are then covered with copper caps secured to the upper ridges, insuring a constant covering for the joints, and allowing a free movement during expansion and contraction. This eliminates all danger of the glass breaking or cracking. The condensation gutters extend slightly beyond the glass without excluding any light whatsoever. They carry away the water condensed from the atmosphere by means of port-holes to the roof. Simplicity of construction

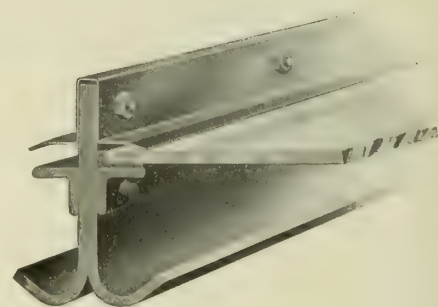


FIG. 1.

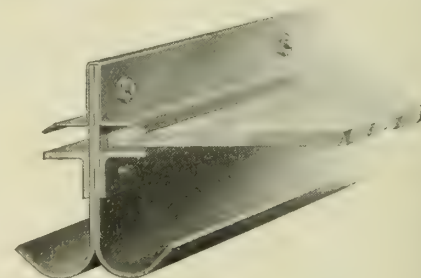


FIG. 2.

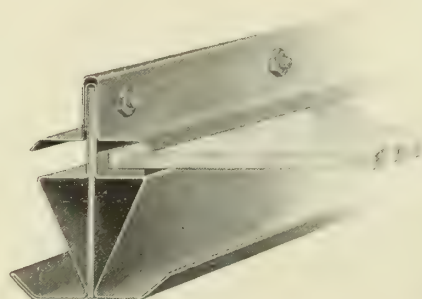
IRWIN IMPROVED STRUCTURAL
IRON SKYLIGHT BARS

FIG. 3.

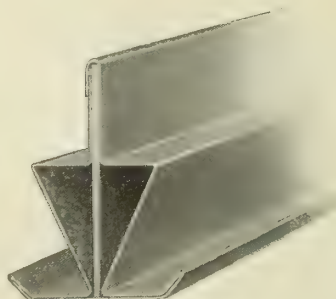


FIG. 4.

STYLES OF CARNEGIE BARS

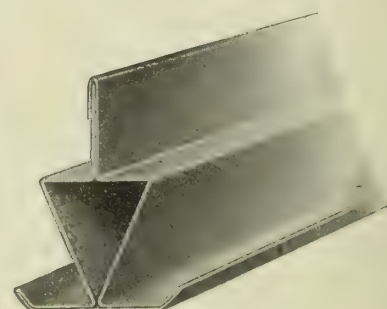


FIG. 5

produces the utmost economy, for wear and strain are reduced to a minimum, due to the fact that no springs are used and no felt employed, which will deteriorate. Putty is employed because there is not one sheet of glass in one hundred which is perfectly level; hence a perfectly safe and water-tight rest is assured. The Carnegie Bar (Fig. 3) received its name from the Carnegie Library, Pittsburg, Pa., where over 143,000 square feet of skylight area was constructed. It is made of 16-ounce C. R. copper with $\frac{1}{8}$ " black iron core-plate. This bar is also furnished in No. 24 galvanized iron with core-plate of black iron (Fig. 4), designed for use when purlins are 8 feet apart, or more. Where cheaper construction is desired the bar is furnished without core-plate (Fig. 5). This style can be used on spans of 8 or 9 feet.

MIDVALE
BAR.

The Midvale Bar (Fig. 6) is constructed of No. 18 galvanized iron, and designed for use in 10 to 12 foot lengths without intermediate purlins, thereby saving in cost of construction. This style was used in the skylight construction of the Midvale Steel Company, Nicetown, Philadelphia, Pa.

GALVANIZED
IRON BARS,
NO. 24 OR 26.

The bar shown in Fig. 7 is No. 24 or 26 galvanized iron, open bottom, with single-ply condensation gutters extended beyond the line of the glass rest. This prevents any leak from the condensation flowing towards the bar when the roof lines are out of level.

ROLLED
STEEL BAR
NO. 8.

To meet the demand of those who prefer a rolled-steel bar, we have recently added to our construction this German Rolled-Steel Bar (Fig. 8). It is one that is used extensively in Europe and has been on the American market for over twenty years.

The original "Irwin" construction of caps, cross-bars and curbs without flashings, is used.

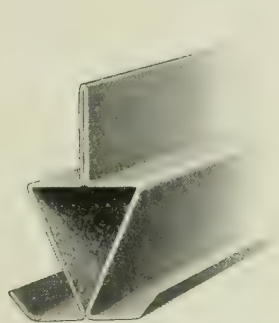


FIG. 6. MIDVALE BAR

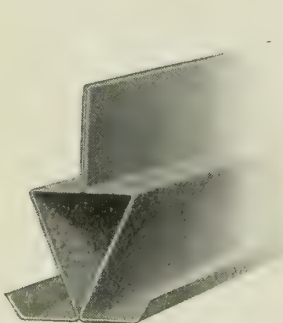


FIG. 7. NO. 24 OR 26
GALVANIZED IRON BAR

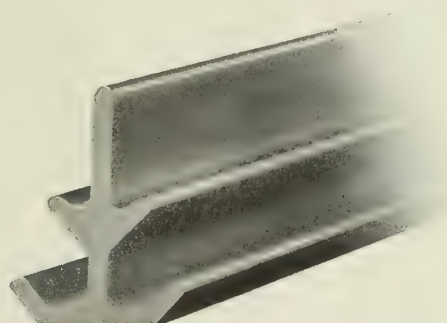


FIG. 8. ROLLED STEEL BAR NO. 8

ESTIMATES.

We invite architects and builders to send specifications, and we will gladly forward estimates, for which we need to know: (1) Style of bar; (2) Style of skylight (comb, hipped or flat); (3) Length; (4) Width; (5) Thickness and kind of glass (rough, ribbed, or wire); (6) Erected or f. o. b. Pittsburg.

GUARANTEE.

All of our work is guaranteed to represent the highest standard of quality, material, construction and workmanship, and when our skylights are erected by ourselves they will be absolutely water-tight, and satisfactory in every respect.

REFERENCES.

The following is a partial list of representative concerns for whom our skylights have been installed:

Allis-Chalmers Co., Cincinnati, Ohio
Allis-Chalmers Co., West Allis, Wis.
American Bridge Co., Ambridge, Pa.
American Steel & Wire Co., Cleveland, Ohio
Baltimore & Ohio R. R. Co. Roundhouse, Glenwood, Pa.
Baltimore & Ohio R. R. Co. Freight Station, Pittsburg, Pa.
Colorado Fuel & Iron Co., Pueblo, Colo.
Firth-Sterling Steel Co., Uniontown, Wash.
Lorain Steel Co., Johnstown, Pa.
Michigan Alkali Co., Wyandotte, Mich.

Midvale Steel Co., Philadelphia, Pa.
National Tube Co., McKeesport, Pa.
Pittsburg Reduction Co., New Kensington, Pa.
Pittsburg Reduction Co., Massina Springs, N. Y.
Pressed Steel Car Co., McKees Rocks, Pa.
Riter-Conley Mfg. Co., Pittsburg, Pa.
Union Switch & Signal Co., Swissvale, Pa.
Westinghouse Air Brake Co., Wilmerding, Pa.
Westinghouse Electric & Mfg. Co., East Pittsburg, Pa.
Westinghouse Machine Co., East Pittsburg, Pa.

LYSTER SHEET METAL CO.

MANUFACTURERS OF

"Lyster's" Patent Ventilating Skylights, Sheet-Metal Windows, etc.

1218-1220 Filbert Street
PHILADELPHIA, PA.

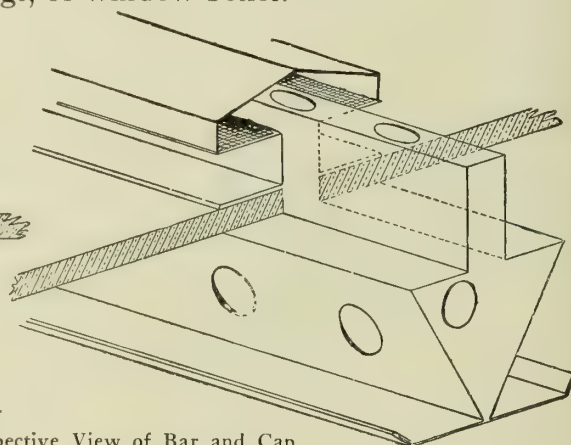
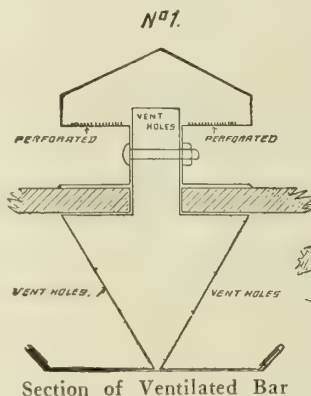
PRODUCTS.

"LYSTER'S" PATENT VENTILATING SKYLIGHTS, SHEET-METAL and WROUGHT-STEEL BAR SKYLIGHTS, FIREPROOF WINDOWS, VENTILATORS, CORNICES, FIRE DOORS, and all kinds of SHEET METAL and ROOFING. Six patented products.

We are also manufacturers of the "AUSTRAL" WINDOW in Sheet Metal; COUNTERBALANCED SASH, without weights, pulleys, cords, springs, or window-boxes.

"LYSTER'S" VENTILATING SKYLIGHT.

"Lyster's" Ventilating Skylight overcomes condensation, gets rid of hot air and gases, is economical and storm-proof. Every skylight bar is a ventilator for its entire length. No back draft. Illustration shows section of ventilated bar; also, perspective view of bar and cap.



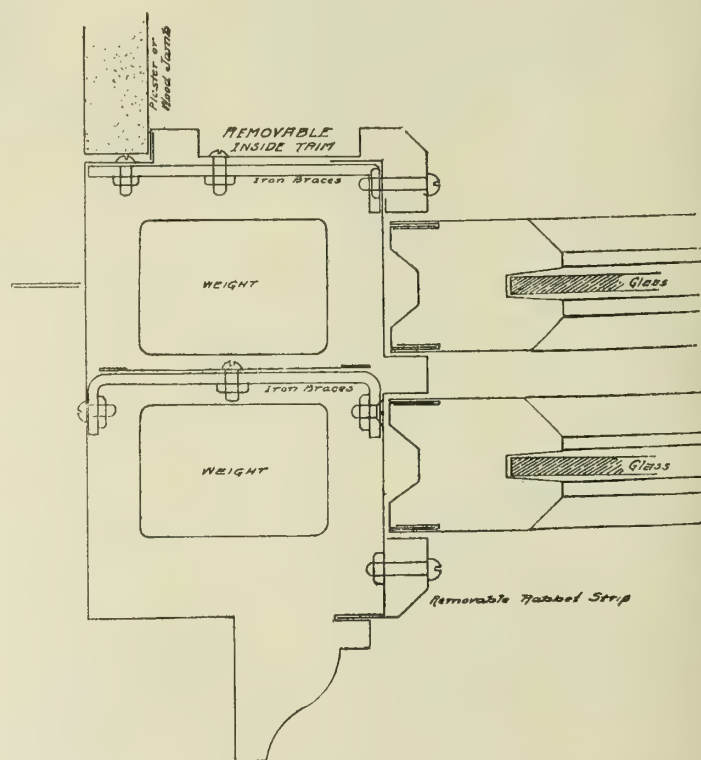
Perspective View of Bar and Cap
"LYSTER'S" VENTILATING SKYLIGHT

The United States Government has contracted with us for twenty thousand feet of above skylights for the Riding-Hall at West Point, N. Y. We have also removed the present skylights from the Government Library Building and installed the "Lyster" Ventilating Skylights.

Send for list of testimonials from fifty-two architects who have specified "Lyster's" galvanized-iron or copper Ventilating Skylights, and of the buildings in which these have been installed; they would take up three pages of "SWEET'S."

"LYSTER'S" SHEET-METAL WINDOW.

This Metal Window (Patented 1908) has a detachable inside trim. Cold air on outside of box and hot air on inside will cause condensation and eventual rusting out. Our inside trim is detachable, to allow for painting and preserving the inside of box and adjusting of weights. The trim gives a paneled inside finish.



SECTION OF METAL WINDOW-BOX FOR DOUBLE-HUNG SASH

Our Double-Hung Window is the nearest approach to mill construction of any manufactured. Sashes work easy, do not bind, and are weather-tight.

"AUSTRAL"
WINDOW.

The "Austral" Window affords a perfect system of ventilation without draft. It is simple in adjustment, economical in construction, storm-proof, and a necessity for schools, hospitals, sanitariums, etc., where ventilation is an essential requirement.

Many office buildings, institutions, and factories are being equipped with Sheet-Metal "Austral" Windows.

Send for list of buildings in which these have been used.

REFERENCES.

Our Metal Windows and Skylights are indorsed by many prominent architects throughout the United States.

CATALOGUE.

Catalogue of our products will be furnished upon application.



WINDOW OPEN AT TOP, BOTTOM
AND CENTER



WINDOW OPEN AT CENTER ONLY
VENTILATION WITHOUT DRAFT



WINDOW WIDE OPEN AT
TOP AND BOTTOM

NATIONAL VENTILATING COMPANY

Puttyless Skylights

General Office, 1 Madison Avenue
NEW YORK, N. Y.

TELEPHONE, 5499 GRAMERCY

FACTORY
HARRISON, N. J.

(Copyright 1909 by the National Ventilating Company)

PRODUCTS. NATIONAL PUTTYLESS SKYLIGHTS and NATIONAL VENTILATING DEVICES. (For particulars as to Ventilating Devices see General Index, under "Ventilation," for our page.)

ADAPTABILITY. Skylights for railway terminals, power-stations, machine-shops, factories, foundries, libraries, museums, art galleries, and all other buildings whereon permanent water-tight skylights of large area are required.

**ADVANTAGES
AND DIS-
TINCTIVE
FEATURES.**

Referring to the adjacent view, the bar and upper lights are supported in a fixed manner by the purlin thereunder, while the lower bar, supporting the lower lights, is secured by the same purlin in a loose manner, permitting it to expand freely. This construction, being repeated at each purlin, permits movement, all in the same direction, due to expansion, contraction, or vibration (along the cross-sectional line of the skylight) of the cap, glass and bar of each unit or tier of glass, independently of every other unit or tier.

Along the longitudinal line of the skylight the steel frame of the building and the entire length of the glass are each taken as a separate unit, and the difference, nearly 100 per cent, in the expansion and contraction of these materials (glass and steel) is likewise thoroughly taken care of by the brass spreading clips shown in transverse section at supporting bar on opposite page. These spreading clips are placed over each cap bolt, spaced about 10 inches along each skylight bar, and incidentally they serve also to better secure in place the brass bolts for holding the caps.

The cap is strong and yet resilient. Its upper half is of an inverted "U" shape, which provides strength and rigidity, while the lower half, especially at the lower extremities, is resilient, so as to conform thoroughly, when secured in position, to the surface of the glass.

Gutters and parts that are non-accessible without removing the glass, are of non-corrosive material. The entire top of the bar is covered with eight ounce copper, the same being applied while the last coat of bar-paint is still wet; and a flexible bearing for the glass is formed (see transverse section on opposite page) which adjusts itself to any warps or irregularities of the glass along its bearing line.

We are equipped to cover the bottom of the bar also. Both the top and bottom bar covers are made by special dies and both fit the bar snugly.

Packing, filling substance of whatever kind, and all material other than glass and metal, are excluded.

**ADOPTED BY
LEADING
RAILROADS.**

After carefully examining all other types of puttyless skylights in actual service, the Pennsylvania Railroad adopted the construction above shown and described, for its new New York & Long Island Railroad Passenger Station, 31st to 33d Streets and 7th and 8th Avenues, New York City, to which building we are now erecting 83,000 square feet of skylight.

The New York Central Railroad Company also is using the above described construction on its new Passenger Station at 42d Street, New York City.

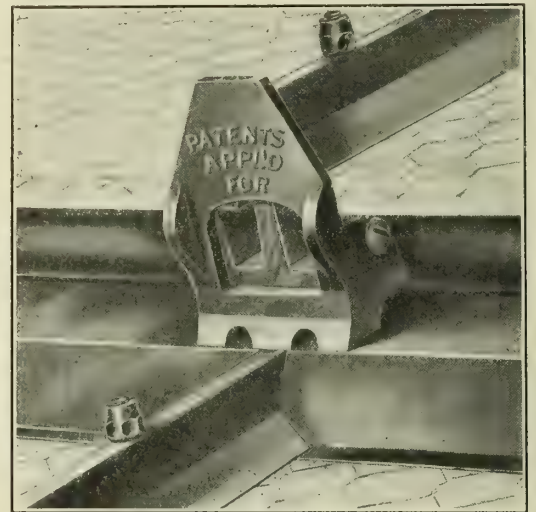


FIG. 1. HALF-SIZE PERSPECTIVE
Showing Exterior View at each Purlin and Skylight
Supporting Bar, between the eave and the ridge

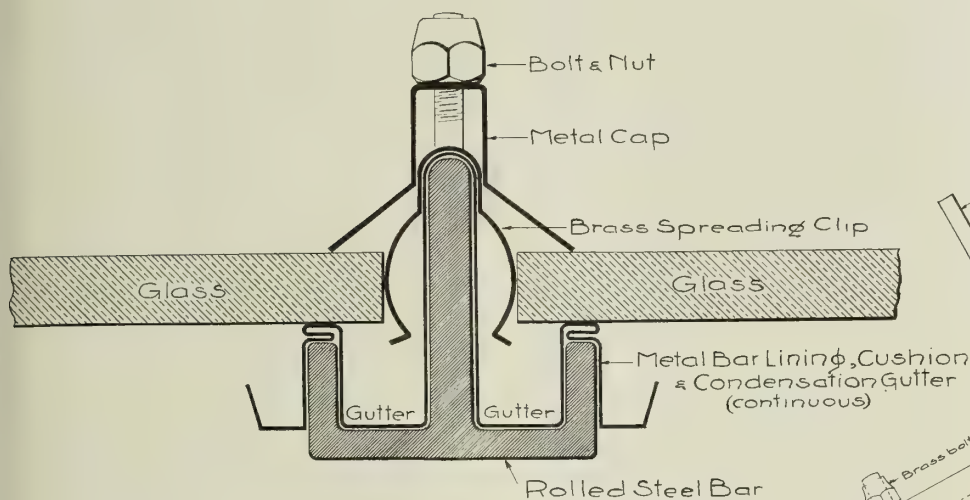


FIG. 2. FULL-SIZE TRANSVERSE SECTION AT SKYLIGHT SUPPORTING BAR
(Patents applied for)

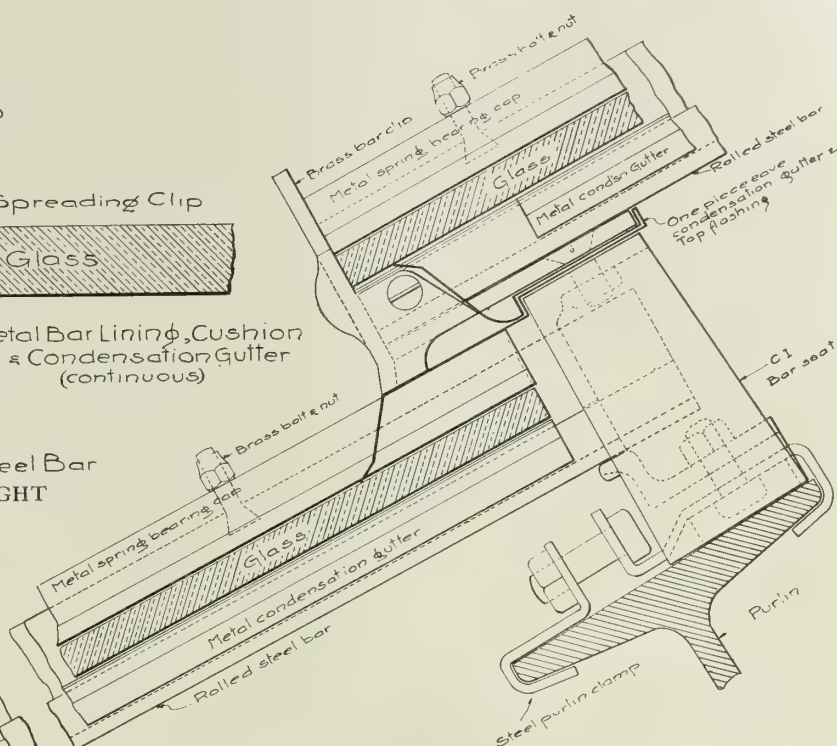


FIG. 3. HALF-SIZE CROSS-SECTION FROM EAVE TO NEXT PURLIN ABOVE
(Patents applied for)

Construction shown on the right side is repeated at each purlin between the eave and the ridge

SPECIFICATIONS, NATIONAL VENTILATING COMPANY'S PUTTYLESS SYSTEM OF SKYLIGHTS

All curb and roof flashings shall be included under heading "Sheet-Metal Work." They must be well connected, ready to receive the skylight work, and must include all necessary counter flashing, well secured to roof flashings and made water-tight.

The skylights shall be of the puttyless type, of a design to allow for free expansion and contraction, or movement due to vibration, of the glass and supporting bars, *all in the same direction*.

Each light of glass shall be entirely independent of every other light, so that one light will be prevented from supporting another; and the glass shall be held laterally in a manner to prevent its coming in contact with any rigid part.

The bearing for the glass shall be flexible, so as to adjust itself to any warps or irregularities of the glass along its bearing line.

The caps shall be spring-bearing, in order to thoroughly conform along the lines of contact, when secured in position, to the surface of the glass.

The supporting bars shall be of rolled steel and shall be held in a loose manner at the upper end and in a fixed manner at the lower end, by brass clips.

Packing, filling substance of whatever kind, or material other than glass and metal, shall not be used.
All skylight sheet-metal work shall be (specify copper, zinc, or galvanized iron).
The glass shall be $\frac{3}{8}$ inch thick (specify whether wire, plain or ribbed).

The above described skylight is the result of experience and investigations made by us in this line extending over a period of more than five years.

Our efforts during this time have been directed to producing, not the cheapest, but the best construction.

In skylight work, true economy does not consist in buying the cheapest.

As evidence of our experience in skylight work we refer to the following, among many installations made by us during the past five years, some of which have been partly replaced by the new and improved construction above described.

BUILDINGS, LOCATION, AND ARCHITECTS

New Walters Art Gallery, Baltimore, Delano & Aldrich, Architects, New York
International Paper Co. Mills, at Niagara Falls and Palmer, N. Y., and at Rumford Falls and Chisholm, Me.
N. Y. C. & H. R. R. Power-Stations, at Yonkers and Port Morris, N. Y., Reed & Stem, Architects, New York
N. Y., N. H. & H. R. R. Locomotive and Machine Shops, Readville, Mass.

United States Navy Yards, at Norfolk, Charlestown, and Pensacola
Buffalo, Rochester & Pittsburg R. R. Office Building, Rochester, N. Y.
Maryland Institute, Baltimore, Pell & Corbett, Architects, New York
Brooklyn Rapid Transit Company Shops, Maspeth, L. I.
Tichenor-Grand Sales Stables, New York, Hill & Stout, Architects
American Steel & Wire Co. Mill, Worcester, Mass.
C. K. G. Billings' Residence, New York, Guy Lowell, Architect
New York Edison Company's New Waterside Power-Station, New York

RESULT OF THOROUGH INVESTIGATION.

OTHER NOTABLE INSTALLATIONS.

VAILE & YOUNG

MANUFACTURERS OF

Skylight and Architectural Sheet-Metal Work

216 North Calvert Street

BALTIMORE, MD.

PRODUCT.

Sole manufacturers of VAILE & YOUNG'S PATENT METALLIC SKYLIGHTS without putty.

DESCRIPTION.

The Vaile & Young Patent Metallic Skylight is made of galvanized steel or copper, the bars being constructed with two open tubular gutters and provided with a tubular strengthening plate inserted between gutters, all well riveted together, as shown in Fig. 1. Where additional strength is required, as in large construction, steel strengthening cores are inserted, as shown in Fig. 2.

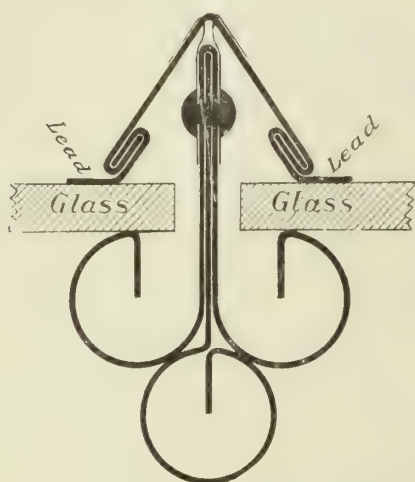


FIG. 1. SHOWING FULL-SIZED SECTION OF SKYLIGHT BAR WITH CAP

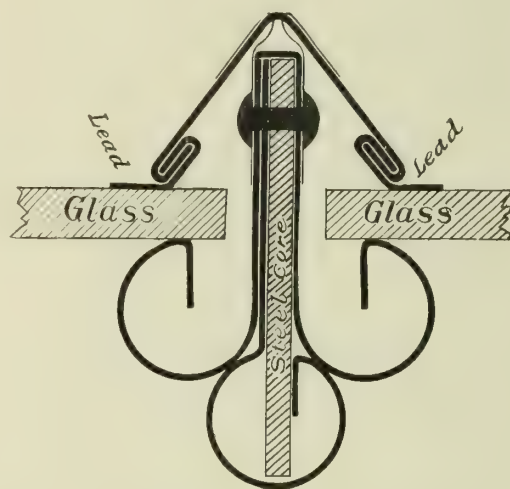


FIG. 2. SHOWING FULL-SIZED SECTION OF SKYLIGHT BAR AND CAP WITH STEEL STRENGTHENING CORE

Tubular condensation gutters are provided on inside of skylight at eaves, which are connected to and have outlet from each of the gutter bars, as shown in Fig. 3.

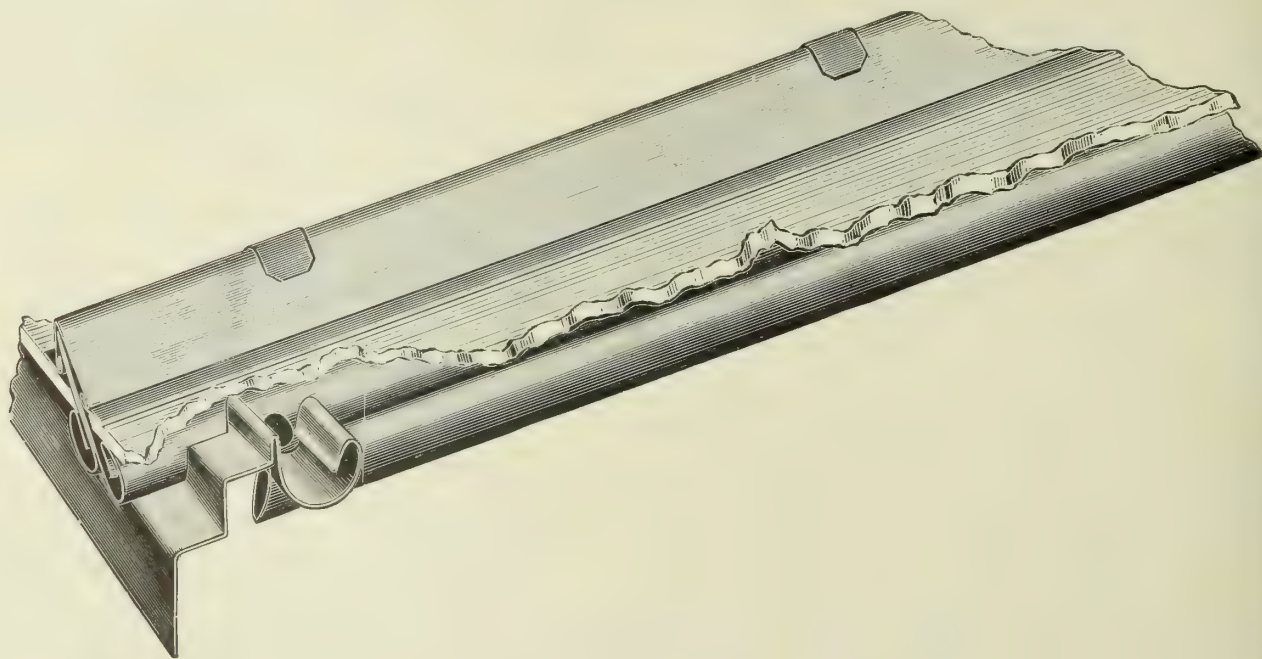


FIG. 3. SECTION SHOWING CONDENSATION GUTTER CONNECTING WITH THE BAR AT END

The outside of bars is capped with a V-shaped cap, in each side of which is inserted a strip of heavy sheet lead; this is pressed closely to the glass, the cap being held firmly in place by heavy copper cleats, making the skylight absolutely water-tight.

ADVANTAGES.

Our system combines strength and rigidity with lightness of construction and is neat in appearance.

The method of puttyless glazing entirely overcomes the dangers of expansion and contraction, as the glass is not bound as with putty or cement, consequently the breakage of glass by vibration is avoided; also, putty and cement in time lose their elasticity and permit leakage. The readiness with which broken glass can be replaced is apparent, it being only necessary to loosen the copper cleats and remove the cap.

ADAPTABILITY.

Our Skylights are adapted to any form of building construction and are in use in all sections of the United States; also, in Canada, Mexico and many foreign countries. We have erected them on buildings of all classes—residences, schools, public buildings, railroad stations and shops, factories, mills, foundries, etc.

FACILITIES.

We are prepared to execute all contracts promptly, as our methods and factory equipment are strictly modern. We have been making these skylights for twenty-five years.

INFORMATION.

We shall be glad to furnish details of our Skylights adapted to any form of construction, or to assist in arranging plans for skylights, our Draughting Department being equipped for such service.

PRICES AND SHIPMENTS.

Prices will be quoted for delivery to any point. We will deliver f. o. b. Baltimore on cars or boat, or f. o. b. destination.

The skylights are properly crated and the glass shipped in well-packed cases.

Where skylights are too large to ship entire they are made in sections and can readily be put together.

With large contracts we send our own workman for erecting.

E. VAN NOORDEN COMPANY

Skylights, Ventilators and Metal Windows

Magazine Street, near Massachusetts Avenue

BOSTON, MASS.

TELEPHONE, ROXBURY 753

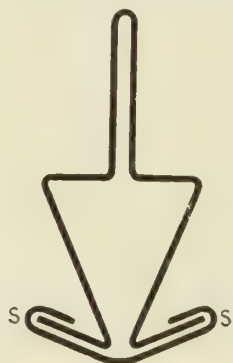
ESTABLISHED 1873

PRODUCTS.

Manufacturers of "VAN NOORDEN" SHEET STEEL and COPPER SKYLIGHTS of every type, "VAN NOORDEN" GALVANIZED STEEL or COPPER VENTILATORS, and "VAN NOORDEN" SHEET STEEL or COPPER WINDOWS.

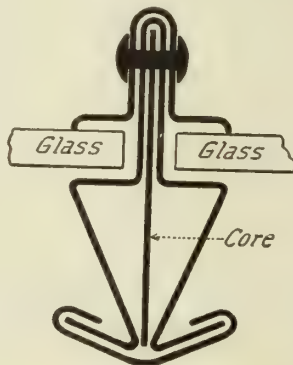
"VAN NOORDEN" SHEET STEEL OR COPPER SKYLIGHTS.

"Van Noorden" Skylights have stood the test of time, the severest of all tests. The bars are formed of sheet metal, as shown in cuts, combining maximum strength with little weight. All the parts are riveted and soldered. Expansion and contraction are allowed for. Ample provision is made for the egress of condensation. They are applicable wherever overhead light is desired.



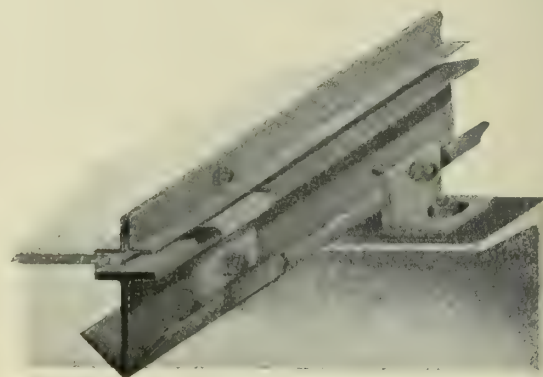
"VAN NOORDEN" SKYLIGHT BAR

About one half size



"VAN NOORDEN" SKYLIGHT BAR

With Core-Plate and Cap



"VAN NOORDEN" ANCHOR BAR

"VAN NOORDEN" ANCHOR BAR SKYLIGHTS. VENTILATORS, "CLOVER LEAF," "O. K.," "ESPEY."

"Anchor Bar" Skylights are constructed of a tee and angle bar, clamped together. Exposed parts, gutter and trim are of copper. They are designed for large skylight areas.

"Van Noorden" Ventilators are strongly constructed and effective in creating an up-draft. We manufacture three types:

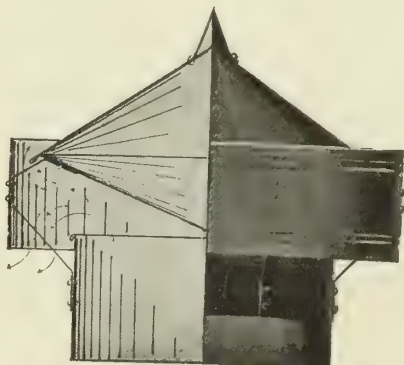
Our "Clover Leaf" is a standard ventilator in the East, well known through its neat appearance and efficiency.

The "O. K." Ventilator is constructed with an inverted cone over the shaft, which increases the draft. The band-shield precludes rain or snow.

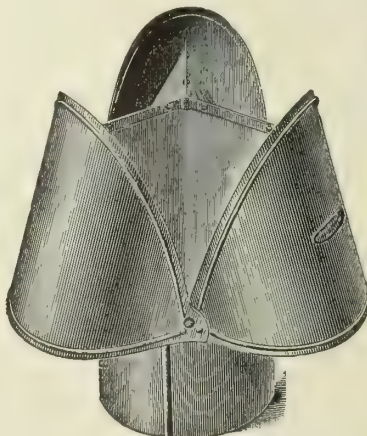
The "Espey" is a revolving ventilator of a well-known type. Recent tests have proved that the "Espey" in its simplicity is fully equal to and less expensive than so-called "improved" modifications of the same principle.

HOW TO SPECIFY.

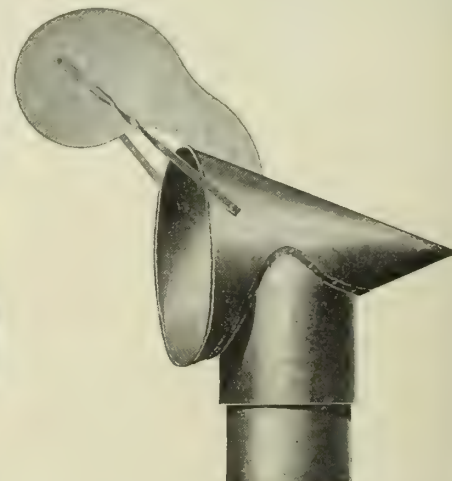
The size of a ventilator in all cases is the diameter of the barrel; in specifying, bases and dampers should be mentioned.



"O. K." VENTILATOR



"CLOVER LEAF" VENTILATOR



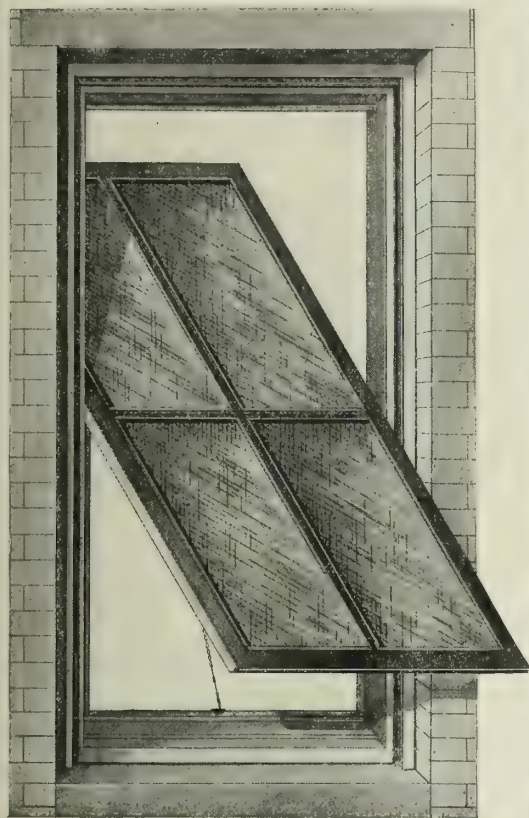
"ESPEY" REVOLVING VENTILATOR

"VAN NOORDEN" METAL WINDOWS.

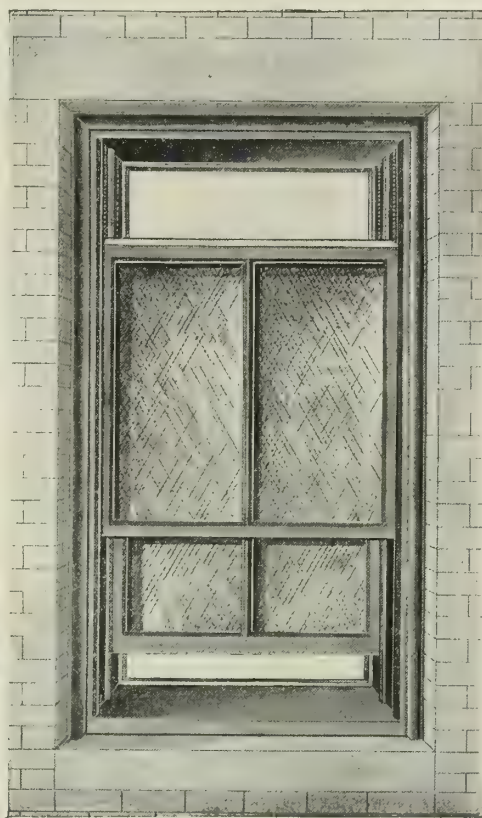
ADAPTABILITY.

"Van Noorden" Metal Windows are made of galvanized sheet steel or copper, in nine standard types, with sliding, revolving, hinged or stationary sash, as required.

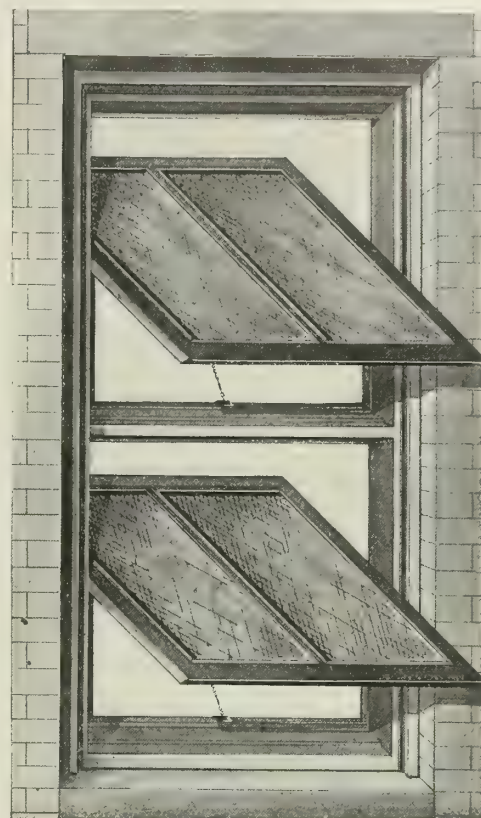
They are constructed in accordance with the regulation of the National Board of Fire Underwriters and have been tested and approved by the Underwriters' Laboratories.



Type A. Single Horizontal Pivot



Type C. Double-Hung, Sliding



Type E. Double Horizontal Pivot

TYPES OF "VAN NOORDEN" WINDOWS

"VAN NOORDEN" DOUBLE-HUNG WINDOWS.

"VAN NOORDEN" REVOLVING WINDOW. GLAZING. ESTIMATES.

Our double-hung sash slides freely. Sash do not bind and are easily removed and set when reglazing. A removable section of jamb permits access to counterbalanced weights after windows are in place.

Our Revolving Window permits of a complete revolution of sash; thus outside and inside can be cleaned with equal ease. A special feature is the weather flange, which protects the joint between sash and frame at all points, especially at pivots.

Our windows are glazed with $\frac{1}{4}$ " wire-glass—maze, ribbed, hammered, or polished plate.

Estimates include all hardware, unless otherwise stated. Inquiries should state style, size and number of windows, with measures inside and outside of opening, thickness of wall, and reveal.



A SERIES OF "VAN NOORDEN" SAW-TOOTH SKYLIGHTS

WEATHERPROOF CONSTRUCTION COMPANY

MANUFACTURERS OF

“Weatherproof” Skylights, Saw-Tooth Roofs, Monitor and Fireproof Windows

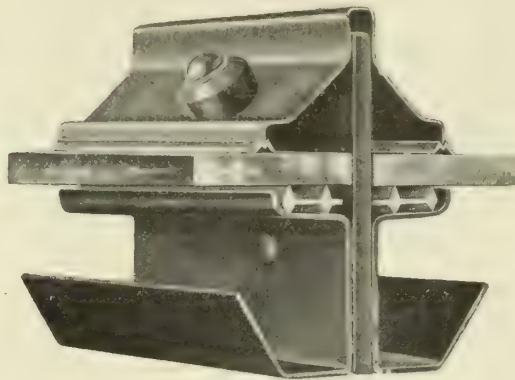
39 Cortlandt Street
NEW YORK, N. Y.

PRODUCTS.

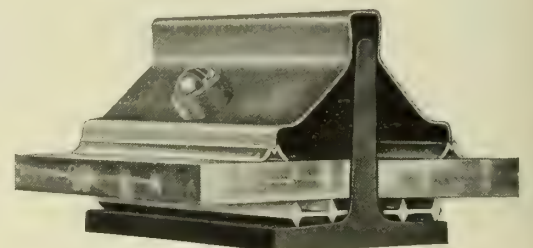
COPPER, GALVANIZED and STRUCTURAL IRON SKYLIGHTS; SAW-TOOTH ROOFS; MONITOR and FACTORY SASH; CONTINUOUS METAL and FIREPROOF WINDOWS. All constructed with “WEATHERPROOF” SYSTEM OF GLAZING (Patent pending).

SKYLIGHTS.

The “Weatherproof” Glazing System for skylight and similar construction consists of double, or more, ribbed seats of soft, impressible and non-deteriorating material (preferably moulded lead) upon which the glass is bedded; similar material above and between the glass and metal cap, holding the same in place, and special and extremely simple means of fastening the caps to the structural bars, which are of *standard* rolled iron or steel shapes. When the fastenings are made the glass is gripped tightly between soft lead contact edges, which mould themselves closely to the contour of glass surface, thus producing an absolutely water-tight joint. The metal caps are so shaped as to provide the greatest possible amount of resiliency, which is supplemented and greatly increased (when advisable) by the use of bronze or rubber springs, thus positively preventing the breakage of glass from vibration, expansion, etc. No hard metal touches the glass.



Bar No. 1



Bar No. 2

“WEATHERPROOF” GLAZING BARS
(Patent pending)

TWO STYLES OF BARS.

We make two styles of Glazing Bars: No. 1, having the so-called condensation gutters as illustrated; and No. 2, also fitted with the gutters, when required—and they are furnished in a variety of shapes. A *standard* structural member being the base of either bar, makes its application and connection to other structural members extremely simple and requires only ordinary labor to install; it also simplifies the details of design of the other structural members.

SAW-TOOTH
AND MON-
ITOR SASH.

For Saw-Tooth and Monitor Sash Work Bar No. 2 (without gutters) is used, the connections at top and bottom being made to standard rolled-steel shapes, with proper flashings. This construction is of sufficient strength to carry the edge of the roof and avoids the cost and necessity of using mullions. There is no maintenance cost, as in the case of wooden sash operated in series.

FIREPROOF
WINDOWS.

We furnish Fireproof Windows for openings of any size, stock sizes being unnecessary because of the simplicity of construction. The frames are of *standard* rolled shapes, the rubber or bronze springs are omitted, other material is substituted for the moulded lead strips (to comply with the requirements of the insurance authorities) and movable sash are framed with angle iron in such a way as to be handled readily by operating devices. Special rolled bars, intricate cast or wrought parts and joint devices are avoided. The merit of this construction lies, therefore, in simplicity of design and plain mechanical methods of fabrication, both of which combine to give these windows great strength, durability, ease of erection and economy of cost.

CONTINUOUS
SASH.

For shop, mill, factory and other industrial buildings erected with curtain walls from story to story, our windows can be applied in continuous run without brick piers, wide mullions or frames. This greatly increases the lighting area, avoids shadows on machine floors and decreases costs.

CONTRACTS.

For work of any magnitude we prefer to take contracts to erect all of the material in place complete.

AGENCIES.

Sales agencies and manufacturing arrangements have been or will be made in various large cities and our facilities will be unsurpassed.

LIGHTING
PROBLEMS.

We invite consultation as to plans, details and cost, and place at your disposal our experience in the working out of daylighting problems for industrial and other buildings.

REFERENCES.

Notable installations of our work were made for the Chicago Railways Company and the South Side Park Board Commissioners, Chicago, Ill.

THE AMERICAN METAL DOOR COMPANY

MANUFACTURERS OF

Fireproof Metal Doors and Interior Trim

GENERAL OFFICE AND FACTORY

BRADFORD, PA.

AGENCIES IN ALL PRINCIPAL CITIES

PRODUCTS.

"SJOBRING" PATENTED FIREPROOF DOORS and WINDOWS; DRAWN-STEEL MOULDINGS meeting all requirements for INTERIOR TRIM, such as CASINGS, BASE-BOARD, WAINSCOT CAP, CHAIR RAILS, PICTURE MOULDINGS, special and miscellaneous designs.

SASH DOORS so constructed that glass can be inserted without the ever annoying screws, rivets, putty or various fillers, as illustrated.

Also PARTITION WORK, ELEVATOR ENCLOSURES, and DUMB-WAITER DOORS.

"SJOBRING" PATENTED HOLLOW FIREPROOF DOORS.

In the "Sjobring" Patented Fireproof Doors—illustrations of which, including details, are shown—strength, rigidity, durability and uniform construction for sash and all-steel doors are obtained by double interlocking seams, which eliminate rivets.

PATENT GLASS MOULDING.

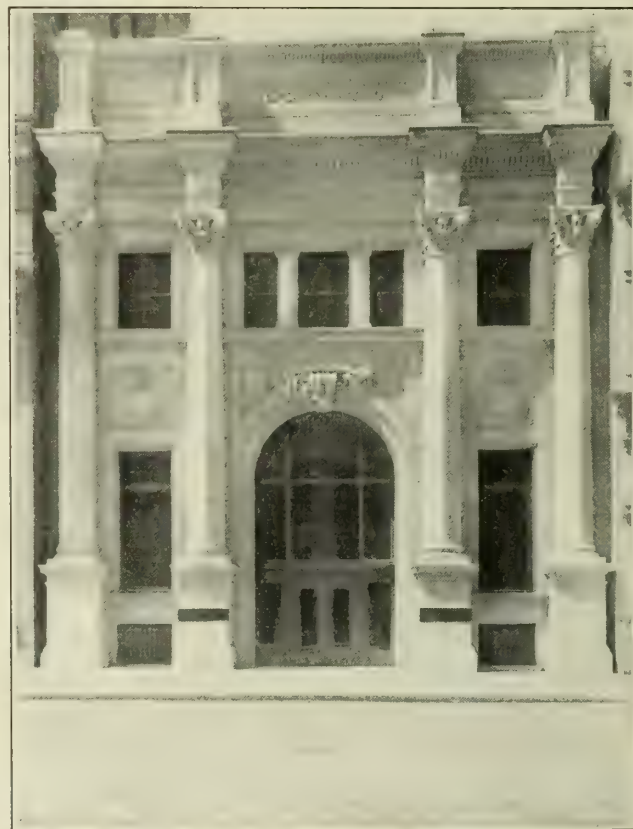
Glass is inserted and held intact by a detachable spring glass moulding, of the same profile as used around panels on all steel doors. By the use of this moulding, screws, rivets, putty or other fillers are eliminated.

ASBESTOS FILLED PANELS.

All panels are filled with asbestos; which is secured to steel panel plates by a special cement which contains no properties that will rust or corrode, and which, after being applied, will resist severe heat. This construction has been clearly proven to be a high-grade fire retardant, having resisted over 2,000 degrees of heat in actual tests.

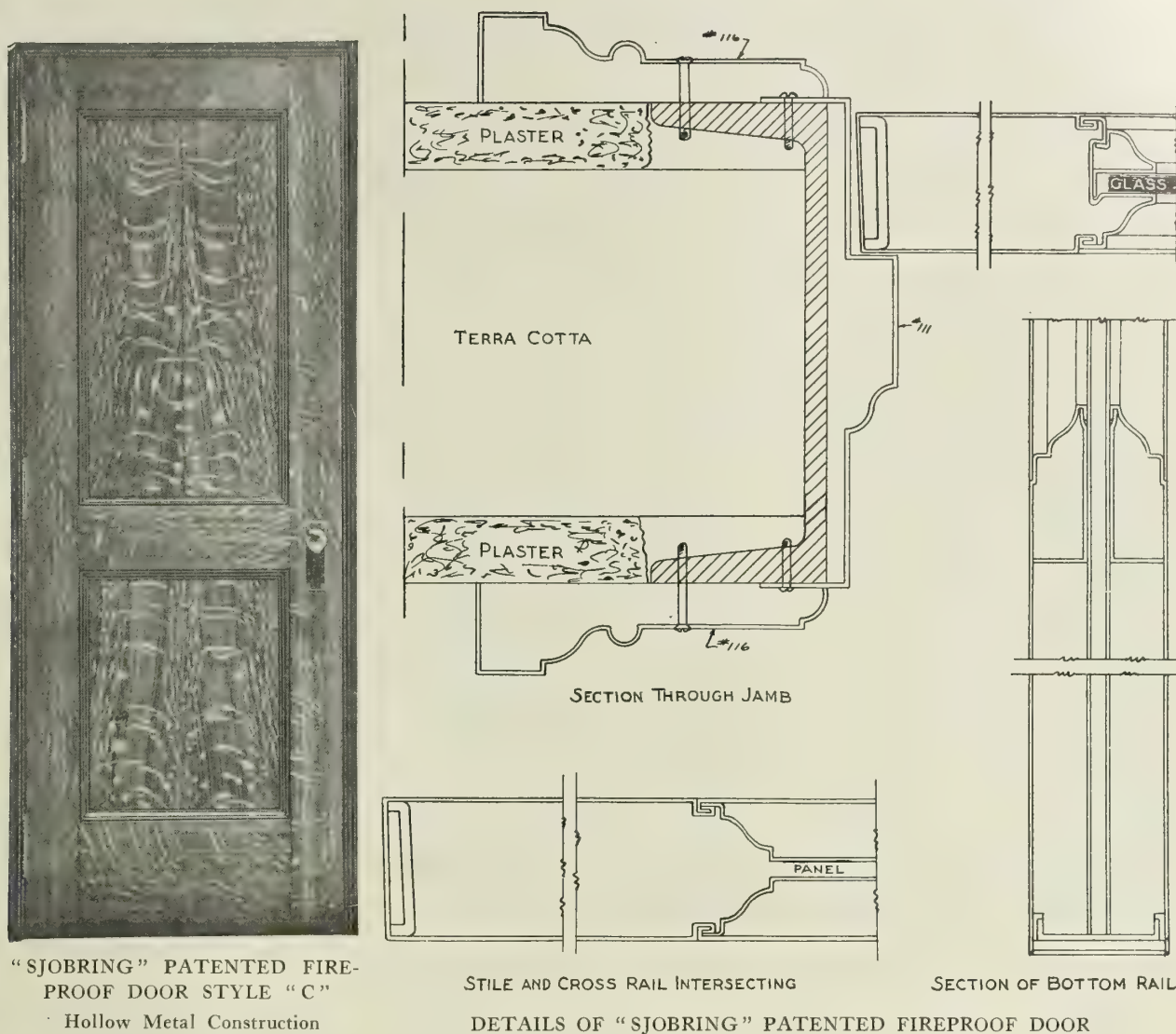
HIGH-GRADE FINISH, WOOD OR METAL EFFECTS.

By a baked enamel process we attain the highest Art Metal results, imitating, beyond detection, the rarest quality of quartered oak, crotch mahogany, Circassian walnut, and other woods. Metals, such as copper, bronze, brass or aluminum, can also be imitated.



MERCANTILE TRUST COMPANY BUILDING, SAN FRANCISCO, CAL.

Steel Doors and Window Trim, furnished by AMERICAN METAL DOOR COMPANY



ADAPTABILITY.

The "Sjobering" Patented Fireproof Door is designed for residences, office buildings, theaters, hospitals, hotels, schools, and, in fact, every place where a fireproof door is desired, and can be installed by any mechanic or will be installed by us.

SPECIFICATIONS.

Architects can specify sizes and kinds of bucks to be used. Openings to be $\frac{5}{8}$ " wider and $\frac{1}{2}$ " higher than size of door, beside allowing for saddle, if used. Bucks to be furnished and placed by builders.

OFFICIAL ENDORSEMENT.

Our products are manufactured to meet requirements of the Building and Fire Underwriters' Regulations, and have been tested and approved by the Underwriters' Laboratories, Inc.

ESTIMATES.

Estimates, special designs, and all desired information will be cheerfully given upon application. To estimate intelligently, the style and thickness of door, and thickness and character of walls and bucks must be known.

REFERENCES.

Some prominent adoptions:

Mercantile Trust Co., San Francisco, Cal.
 German Savings & Loan Society Building, San Francisco, Cal.
 The Orpheum Theater Building, San Francisco, Cal.
 Sterling & Welch Department Store, Cleveland, Ohio
 Pope Building, Cleveland, Ohio
 National Museum, Washington, D. C.

*Collinwood School, Collinwood, Ohio
 The Frost Building, San Antonio, Tex.
 The Journal Building, Jamestown, N. Y.
 Sonoma County Court House, Santa Rosa, Cal.
 Underwriters' Laboratories, Chicago, Ill.
 Blackstone Hotel, Chicago, Ill.
 Goodrich Building, New York, N. Y.

*Erected on the site of building destroyed by fire March 4, 1908

E. B. BADGER & SONS COMPANY

MANUFACTURERS OF

Sheet-Metal Fireproof Windows

63-75 Pitts Street

BOSTON, MASS.

TELEPHONE, BRANCH EX. 2152 HAYMARKET

ESTABLISHED 1841

PRODUCTS.

SHEET-METAL WINDOW FRAMES and SASH (all sizes and shapes) in Galvanized Iron or Copper, glazed with Ribbed, Rough, or Plate Wire-Glass.

For our other Products see our pages in General Index.

KINDS OF WINDOWS.

We make stationary, double-hung, transom, pivoted (either horizontal or upright), and casement windows.

UNDER-WRITERS' LABEL.

Our Metallic Window Frames and Sash are glazed with wire-glass and constructed in accordance with National Fire Protection Association specifications. They are examined and tested at factories under the supervision of the Underwriters' Laboratories, Inc., and have their labels riveted to the inside of the window.

INSTALLATION.

It is not necessary for us to install or erect our windows, as they can be put in by the general contractor.

FACILITIES.

With every facility for executing all orders, and modern and new machinery, we are prepared to produce superior work in our line.

REFERENCES.

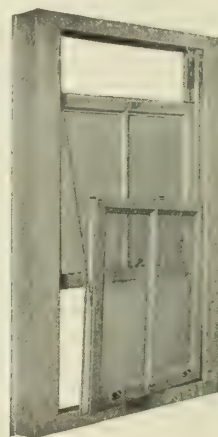
Our reputation for first-class work can not be excelled, and our business experience has extended over a period of sixty-five years. For references we refer to the leading architects of Boston and New England.

TRADE-NAME.

Our window is known as the "Badger Fireproof Window."



Inside View, Lower Sash raised, Guide Rail partly removed, showing how weights are reached.



Inside View, Guide removed, showing method of Hanging and Underwriters' Label on face of frame



Outside View, showing Sashes partially open

"BADGER" DOUBLE-HUNG WINDOWS

THOS. W. IRWIN MFG. CO.

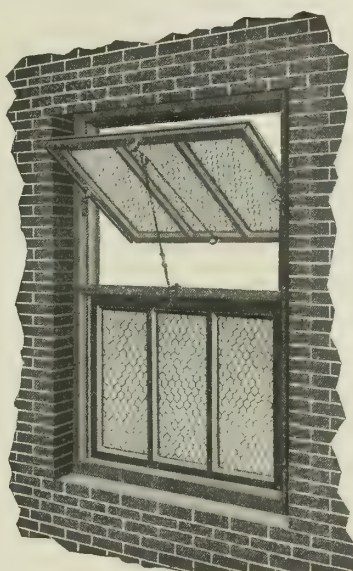
MANUFACTURERS OF
Fireproof Windows
Craig and Rebecca Streets
ALLEGHENY, PA.

PRODUCTS.

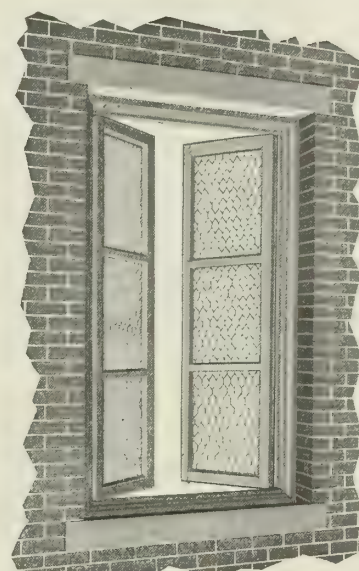
FIREPROOF WINDOWS — Double-Hung, Pivoted, and Casement.



DOUBLE-HUNG WINDOW,
STYLE NO. 1



PIVOTED WINDOW,
STYLE NO. 2



CASEMENT WINDOW,
STYLE NO. 3

DESCRIPTION.

In the Double-Hung Window, Style No. 1, both the upper and lower sash are equipped with counterweights, and bronze chain and ball-bearing pulleys are used. It can be built of galvanized iron or copper.

All of our windows are glazed from the inside, an operation that can be done by any person.

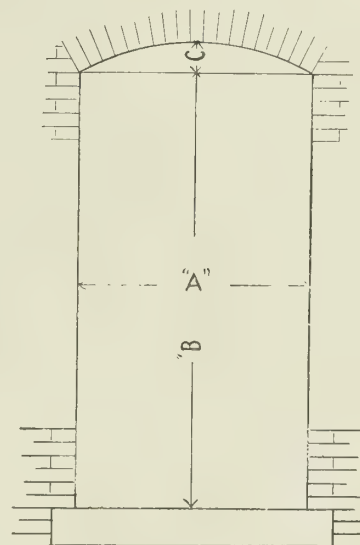
This window is approved by the National Board of Fire Underwriters. It is generally used in office buildings, public buildings and other high-class work.

The Pivoted Window, Style No. 2, has the upper sash pivoted and the lower sash stationary, the upper sash closing automatically. The best approved gravity locks and pivots are used in all of our pivoted windows.

Our Casement Window, Style No. 3, is provided with a weather-strip which prevents the dust and dirt from blowing through and is absolutely weather-proof. It is easy to operate and will positively hold its shape.

ADVANTAGES.

The workmanship of our windows is absolutely perfect, and they are all weather-proof and will not rattle. They are easy to operate and the glazing may be done by any one. The windows admit light at all times and combine safety, economy and efficiency. They save insurance.



MEASUREMENT DETAIL OF
WINDOW

- A. Inside opening of brick wall
- B. Height of brick opening from sill to spring of arch
- C. Height of arch

J. F. BLANCHARD CO.

MANUFACTURERS OF

"All-Metal" Doors, Interior Trim, Metal-Covered Woodwork

Fuller Building, Broadway and 23d Street

NEW YORK, N. Y.

TELEPHONE CONNECTIONS
OFFICE, 3682 AND 3683 GRAMERCY
FACTORY, 1656 GREENPOINT

FACTORY
LONG ISLAND CITY, N. Y.

PRODUCTS
AND
SERVICES.

DOORS; INTERIOR FINISH and STORE and OFFICE FIXTURES in "ALL-METAL"; METAL LOCKERS; METAL COVERED WOODWORK; SEAMLESS FIREPROOF DOORS (Richardson's Patent); SHEET METAL WINDOWS; UNDERWRITERS' DOORS and SHUTTERS.

"ALL-METAL"
DOORS AND
INTERIOR
FINISH
(PATENTED).

We are prepared to execute contracts for the entire interior finish of buildings in "All-Metal" material, made of heavy gauge steel with baked enamel finish, reproducing natural wood

grain or metal effects in the most artistic manner; Bronze Metal, oxidized to any color, is also used if desired.

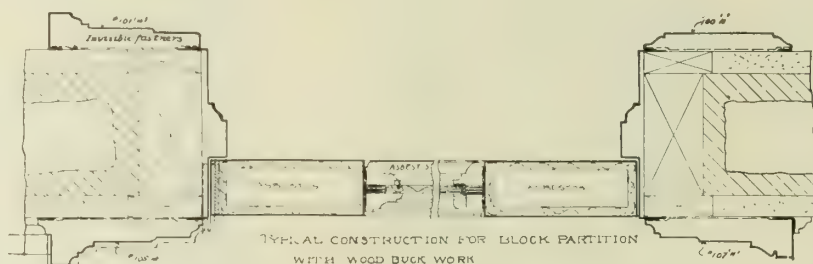
We control, *exclusively*, the process of Electric Welding as applied to work of this character, thereby enabling us to eliminate entirely all rivets, screws, or bolts, leaving the finished product perfectly free from defects of any kind. The miters of interior trim, joined by this process, show no joint whatever, and when erected by our concealed devices (patented), present a finished effect absolutely unequalled by any other method. These devices also provide for the erection of base, chair rail, picture moulding, etc., without any defacement of exposed surfaces.

UNDER-
WRITERS'
APPROVAL.

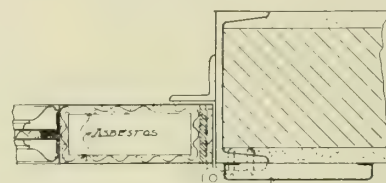
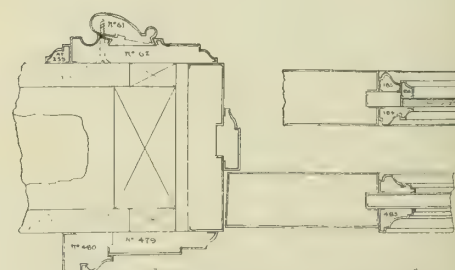
Our "All-Metal" Standard Door has been tested and approved by the National Board of Fire Underwriters; and labels of approval will be attached, when required.

COMPARATIVE
COST.

Our "All-Metal" finish can be installed throughout a building without materially increasing its cost over the use of hardwood trim. An otherwise fireproof building can thereby be made absolutely fireproof by eliminating all woodwork.



"ALL-METAL" INTERIOR FINISH

STANDARD DOOR HUNG IN IRON FRAME
"ALL-METAL" DOORVERTICAL SEC.
THRU DOORSECTION THRU KALAMINE DOOR JALDS & TRIM
METAL-COVERED (KALAMEIN)
WOODWORK

METAL
COVERED
WOODWORK.

Metal-Covered Woodwork (Kalamein Work) is carried out by us with the same freedom regarding architects' details that pertains in cabinet work. Our facilities in this department are unexcelled.

We use only the highest grade material; all cores are thoroughly kiln dried in our own kilns, and "Sempermerus" brand charcoal iron is used entirely for covering purposes, where iron is specified. This material is of the highest possible purity, and guaranteed to show the lowest possible percentage of impurities upon chemical analysis.

SEAMLESS
DOORS
"RICHARD-
SON'S
PATENT."

This Door is constructed with a wood core covered with asbestos, inclosed with seamless paneled sheets of 26-gauge steel or 16-ounce cold-rolled copper. It is accepted by the National Board of Fire Underwriters as standard in elevator, dumb-waiter, pipe and wire shafts, stair enclosures, and all fireproof partitions (not party walls), and if installed in a standard manner will secure the lowest minimum insurance rate. Detailed information as to standard methods of erection sent on request.

UNDER-
WRITERS'
DOORS AND
SHEET-METAL
WINDOWS.

Our work in this department is fully approved by the National Board of Fire Underwriters, and we at all times keep informed as to their latest rulings and requirements. Our Double-Hung Windows are provided with a specially constructed adjustable weather-proof parting-strip (patented), thereby obviating a very serious objection to "All-Metal" Windows, viz., the admission of wind, dust, and cold.

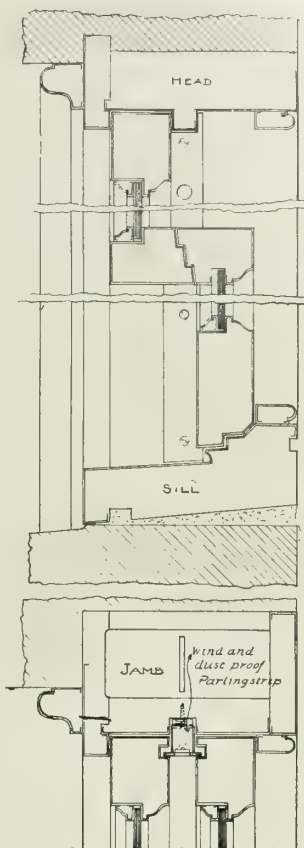
Our construction is distinctive and workmanship is of the highest possible grade.

UNDER-
WRITERS'
LABELS.

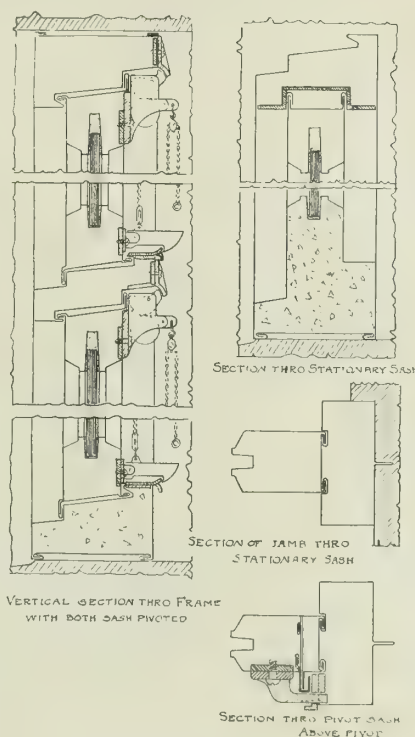
Labels of the National Board of Fire Underwriters, showing inspection and approval by them, will be placed on fire windows and doors wherever so required.

REFERENCES.

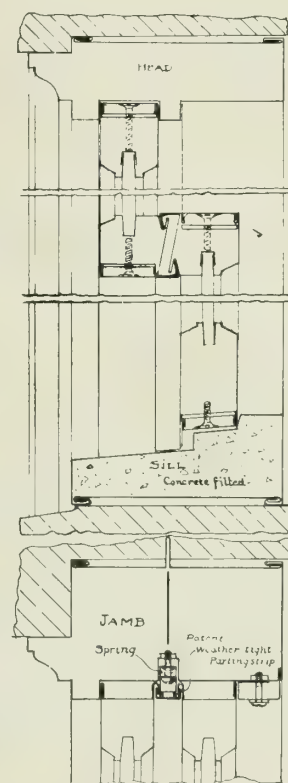
Our material has been used in prominent buildings throughout the country. Installations in any section sent on request.



SECTIONS OF D.H. KALAMEIN WINDOW
WEATHERPROOF TYPE
METAL-COVERED (KALAMEIN)
WOODWORK



TYPE 1, STANDARD SHEET-
METAL WINDOW
Stationary and Pivot Sash



TYPE 2, STANDARD SHEET-
METAL WINDOW
Double-Hung

THE COE BRASS MANUFACTURING COMPANY

Extrusion Department

ANSONIA, CONN.

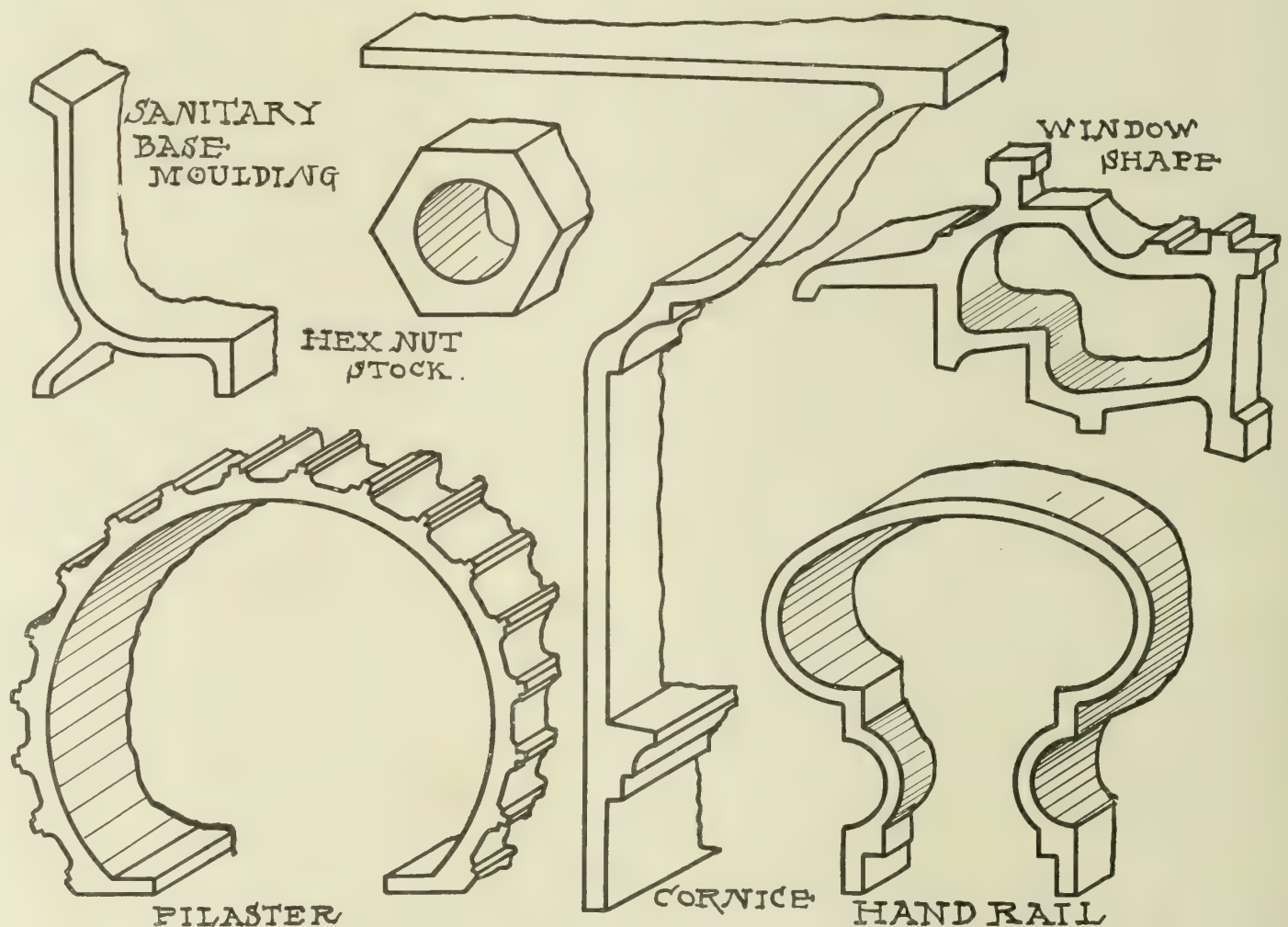
PRODUCTS.

ARCHITECTURAL BRASS and SPECIAL BRONZE MOULDINGS, ANGLES, CHANNELS, TEES, and other SPECIAL-SHAPED BARS constant in section, manufactured by the Extrusion Process.

EXTRUSION PROCESS.

A billet is first cast of a convenient size and suitable composition for the purpose intended. This billet is reheated until it is of a plastic consistency and then is placed within a very strong cylinder, at the end of which is placed the proper die. Upon hydraulic pressure being applied the plastic metal is forced through the die, issuing therefrom in a long bar of the cross-section required.

The very high pressure (frequently as high as 60,000 pounds to the square inch) to which the semiplastic metal is thus subjected gives it increased density and renders it perfectly homogeneous and free from possible casting defects. The bars produced by this process have a greater strength and tenacity than those made by rolling or other cold-working methods. For special purposes alloys are made having the requisite strength and elongation for work demanding the strength of good quality steel.



A FEW REPRESENTATIVE SHAPES MADE BY THE EXTRUSION PROCESS

ILLUSTRATIONS.

The foregoing illustrations show a few representative shapes which we have supplied on orders for various classes of work.

UTILITY.

Extruded Mouldings and Shapes are specially adapted for use in the construction of fireproof doors, window sash and frames, store fronts, bank counter screens, cornices, hand rails, stair nosings, sanitary base moulding, and other art-metal construction.

Extruded Shapes are used in various other lines of manufacture, both in bar lengths and sawed up into short pieces. The metal being perfectly smooth and accurate requires little if any machining, and therefore affords an efficient and economical means for making small, intricate parts.

ADVANTAGES.

Extruded Mouldings and Shapes cost less than machined castings and are far superior in tensile strength and stiffness. Shapes which can not be rolled or drawn can be made readily by the Extrusion Process. Among the many other advantages are uniformity and clean-cut architectural lines throughout.

FACILITIES.

We are equipped to manufacture these Shapes on the most extensive scale, and we guarantee the best of service. They are shipped from our mill having a smooth surface and in the lengths required by metal workers, who can treat them to obtain any finish desired.

ESTIMATES
AND
CO-OPERATIVE
SERVICE.

Practically all Extruded Sections are made up to order in accordance with drawings and specifications. Upon receipt of this information we will give detailed quotation.

We will be glad to send our representative at any time to consult with architects and metal workers in connection with propositions involving the use of Extruded Shapes.



FRONT OF THE GORHAM COMPANY'S BUILDING
FIFTH AVENUE, NEW YORK, N. Y.

Showing application of Extruded Mouldings for construction
of Store Fronts

McKIM, MEAD & WHITE, Architects



NEW YORK PUBLIC LIBRARY BUILDING

CARRÈRE & HASTINGS, Architects

Patented Metal Window Frames and Sash designed by Ferdinand Müller, Architect, and fabricated by the Henry-Bonnard Bronze Co., Mt. Vernon, N. Y., from our Extruded Mouldings and Shapes

GEORGE N. COLE, M. E.

Canopy Doors, "Cross" Horizontal Folding Doors, Elevator Shaft Doors

1328 Broadway

NEW YORK, N. Y.

TELEPHONE CONNECTION

PRODUCTS.

Sole Eastern Agent for "CROSS SYSTEM" WAREHOUSE DOORS, CANOPY DOORS for GARAGES, MOTOR-BOAT HOUSES, SUN-PARLORS, SLEEPING BALCONIES, PLATFORMS, WAGON ENTRANCES, CAR ENTRANCES, STABLES, FACTORIES, CAR SHOPS, ROUNDHOUSES, FREIGHT HOUSES, PIER BULKHEADS, etc.; the "CROSS" IMPROVED COUNTERBALANCED ELEVATOR DOOR; AUTOMATIC FIRE DOORS (approved). See also pages of the Variety Manufacturing Co.

DESCRIPTION.

Horizontal Folding Doors either hung inside or canopy, close tightly into a deep rabbet, and have no intervening mechanism through which draughts can enter.



INSIDE-HUNG DOORS.

When hung inside the building the Horizontal Folding Doors take up no floor or wall space and are a permanent installation. Tight fitting doors are as essential as tight windows, as there is more draught to provide against. The efficiency of our doors in this respect has been proven by the thousands installed.

CANOPY DOORS.

The Canopy Door opens outside the building, forming a canopy one half the height of the opening, while the fixtures and weight are all within the building. The door is made with the center division rain-shedding, and is so constructed that the floor is kept dry, and materials stored on it are never damaged by sopping. Swing doors take from available floor space, while inside-hung "Cross" doors do not. Canopy Doors actually add space to the building.

LOW COST OF MAINTAINING "CROSS" DOORS.

On account of their simplicity of construction the cost of maintenance of "Cross" Doors is reduced to a minimum, and on doors which have been installed for ten years the expense of repairing has been *practically nothing*.

Frequent painting is unnecessary. The only ordinarily wearing parts are the hinges and rollers, so spaced that they keep the matching edges of the door in alignment at all times and prevent all racking.

Hinges and rollers with very large bearings are placed in positions well removed from air currents bearing grit and moisture and are designed to last the maximum length of time with no care.

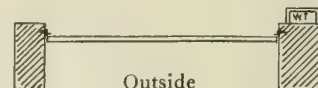
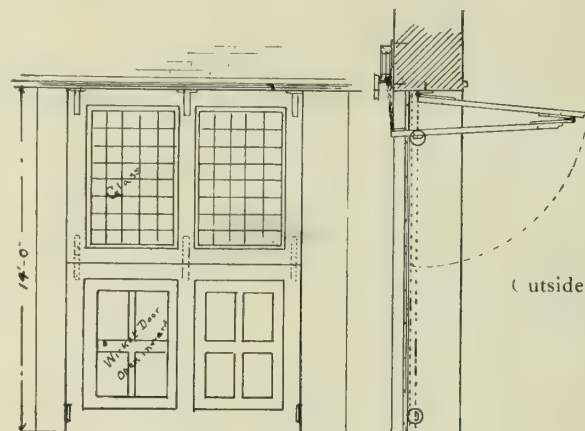
AUTOMATIC FIRE DOORS.

Our Automatic "Cross" H. F. Fire Door is constructed as called for by the regular Fire Underwriters' specifications as to wood core and tin covering. It is hung in the strongest manner possible, which is by the top, so that it can fall in no way except shut. The automatic fire-closing weight is ready at all times to close the door but does not interfere in any way with its usual daily operation.

ELEVATOR-SHAFT DOOR.

We are the original makers of "Meeker" construction elevator doors. The doors are corrugated-iron or tin-clad. Brackets bearing direct on the sill support the door, when open, as trucks pass over the sill, and our doors lock direct to the track by heavy lugs that positively support the doors when closed.

All frames, bearings, chains and tracks are of the strongest and best design.



CANOPY CONSTRUCTION WITHIN THE OPENING
Showing the proper angle for arranging door when open



GARAGE AT FACTORY OF THE LOCOMOBILE CO. OF AMERICA,
BRIDGEPORT, CONN.



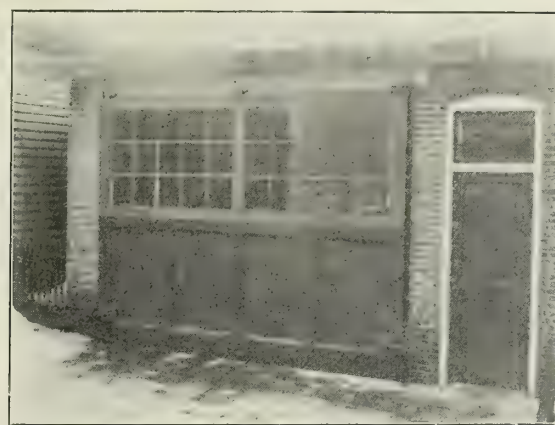
UNITED STATES GOVERNMENT WAREHOUSE
INSIDE-HUNG DOORS, 16 x 18 FEET
Replacing Rolling Steel Doors

SUN AND
SLEEPING
ROOMS.

For sun and sleeping rooms the Canopy Window gives a total opening for ventilation, canopy protection in case of rain, and by special arrangement of fixtures it can be closed absolutely tight when needed, thus providing an ideal room for night and day, summer and winter. These Canopy Windows are specially adapted for use in hospitals.



CANOPY DOOR OPEN



CANOPY DOOR CLOSED

ROOF
GARDENS.

Roof Gardens equipped with Canopy Windows can be fully and quickly protected from storms while at the same time they are provided with the maximum amount of air.

The window offers no obstruction, can not slam, and can be easily and quickly closed.

NOTABLE IN-
STALLATION.

The baggage room of the New Pennsylvania Railroad Terminal in New York is fitted throughout with Cross Horizontal Folding Doors.

For very large openings up to forty feet wide we can furnish the Cross Compound Lift-Up Doors which one man readily operates.



PERMANENT ROOF-GARDEN HOOD FOR BELLEVUE STRATFORD HOTEL, PHILADELPHIA, PA.

Windows, Canopy Construction, open outward, giving entire opening clear; or close tightly, excluding storm and cold. Operated in a few seconds. Above picture shows arrangement for winter solarium

CONSOLIDATED SHEET METAL WORKS

Fireproof Windows, Metallic Skylights and Fire Doors
General Sheet Metal Contractors

661-673 Hubbard Street
MILWAUKEE, WIS.

PRODUCTS.

METAL FIREPROOF WINDOWS, including "BOGENBERGER" APPROVED UNDERWRITERS' WINDOWS; FIRE DOORS; METALLIC SKYLIGHTS; GALVANIZED IRON and COPPER CORNICES, DORMERS, FINIALS, CRESTINGS, VENTILATORS; METAL, SLATE, and TILE ROOFING.

"BOGENBERGER" WINDOWS.

"Bogenberger" Windows are made in all the required types, in either galvanized iron or copper, strictly in accordance with the specifications of and approved by the National Board of Fire Underwriters. They are architectural in design, weather-proof, and, in fact, combine safety, economy and efficiency.

OUR LABORATORY TESTS.

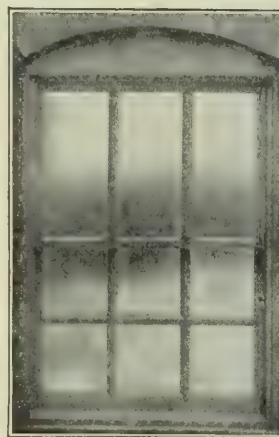
These illustrations are true facsimiles of photographs taken before and after the fire tests. All our windows required but one test to convince and satisfy the Chicago Laboratories as to their efficiency as a fire retardant. The temperature attained in these tests was above 1,800 degrees. Our windows average 75 per cent glass surface.

THE LABORATORY LABELS.

Whenever these labels are attached to windows, fire doors, etc., the architects and owners can rest assured that they are getting a first-class product in every respect. All our windows and fire doors are inspected by a laboratory inspector before they leave our plant.

ILLUSTRATIONS OF METAL WINDOWS.

We show herewith a few of the many various types of metal windows we manufacture, division of lights as per Underwriters' specifications.



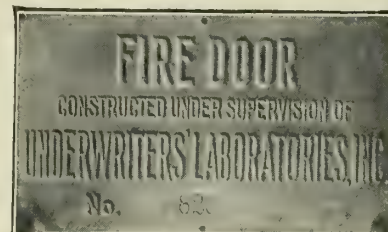
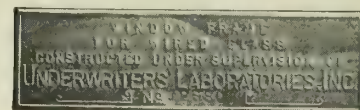
Before Test



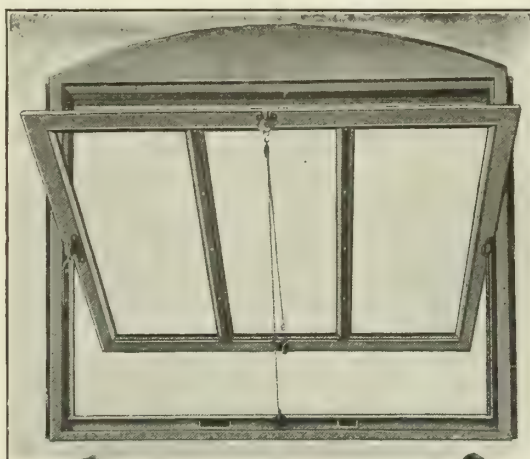
After Test

"BOGENBERGER" WINDOW TESTED OVER 1,800 DEGREES TEMPERATURE

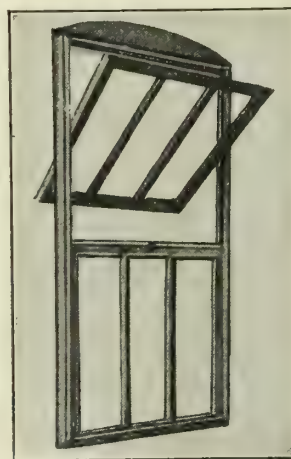
No further comment necessary—the above speaks for itself



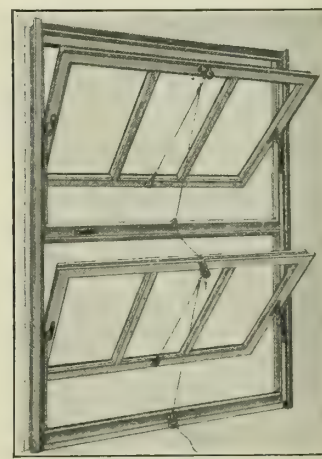
LABELS WE USE ON OUR PRODUCTS



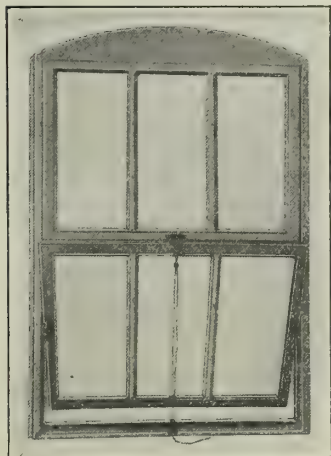
TYPE NO. 1. SINGLE-PIVOTED



TYPE NO. 2. UPPER SASH PIVOTED; LOWER SASH STATIONARY



TYPE NO. 3. UPPER AND LOWER SASH PIVOTED

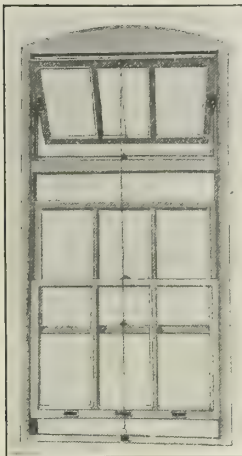


TYPE NO. 9. LOWER
SASH PIVOTED, UPPER
SASH STATIONARY

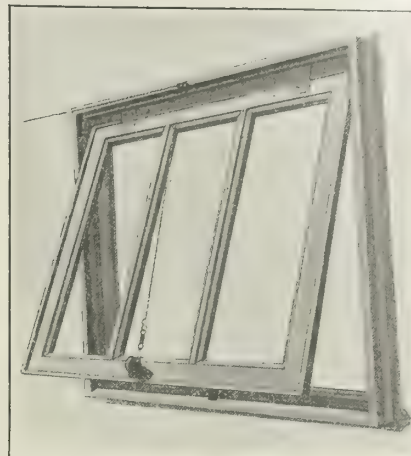


TYPE A. BOX-FRAME
OR DOUBLE-HUNG,
WITH BRASS OR
GALVANIZED IRON
TRACK PLATES AND
HEADS

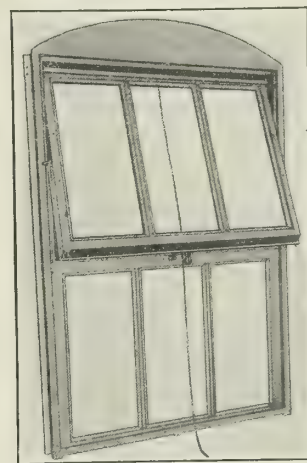
The Brass is preferable
for wearing and work-
ing qualities



TYPE A. DOUBLE-
HUNG WINDOW
COMBINED WITH
NO. 1 PIVOTED



TYPE NO. 20. HINGED ON TOP



"BOGENBERGER" WINDOW,
SAME AS TYPE NO. 2

Showing Reversed Sash for
cleaning purposes, which is
accomplished without even
disengaging any bolts, piv-
ots, etc.

OTHER
SHEET-METAL
WORK.

We are always prepared to furnish Skylights, Cornices, Ventilators, etc., adapted for any and all purposes throughout the country.

We show below a cut of a metal fireproof Ventilating Monitor of our own design, glazed with wire-glass, reinforced throughout with angle and bar iron steel. Not one iota of wood is used. We recommend this especially for engine and boiler houses.

UTILITY.

Our products are suitable for all classes of buildings, city or country, and owing to our method of construction can be easily erected by the average mechanic.

PRICES.

Quotations will always be the best for first-class workmanship and materials.

SERVICE.

Service is always right—prompt and guaranteed.

FACILITIES.

We have not only the necessary factory space, but the best equipment available for manufacturing purposes.

TERRITORY.

We are prepared at all times to install our products in any part of the country.

REFERENCES.

A few of the many buildings recently equipped with our windows, and approximating over 140,000 square feet:

A. O. Smith Company, Milwaukee, Wis.
F. M. Prescott Steam Pump Co., Milwaukee, Wis.
F. W. Sivy, Milwaukee, Wis.
The Falk Company, Milwaukee, Wis.
Wisconsin Lakes Ice & Cartage Co., Milwaukee, Wis.
The Cutler Hammer Mfg. Co., Milwaukee, Wis.
Robt. A. Johnston, Milwaukee, Wis.

H. W. Johns-Manville Co., Milwaukee, Wis.
A. F. Gallun & Sons, Milwaukee, Wis.
Bain Wagon Co., Racine, Wis.
Milwaukee Drug Co., Milwaukee, Wis.
Refuse Incineration Plant, Milwaukee, Wis.
Split Rock Light House, Duluth, Minn.



VENTILATING MONITOR

THE CRITTALL MANUFACTURING CO., LTD.

Metal Casement Windows

11-12 Finsbury Square
LONDON, E. C., ENG.

UNITED STATES SALES AGENT
SAMUEL BETTLE, JR., Land Title Building, Philadelphia, Pa.

PRODUCTS.

CASEMENT WINDOWS of ROLLED SECTIONS, in Steel or Bronze; WROUGHT-STEEL and BRONZE WINDOWS and SASHES of Special Design to suit any character of building.

DESCRIPTION.

"Crittall" Casements are made of the best mild steel sections from our own rolls. In the manufacture of Steel Casements we have eliminated all brazing, *every joint being welded*, and the whole frame is solid. Besides being stronger this is par excellence the method for joining casement sections, as it does away with any possibility of the brazing flux raising the paint and exposing the metal to the rusting elements. We have a great variety of sections of various weights and designs to suit every requirement. Our No. 1 section and our No. 29, or "Economic" Section, are illustrated below:

No. 1 Section is outward opening, and is guaranteed weather-tight under all conditions. Casements of A grade have gun-metal condensation sill in addition. Our No. 9 Section corresponds with No. 1, but opens inward, and has copper weather-bar at the sill.

The "Economic" Casement has been put on the market to fill a demand for a low-priced metal casement. It is certainly more weather-tight than a wooden casement, and

costs about the same. For example, the price of a casement 2 feet wide by 3 feet 6 inches high is \$6.00 with gun-metal fittings, and \$4.25 with blacked iron fittings, f. o. b. New York.

The flat strips are planed on the striking edge to insure the true fit necessary.

FITTINGS

Our Fittings are now finished direct from castings, thereby avoiding a hard mechanical appearance, and are most artistic in both color and design. All necessary hardware and fittings are supplied with our casements.

A grade are of polished gun-metal (bronze).

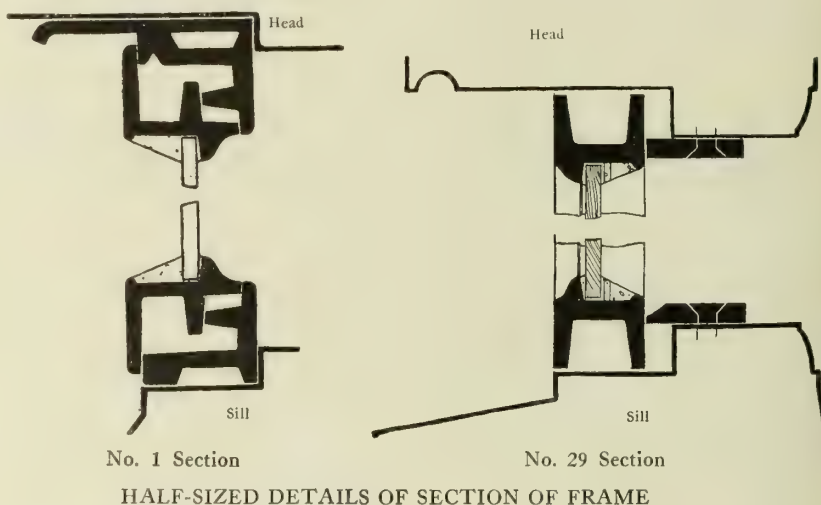
B grade are of iron, dull black, oven-enameled.

ADVANTAGES.

There can be no question as to the superiority of metal to wood in casement windows. Metal casements will neither warp, twist, shrink nor stick, but will hold their proper shape, remain tight, and always open and close easily. They offer a minimum obstruction to light, allow a maximum of ventilation and are much stronger and more durable. There are many examples of these windows three and four hundred years old.

OBJECTIONS ANSWERED.

The only objections to the casement window are the difficulties presented by fly screens and cleaning. We have successfully solved both of these problems. In the matter of screens



there are several methods to suit different cases, and we shall be glad to submit details upon receipt of particulars.

To overcome the difficulty which arises in cleaning single casements in upper stories, we have the "Crittall" Patent Safety Hinge.

"CRITTALL"
SAFETY
HINGE.

This hinge is of simple design with no complicated parts. It reverses the casement and allows the outside of the window to be cleaned from the inside. It is simply an attachment which does not disfigure the casement in any way and all weather-tight qualities are retained.

SPECIAL
WINDOWS.

In addition to the domestic casement, we manufacture a very wide variety of Wrought-Steel Windows and Sashes for public buildings, hotels, office buildings, high-class loft and mercantile structures.

Our American representative will be pleased to consult with architects and to submit details and prices.

CATALOGUE.

We have just issued an American Edition of our catalogue, giving prices in dollars and cents, including freight and customs duty. We will send a copy to any architect upon request.

FACILITIES.

We are to-day the largest makers of casements in England. Our shops are as perfect as up-to-date machinery and methods can make them. The skill of our working force is the highest procurable.

While we are thoroughly alive to the question of manufacturing in the United States, we consider the time is not yet ripe for doing so.

We can make delivery in from six to ten weeks from receipt of particulars; and as Metal Casements should be installed as part of the "finish" work of a building, there is ample time to procure the casements from England.

INQUIRIES.

Inquiries should be accompanied by the following particulars:

- (1) Height and width, giving height first. (2) Kind of casement required. Side-hung to open out; side-hung to open in; bottom-hung to open in; top-hung to open out; horizontal center hung; vertical center hung; fixed; special. (3) What fittings are required. (4) How sash is to be glazed.

AMERICAN
CONTRACTS.

Our American Agency has only recently been established, but we are already favorably known by many of the leading architects in New York, Boston, Philadelphia, Baltimore, Detroit and other cities.

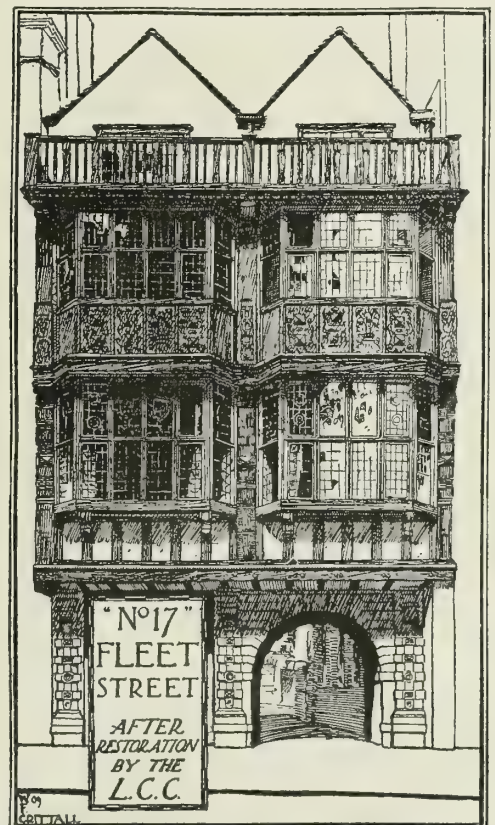
Among our American contracts we mention the following: Parish House of St. Bartholomew, Philadelphia, Pa., M. B. Medary, Jr., architect; residence, Philadelphia, Messrs. Frank Miles Day & Brother, architects; residence, Merion, Pa., Thomas, Churchman & Molitor, architects; residence, Chestnut Hill, Philadelphia, Pa., Wilson Eyre, Jr., architect; Market Street National Bank, Philadelphia, Pa., Thomas, Churchman & Molitor, architects; residence, Baltimore, Md., Ellicott & Emmart, architects.

FOREIGN
CONTRACTS.

Among the contracts recently executed in Europe, the following may be mentioned as typical: Royal Assurance Co.; New Sessions House, Old Bailey; New office London Assurance Co.; The Chartered Bank of India; University College Hospital; Victorian Government Offices; Harrod's Stores, and Albemarle Club, all in London; City and Midland Bank, Liverpool; Liverpool County Hospital; Carnegie Free Library, Kendal; Vickers Sons and Maxim, Sheffield; Queen's College, Belfast; Bank of Ireland, Cork.

RESTORATIONS.

The contracts for restorations recently completed by us include the Tower of London; Lambeth Palace; Bishop's Palace, Canterbury; No. 17 Fleet Street; Layer Marney Towers and Hever Castle.



"CRITTALL" CASEMENT WINDOWS USED
IN THE RESTORATION OF 17 FLEET
STREET, LONDON, ENG.

DAHLSTROM METALLIC DOOR COMPANY

MANUFACTURERS OF

"Dahlstrom" Patent Sheet-Metal Doors, Trim and Accessories

JAMESTOWN, N. Y.

BRANCH OFFICES

NEW YORK, N. Y., 299 Broadway
TELEPHONE, 4161 WORTH
CHICAGO, ILL., 831 Monadnock Building

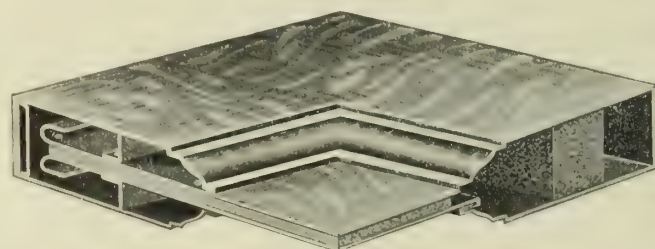
SAN FRANCISCO, CAL., 720 Merchants Exchange
PHILADELPHIA, PA., 1520 Chestnut Street
ST. LOUIS, MO., Bank of Commerce Building

PRODUCTS.

We are the originators of HOLLOW-METAL FIREPROOFING. We manufacture DOORS, ELECTRICAL CABINETS and CUT-OUT BOXES, PARTITIONS, WARDROBES, and complete TRIM, including PICTURE and WIRE MOULDING, CAPPING, CHAIR RAILING, and MOULDING for all purposes in STEEL, BRASS and BRONZE.

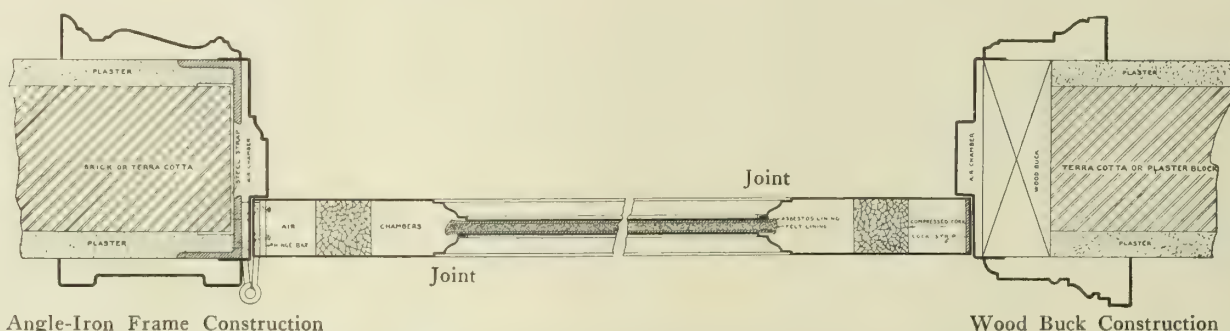
CONSTRUCTION.

Being pioneers, our patents cover broadly the most desirable features and insure simplicity of construction, producing absolute rigidity without excessive weight. Our welded joints and sealed double-lock seams make the connections invisible, adding beauty and strength to the unsurpassed fireproof qualities of our doors.



RIGHT-HAND UPPER CORNER OF DOOR

The accompanying view of section through door and corner further illustrates our construction and method of sound-proofing. The corners of our casings are mitered and welded. The side and head jambs are shipped knocked-down to provide for adjustment in the rough openings in the building.



Angle-Iron Frame Construction

Wood Buck Construction

SECTIONAL VIEW OF THE "DAHLSTROM" FIREPROOF DOOR

Showing sheet-steel frame, four styles of casings, and two methods of securing same to the wall

HARDWARE.

No wood is used but we fit all hardware and provide proper reinforcements of steel for all hardware. Any kind of hardware desired is therefore permissible. Templates of hardware must be at our factory by the time actual work on the doors is commenced. Time and expense will be saved if all hardware is ordered interchangeable and packed with machine screws.

STYLES.

For ready reference we illustrate herewith a few frequently used styles of doors and mouldings, but these can be varied to suit customers' tastes. In doors without glass panels our Colonial style forms the base and any additional panels desired are planted on same in the most practical manner, mostly by either welding or riveting.

PARTITIONS.

To secure privacy and neatness without loss of valuable space, our sheet-steel partitions are extensively used for subdivisions of offices with or without glass panels, and they can be expeditiously taken down and re-erected at any time to meet the changing conditions and requirements of occupants. Accompanying cut shows one of these partitions in the Singer Building, as well as our steel wainscoting.

TRIM.

We maintain a large force of expert tool makers in order to meet demands for specially designed shapes, but we are constantly adding to our stock designs (catalogue of which we shall be pleased to send on application) which are available for immediate use. The glimpse of a corridor illustrated herewith is from the Singer Building and shows our steel wainscoting-cap, borrowed lights and window-casings, as well as doors and transoms.

MOULDINGS.

Our cold-drawn steel mouldings are for many purposes rapidly replacing the imported heavy, hot-rolled sections heretofore so extensively used by ornamental iron works in stair, store and elevator front work, etc., and every architect should make sure to have one of our catalogues for ready reference. These mouldings are furnished to the trade in bars or cut to lengths.

ADVANTAGES AND ADAPTABILITY.

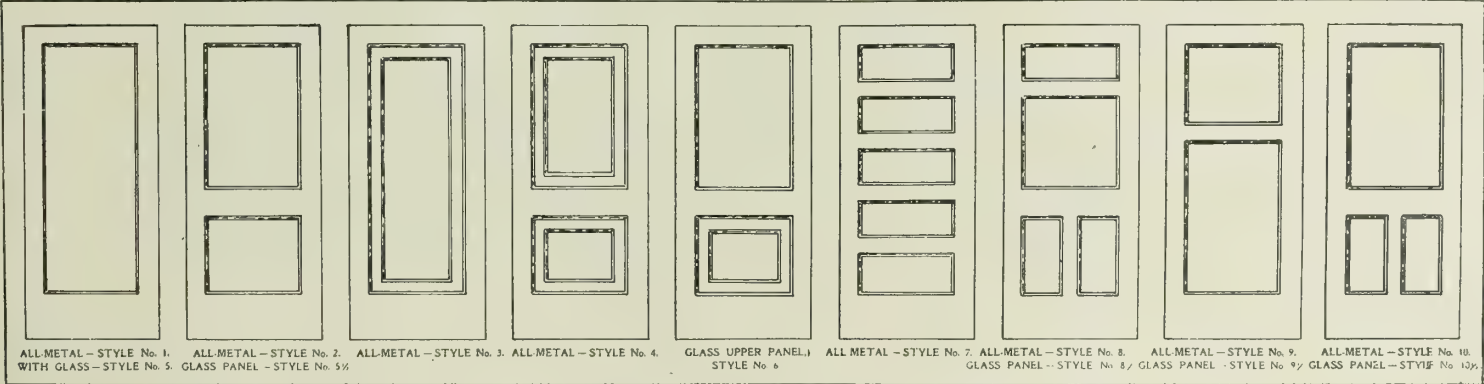
The advantages of making each room in a fireproof building a fireproof compartment by the use of fireproof doors and trim, are too well known to require further arguments.

OFFICIAL ENDORSEMENT OF FIRE TESTS AND LABELS.

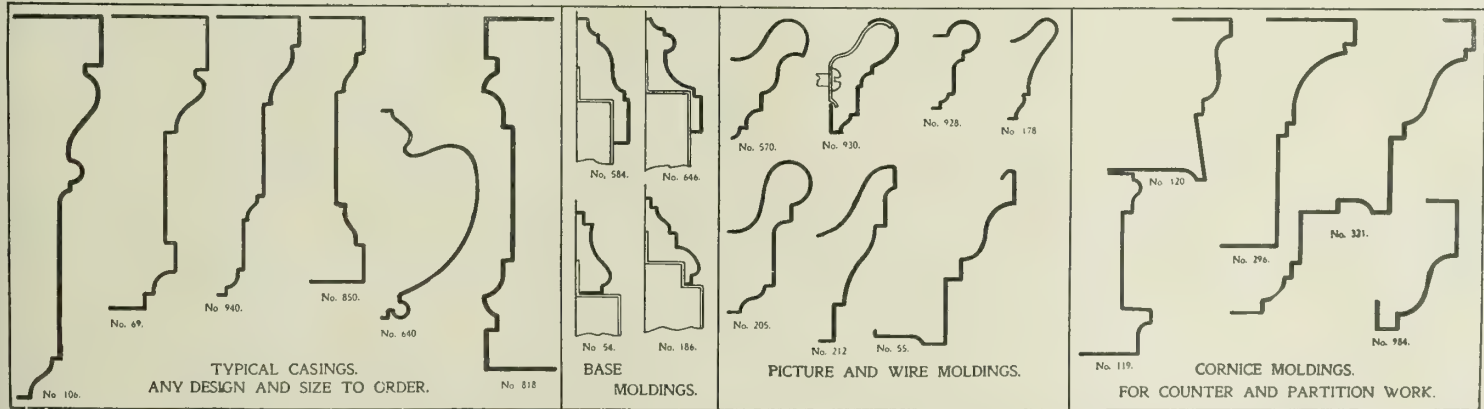
The National Board of Fire Underwriters have tested and approved our doors and their labels of inspection are furnished when desired. They also have the approval of the Department of Buildings of our larger cities.



CORRIDOR OF THE SINGER BUILDING, NEW YORK, N. Y.



A STRING OF DOORS, WITH OUR STYLE NUMBERS FOR DIFFERENT DESIGNS. SCALE 1/4 IN. = 1 FOOT



A FEW OF OUR STANDARD MOLDINGS, 1/2 ACTUAL SIZE. CATALOGUE SHOWING ABOUT 500 SHAPES, SENT ON APPLICATION

CHARACTER- ISTICS.

Beside meeting a practical purpose by being fireproof, their artistic and superlative finish make our products available for the highest classes of buildings and give tone to the buildings where used, as well as a sense of security to the hotel guest. Apartments and offices rent quicker, and the material being finished before it is shipped from the factory, the annoyance caused and the time lost by having the trim painted after erection are obviated.

Corrosion is guarded against by a thorough cleaning of the steel and careful application of metallic paint on inside and outside.

Metallic ring is prevented by use of felt and cork cushions. The wearing quality of our finish is enhanced by our baking method and by the use of only the best grades of material applied by hand.

We undertake to reproduce faithfully any color, wood or metal finish.



LOBBY OF COLUMBIA COUNTY COURT HOUSE, HUDSON, N. Y.

FACILITIES AND TERRITORY.

Our new factory additions give us floor space of about one eighth of a million square feet. Our equipment includes machinery designed and built especially for Hollow-Metal Door work, and a well-equipped tool room, making our facilities for prompt execution of orders unsurpassed.

Contracts solicited for f. o. b. factory shipments as well as for the work installed anywhere.

CO-OPERATIVE SERVICE.

It is a pleasure to us to co-operate with architects, and we will adapt any rough sketch or suggestions to our construction and submit adequate drawings for approval.

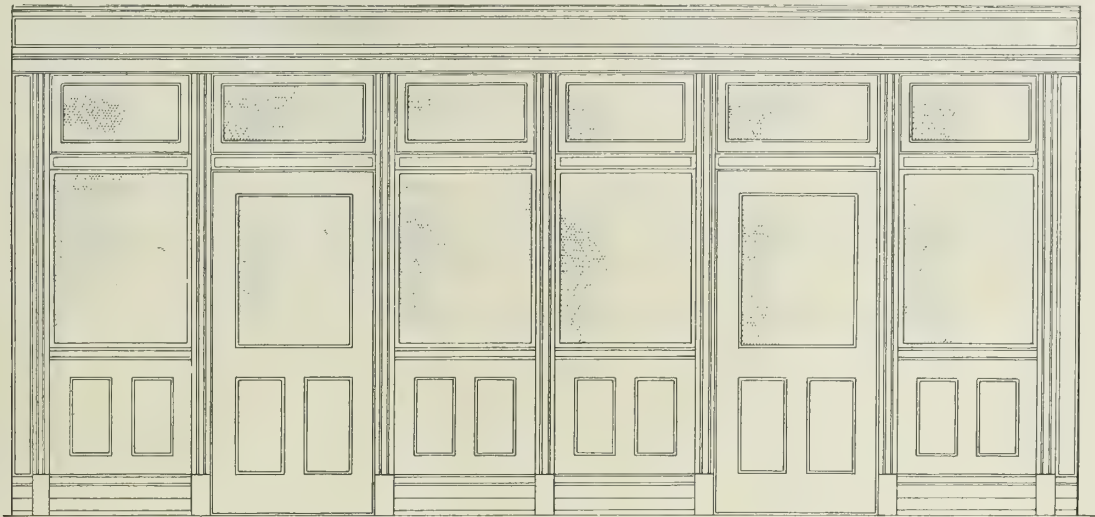
We particularly invite communications regarding estimates in all branches of our work. Catalogue sent upon request.

PRICES.

To quote intelligently we should be informed of styles of doors, sizes of openings and thickness and nature of wall and buck work. Estimates, designs and further information submitted upon application.

SPECIFICATIONS.

Our construction permits architects to specify any kind of buck work they desire. All structural work should be provided and set in place by general or iron contractor, but where preferred we can include same in our estimates. Illustrations of standard methods employed will be sent on application.



TYPICAL STEEL PARTITIONS WITH GLASS PANELS

GUARANTEE.

The DAHLSTROM METALLIC DOOR COMPANY guarantee that all materials and workmanship used in the manufacture of their products are of the very best quality and that the work they install will give satisfaction.

REFERENCES.

The work executed by us is our best recommendation, and we quote below a few of our installations:

- | | |
|---|---|
| The United States Express Building, Greenwich and Rector Streets, New York, N. Y. | Bell Telephone Exchange, Wilmington, Del. |
| The Singer Building, 149 Broadway, New York, N. Y. | Altoona High School, Altoona, Pa. |
| Post Office and Office Building, Grand Central Station, New York, N. Y. | William Penn High School, Philadelphia, Pa. |
| James A. Farley Apartment, 56th Street and Madison Avenue, New York, N. Y. | Englewood Theater, 1521 State Street, Chicago, Ill. |
| Hispanic Society Museum, 155th Street, West of Broadway, New York, N. Y. | The New Lyric Theater, Cincinnati, Ohio |
| Scribner Press Building, New York, N. Y. | Seventh Regiment Armory, 34th Street and Wenworth Avenue, Chicago, Ill. |
| Numismatic Society Museum, New York, N. Y. | Eva Hebbard Warehouse, Chicago, Ill. |
| Hendrick Hudson Apartment House, 110th-111th Streets and Cathedral Parkway, New York, N. Y. | Underwriters' Laboratories, Chicago, Ill. |
| Stuyvesant Apartment House, 98th Street and Riverside Drive, New York, N. Y. | The Oliver Building, Pittsburg, Pa. |
| Gramercy Park Apartment House, 24 Gramercy Park, New York, N. Y. | Infirmity Hospital for Insane, Watertown, Ill. |
| Apartment house, 93rd Street, New York, N. Y. | R. A. Long Building, Kansas City, Mo. |
| Apartment house, 925 Park Avenue, New York, N. Y. | Bank of Commerce, St. Louis, Mo. |
| Columbia County Court House, Hudson, New York. | Luning Building, San Francisco, Cal. |
| Good Housekeeping Building, Springfield, Mass. | St. Clair Building, San Francisco, Cal. |
| State Insane Asylum, Overbrook, N. J. | The Bank of Italy, San Francisco, Cal. |
| Security Building, Bridgeport, Conn. | Hibernia Bank, San Francisco, Cal. |
| Bell Telephone Exchange, Philadelphia, Pa. | Oakland Bank of Savings, Oakland, Cal. |
| | Royal Insurance Building, San Francisco, Cal. |
| | Pacific Mutual Life Insurance Building, Los Angeles, Cal. |
| | Wells Fargo & Co. Express Building, Portland, Ore. |
| | Hotel Chalfonte, Atlantic City, N. J. |
| | School for the Deaf, Jacksonville, Ill. |
| | Mercer County Court House, Mercer, Pa. |

DETROIT STEEL PRODUCTS COMPANY

MANUFACTURERS OF

Wrought-Steel "Detroit Fenestra" Window Sash (Patented)

DETROIT, MICH.

AGENTS

BOSTON, MASS., SMITH & THAYER COMPANY, 236 Congress Street

PHILADELPHIA, PA., SAMUEL BETTLE, JR., Land Title Building

CLEVELAND, OHIO, A. G. HATHAWAY & Co., Cuyahoga Building

ST. LOUIS, MO., HUNKINS-WILLIS LIME & CEMENT Co.

LOS ANGELES, CAL., CALIFORNIA BUILDERS' SUPPLY COMPANY, Henne Building

KANSAS CITY, MO., JACQUES STEEL COMPANY, R. A. Long Building

CHICAGO, ILL., CHARLES R. AYARS, 90 Washington Street

MINNEAPOLIS, MINN., HENRY O. JOHNSON, 400 Lumber Exchange

NEW ORLEANS, LA., AMERICAN SHEET-METAL WORKS

SAN FRANCISCO, CAL., WILKOMM BUILDING SUPPLY Co., 151 Tahama Street

SALT LAKE CITY, UTAH, THOMAS A. WILLIAMS, 209 Scott Building

PRODUCT.

We are the makers of "FENESTRA" WROUGHT-STEEL SASH for Factories, Mills, Warehouses, Railroad Shops, Garages, Institutions, and all industrial buildings.

DESCRIPTION.

Our Sash are manufactured from specially rolled solid sections, the composition of the material being such that we are able to furnish a sash which has at once the strength of steel and the weather-resisting qualities of iron.

"Fenestra" was designed to supply a demand for a metal *factory* sash. It is not intended for installation in office buildings; but, for its special purposes, it has no equal, combining simplicity and neatness with strength and weather and fire-resisting qualities.

ADVANTAGES.

Because of the strength of our "Fenestra" joint (Fig. 1) it is possible for us to use sections which permit of 25 per cent more light being delivered through a given opening than has heretofore been possible.

By making a sash which requires no frame, sash weights, etc., or heavy mullions, we eliminate the cost of same, thereby reducing the cost of each sash to a minimum.

"Fenestra" looks better than any other sash. A natural curve at each joint breaks the monotony which is characteristic of the old miter-joint sash, and gives "Fenestra" an appearance which is quite its own.

ADAPTABILITY

"Fenestra" is used to special advantage in paper mills, breweries, soda ash works and similar plants, where chemical action and dampness destroy sheet metal or wood. In institutions and asylums it serves doubly for window and grating, a reliable barrier against intrusion or escape. But "Fenestra" finds its great field of general usefulness in factories, powerhouses, railroad shops, warehouses, garages, etc., where wood sash is a thing of the past, and where the lighter and more bulky sheet-metal article can not endure.

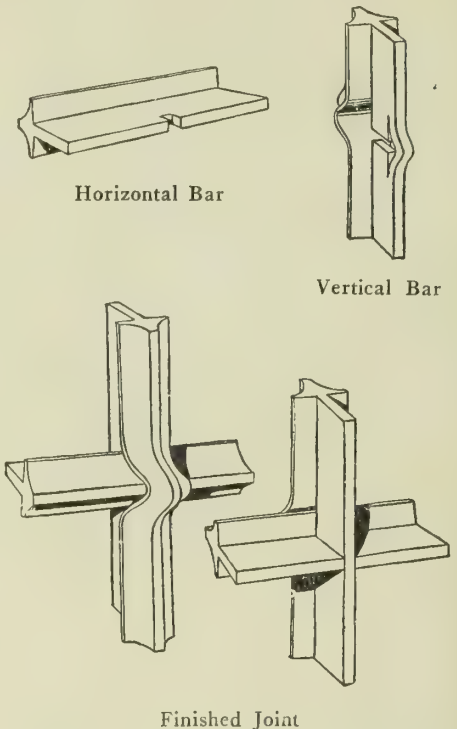


FIG. 1. THE FENESTRA JOINT



FIG. 2. A WELL-LIGHTED FACTORY

CO-OPERATIVE
SERVICE.

We always aim to obtain information regarding prospective work at a time when it is not too late for us to advise with our customers concerning details of building construction. In this way we are able to give them the benefit of our experience and at the same time to make our proposition attractive by offering at their full value and least cost the advantages which our construction affords. For detailed information, therefore, we refer you to our estimating department, which is organized especially for consultation with our customers.

"FENESTRA"
DESIGN.

It must first be understood that but two sections are ordinarily used in the construction of "Fenestra" Steel Sash, viz: The double-flange section No. 92, which forms the outside members of the sash, and the inside sash section No. 90, which is used for making the inner bars (both vertical and horizontal). Other outside sections are used in special cases and for special sash, but the one shown may be applied in such a variety of ways that it can be used for ordinary sash almost without exception.

Fig. 3 illustrates the manner in which "Fenestra" is laid out in our shops, and the following formula may be used for calculating the dimensions of any sash, the outside members of which are formed from Section No. 92. The illustration applies in this particular case to our standard sash Type A-12, which is designed for 10" x 16" glass.

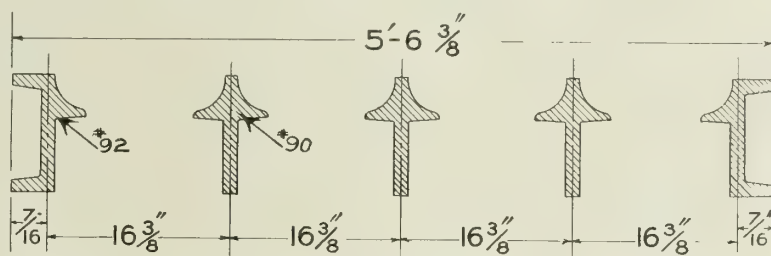


FIG. 3. LAYOUT OF HORIZONTAL BARS IN SASH A-12

$N \times (\text{Glass dimension} + \frac{3}{8}" , \text{height or width}) + \frac{7}{8}" = \text{over-all dimension of sash, height or width.}$
 $N = \text{number of divisions in height or width of sash.}$

"FENESTRA"
STANDARDS.

We are making "Fenestra" sash in standard sizes, because we believe that the market is now prepared for this step in the manufacture of metal sash. The architect and builder will readily appreciate the advantages derived from the use of a standard sash from the standpoint of delivery and erection; while, from the manufacturing standpoint, it may be said that the adoption of the standard so materially reduces the cost of the sash as to make metal sash nearly as inexpensive as the ordinary wood window, under equal conditions.

We would call your attention to the fact that the use of standards in "Fenestra" neither restricts the size of the opening nor the amount of ventilation which may be obtained from the opening. By selecting a sash of the required height, the width may be varied by using multiples of this sash unit. Ventilation may be arranged to suit practically any requirement by the use of the desired single unit or a combination of sashes in fixed lights, with those which are provided with ventilators. All units of the same height are interchangeable.

Standards in "Fenestra" are designed to take 10" x 16", or 12" x 18" glass.

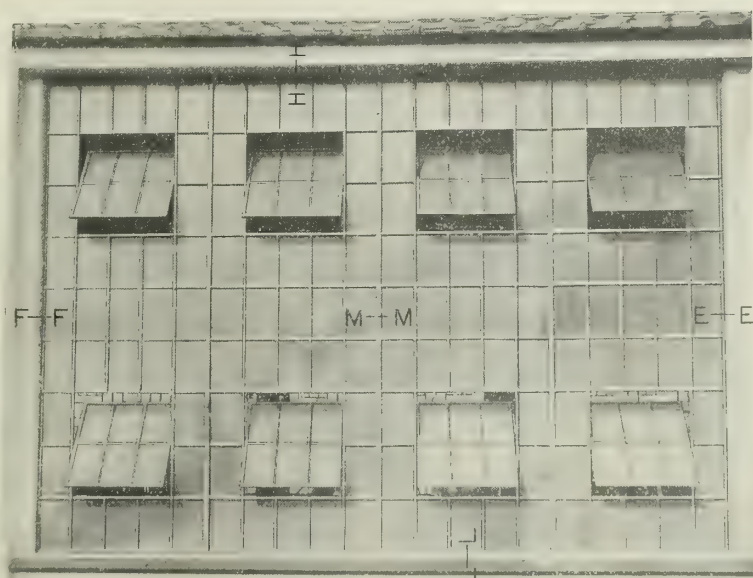


FIG. 4. ASSEMBLY OF FOUR STANDARD UNITS, TYPE A-1
(See Fig. 5)

ERECTION OF "FENESTRA"

Figs. 4 and 5 show the manner in which "Fenestra" is placed in brick work openings. No particular knowledge of the sash is required, it being necessary only to set the sash plumb and square, filling the channel of the frame with pointing as the wall goes up.

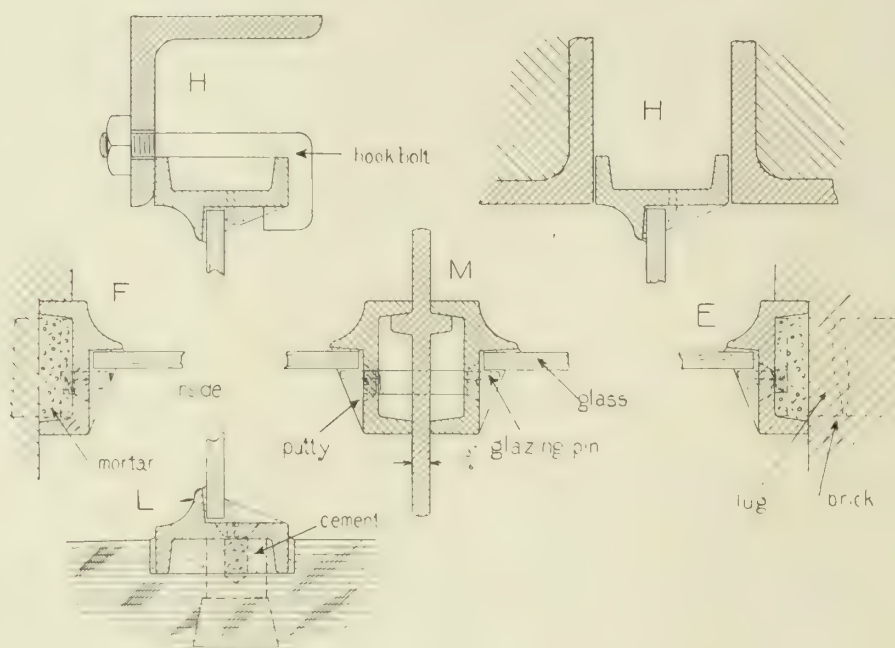


FIG. 5. HALF SIZED DETAILS FOR ERECTION OF "FENESTRA" (See Fig 4)

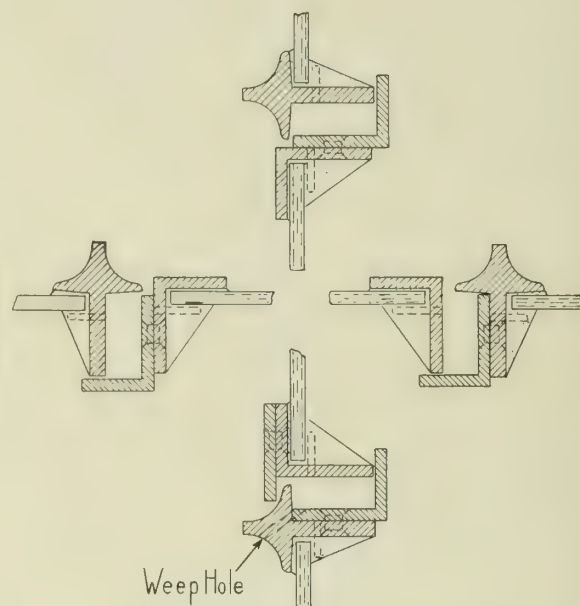


FIG. 6. STANDARD VENTILATOR DETAILS

SIZES.

We make two types of "Fenestra" Standard Sash: Type "A," designed for 10" x 16" glass, and Type "B," designed for 12" x 18" glass. Table No. 1 shows the over-all width of from one to five units of either type, including mullions. Table No. 2 specifies the height of all standard units of Types "A" and "B"; while Fig. 7 shows the arrangement of all units of either type, together with their catalogue numbers.

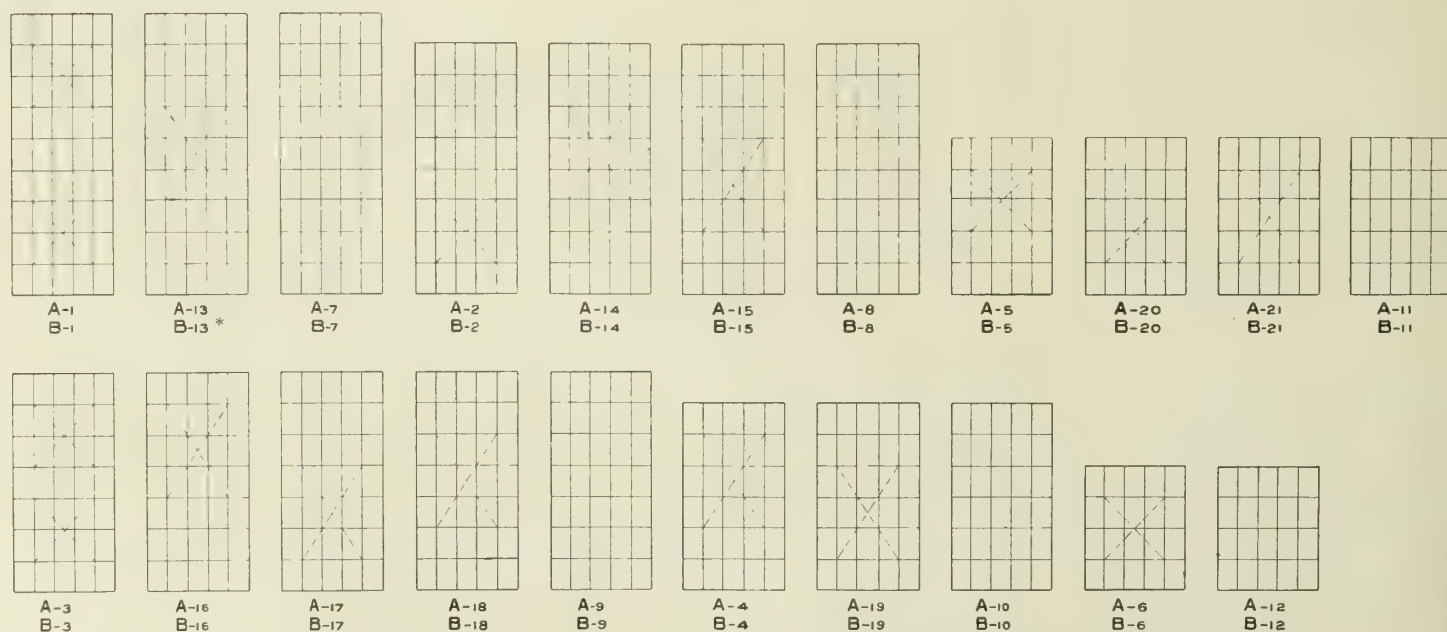


FIG. 7. ARRANGEMENT AND CATALOGUE NUMBERS OF "DETROIT FENESTRA" STANDARDS

*NOTE—Standard Sash No. 13 is now made with two nine-pane ventilators, instead of one as shown above.

TABLE NO. 1—OVER-ALL WIDTH OF ONE OR MORE UNITS OF STANDARD SASH

No. of Units	Type "A"	Type "B"	No. of Units	Type "A"	Type "B"
1	4' 4 ³ / ₈ "	5' 2 ³ / ₈ "	4	17' 7 ⁹ / ₁₆ "	20' 11 ⁹ / ₁₆ "
2	8' 9 ¹³ / ₁₆ "	10' 5 ¹¹ / ₁₆ "	5	22' 0 ³ / ₈ "	26' 2 ¹ / ₈ "
3	13' 2 ³ / ₈ "	15' 8 ⁵ / ₈ "			

TABLE NO. 2—HEIGHT OF ONE SASH UNIT

Catalogue No.	Type "A"	Type "B"	Catalogue No.	Type "A"	Type "B"
1	12' 4 ¹ / ₄ "	13' 10 ¹ / ₄ "	12	5' 6 ³ / ₈ "	6' 2 ³ / ₈ "
2	10' 11 ⁷ / ₈ "	12' 3 ⁷ / ₈ "	13	12' 4 ¹ / ₄ "	13' 10 ¹ / ₄ "
3	9' 7 ¹ / ₂ "	10' 9 ¹ / ₂ "	14	10' 11 ¹ / ₈ "	12' 3 ³ / ₈ "
4	8' 3 ¹ / ₈ "	9' 3 ¹ / ₈ "	15	10' 11 ⁷ / ₈ "	12' 3 ⁷ / ₈ "
5	6' 10 ³ / ₄ "	7' 8 ³ / ₄ "	16	9' 7 ¹ / ₂ "	10' 9 ¹ / ₂ "
6	5' 6 ³ / ₈ "	6' 2 ³ / ₈ "	17	9' 7 ¹ / ₂ "	10' 9 ¹ / ₂ "
7	12' 4 ¹ / ₄ "	13' 10 ¹ / ₄ "	18	9' 7 ¹ / ₂ "	10' 9 ¹ / ₂ "
8	10' 11 ⁷ / ₈ "	12' 3 ⁷ / ₈ "	19	8' 3 ¹ / ₈ "	9' 3 ¹ / ₈ "
9	9' 7 ¹ / ₂ "	10' 9 ¹ / ₂ "	20	6' 10 ³ / ₄ "	7' 8 ³ / ₄ "
10	8' 3 ¹ / ₈ "	9' 3 ¹ / ₈ "	21	6' 10 ³ / ₄ "	7' 8 ³ / ₄ "
11	6' 10 ³ / ₄ "	7' 8 ³ / ₄ "			

INSTALLATIONS FOR REFERENCE.

BUILDINGS

Michigan Crucible Steel Castings Co., Detroit, Mich.
Nairn Linoleum Co., Kearney, N. J.
Kawneer Manufacturing Co., Niles, Mich.
U. S. Heater Co., Detroit, Mich.
American Shipbuilding Co., Lorain, Ohio
Manistee Iron Works, Manistee, Mich.
J. E. Scripps Corp., Detroit, Mich.
Kinnear Manufacturing Co., Columbus, Ohio
Nelson Valve Co., Philadelphia, Pa.
Dodge Manufacturing Co., Mishawaka, Ind.
Belle Isle Bath House, Detroit, Mich.
Davenport Wagon Co., Davenport, Iowa
Gemmer Manufacturing Co., Detroit, Mich.
F. E. Wadsworth, Garage, Grosse Pointe, Mich.
Immanuel Hospital, Mankato, Minn.
Carnegie Steel Co., Bellaire, Ohio
Screw Cutting Company of America, Philadelphia, Pa.
American Sterilizer Co., Erie, Pa.
Geo. F. Motter & Sons, York, Pa.
Revere Rubber Co., Chelsea, Mass.
Spencer Wire Co., Worcester, Mass.
Henry W. Moesta, Garage, Detroit, Mich.
Allyne Brass Foundry Co., Cleveland, Ohio
American Optical Co., Southbridge, Mass.
Standard Concrete-Steel Co., New York, N. Y.
Minnesota State Fair Building, St. Paul, Minn.
Western Motor Co., Logansport, Ind.
The Pope Building, Cleveland, Ohio
Bath Iron Works, Bath, Me.
Edison Illuminating Co., Detroit, Mich.
Michigan Alkali Co., Wyandotte, Mich.
Minneapolis Bedding Co., Minneapolis, Minn.
Christie Heating & Iron Co., East St. Louis, Ill.
Bethlehem Foundry & Machine Co., South Bethlehem, Pa.
Frederick Stearns & Co., Detroit, Mich.
El Paso Power Station, El Paso, Texas.
Lake Shore & Northern Railroad Co., Syracuse, N. Y.
Pennsylvania Railroad Co., Philadelphia, Pa.
C. T. Patterson & Co., New Orleans, La.
Holophane Glass Co., Newark, Ohio
Metropolitan Electric Co., Reading, Pa.
Hydro-Carbon Co., Wichita, Kan.
Municipal Pumping Plant & Power Station, Buffalo, N. Y.
Chicago & Northwestern Railway Power Station, Chicago, Ill.
Mitchell Motor Car Co., Racine, Wis.
New York Central & Hudson River R. R., West Albany Shops
Indiana Steel Co. (U. S. Steel Corp.), Gary, Ind.
Northern Pacific Railroad Freight House, St. Paul, Minn.
Rice & Hutchins, Shoe Factory, South Braintree, Mass.
Lehigh University Laboratory, South Bethlehem, Pa.
Grand Rapids Water Works, Grand Rapids, Mich.
Turkey Creek Pumping Station, Kansas City, Mo.

ARCHITECTS AND ENGINEERS

Russel Wheel & Foundry Co., Engineers
Charles P. Baldwin, Newark, N. J., Architect

Smith, Hinchman & Grylls, Architects
American Bridge Co., Engineers

A. C. Varney & Co., Architects
Richards, McCarty & Bulford, Architects
Geo. K. Hooper, New York, N. Y., Engineer

Stratton & Baldwin, Architects
Tri-City Construction Co., Engineers
John Scott & Co., Architects
Louis Kamper, Architect
Albert Schippel

M. B. Medary, Jr., Architect

Hamme & Leber, Architects

Mildner & Eisen, Architects
Moore Engineering Co., Engineers

Reed & Stem, Architects

W. S. Tyler Co., Engineers

H. W. Jones, Architect

Stratton & Baldwin, Architects
Stone & Webster, Boston, Mass., Engineers
Sheaff & Jaastad, Boston, Mass., Engineers
Brann & Stuart Co., Engineers
Stone Bros., Architects
Frank L. Packard, Columbus, Ohio, Architect
Muhlenberg Bros., Architects

Robert A. Wallace, Architect

Frost & Granger, Architects
W. E. Wood, Engineer

Marcellus & Ballard, Oneida, N. Y., Architects

Williamson & Crow, Architects
Rudolf Markgraf, Architect

DOWMAN-DOZIER MFG. CO.

MANUFACTURERS OF

Metal Window Frames and Metal-Clad Doors
ATLANTA, GA.

PRODUCTS.

METAL WINDOW FRAMES for Wired Glass; METAL-CLAD DOORS and SHUTTERS.
Also, SKYLIGHTS and VENTILATORS, METAL CORNICES and GALVANIZED-IRON SPECIAL-TIES, for which see General Index.

DESCRIPTION OF OUR PATENTED WINDOWS.

The Dowman-Dozier Patented Sheet-Metal Window embodies several original and distinct features of construction which combine to produce a window that is comparatively light and inexpensive but at the same time very strong, and of superior weather-proof and fire-proof qualities through ingenious details of jointing.

With these points we combine the features of accessible weight-pockets and removable pulleys, both being valuable conveniences not usually found in metal windows.

DETAILS OF CONSTRUCTION.

The illustrations show the principal parts of our windows in their departure from the usual form of construction in matters of jointing, stop beads, glass stops, meeting-rail, weather lips and fire guards. Each main part of the window-frame, i. e., the sill, the box jambs, the head, and also the rails and stiles of the sashes, is composed of one single sheet of metal bent to shape on parallel lines only by special dies and punched all ready for putting together. This single sheet construction is made possible by the introduction of the groove adjoining the double-locked seam for the working of the die. The top cover of the head alone is a separate sheet, slide-jointed to the sides. The inner casing of the weight box is lap-jointed over the sill and head and secured by rivets, as shown in Fig. 1.

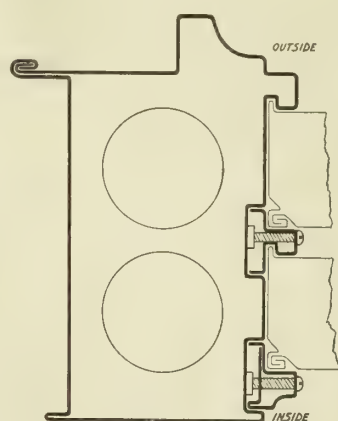


FIG. 3. PLAN OF WINDOW BOX

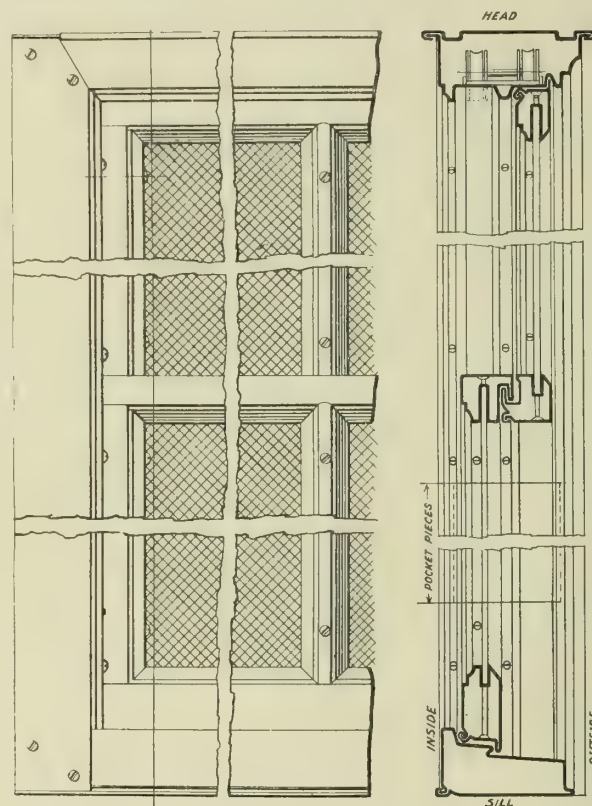


FIG. 1. ELEVATION OF WINDOW (INSIDE)

FIG. 2. SECTION OF WINDOW

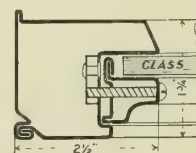


FIG. 4. SECTION OF SASH

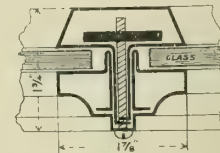


FIG. 5. SECTION OF BAR

DESCRIPTION.

Inside Stop Parting Strip—The plan, Fig. 3, shows the loose Inside Stop and the Parting Strip set in recesses and fastened to the jamb sheet by screws which engage into oblong plates riveted to the jambs. (See also Fig. 2.) The outside stop is worked on the sheet and shows a groove for receiving a weather lip on the sash, as does also the parting strip. This little device not only excludes wind and rain but ties the frame together and keeps it in true alignment. The peculiar shape of the inside stop makes the screw, when driven home, tilt the stop a little towards the sash, binding it and driving both sashes to a snug fit against their seats. The expansion caused by fire will have the same effect upon the stop.

Sash Glass Stop—This identical idea is applied in all details to the glass stop of the sash stiles and rails (see Fig. 4). In this case it is the glass that receives the tilting effect of the moulded stop, obviating thereby the common fault of metal sashes of allowing the glass to drop out when they become heated.

Sash Bars — Fig. 5 shows the sash bar in its two integral parts, the outside structural member and the inside glass stop. Figs. 6 and 7 show the intersection of two sash bars, one bar going through unbroken and the other mitering against it. The same jointing is applied to the glass stop. The two members are firmly drawn together by screws working into solid plates fastened to the interior of the structural member. The action of the screw and the expansion effect of heat upon the internal lip of the glass stop will produce the same binding effect as described for the sash-rail glass stop.

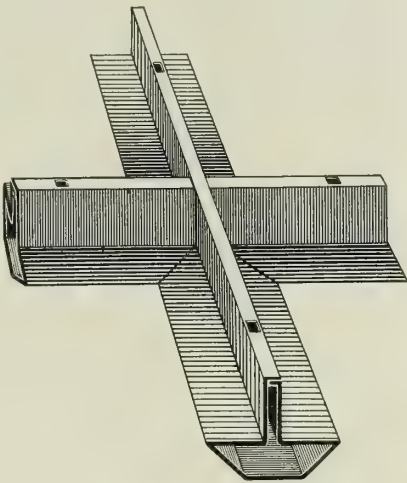


FIG. 6. PERSPECTIVE VIEW OF BAR

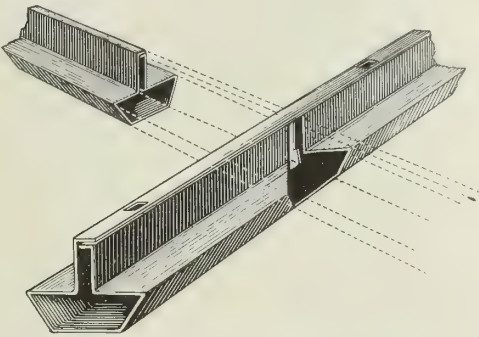


FIG. 7. STRUCTURAL VIEW OF BAR

Pocket Piece — Fig. 2 shows the pocket piece for accession to the weight box.

Pulley Carriage — As shown by Figs. 2, 8 and 9 the pulleys are set in the head of the frame and are supported by a carriage the bottom plate of which is let into the head sheet flush and fastened to a strong plate, shown in dotted lines, which is riveted to the head sheet. The slanting lines show the haunches of the carriage. The edges of the head sheet where cut out are flanged up for stiffness, as shown by the horizontal line. The carriage plate is further supported by the jamb of the frame. By removing the parting strip and taking out the two screws the pulley frame can be taken down and as easily replaced.

Sash Corners and Sash Bar Joints—An important feature of our construction is the sash corner (Fig. 10). The joint between rail and stile is not mitered (except the glass stop), but instead square lap-jointed and riveted and drawn together by a combination plate and bolt (Fig. 11), the plate-end of which is for the screw holding the glass stop, as previously described. The sash bars are jointed and bolted to the rails and stiles in the same manner.

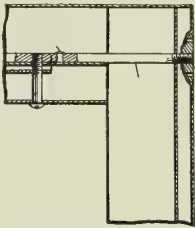


FIG. 10. DETAIL OF SASH CORNER



FIG. 11. SASH RAIL BOLT

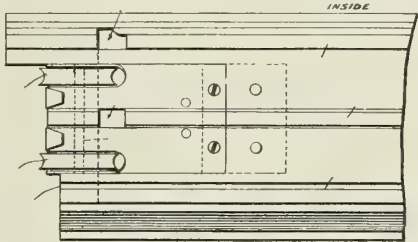


FIG. 8. BOTTOM VIEW OF HEAD JAMB

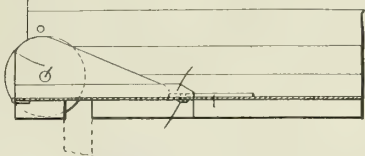


FIG. 9. SECTION OF PULLEY PLATE

Meeting Rails — Fig. 2 shows them to be not simply butted against each other on a level as usual but instead securely interlocked in a vertical joint which is wind-tight and binds the sashes together throughout their entire length. This joint prevents the introduction of any instrument to "force" the sash lock.

The joints in all the different parts of this window are so devised that neither heating nor cooling can cause serious opening of seams or distortion of parts. As to the exclusion of wind and rain, every practical weather stop has been adopted.

We shall be glad to answer any inquiries and quote prices. Trade catalogue of all our products sent promptly on request.

These window frames are made in full compliance with the Rules and Requirements of the National Board of Fire Underwriters and under supervision of Underwriters Laboratories, and bear their label.

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F. G. DRAPER

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NEW YORK, N. Y.

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UNITED STATES AGENT FOR
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SASHES.

Rolled sashes are now used almost exclusively in place of cast. They are invariably cheaper, offer less obstruction to daylight, and can be better adapted to varying sizes and shapes of windows. Better architectural effects can be obtained than with cast-iron, and they are practically unbreakable. Casements which open can be fitted better and made absolutely weather-proof. All joints are machined and interlocked.

FACILITIES
AND
DELIVERIES.

George Wragge, Ltd., own the patents of many of their sections and own their own rolls, assuring highly finished material and prompt delivery. The capacity of the works is from 10,000 to 15,000 feet of sash per week. Orders can be executed in from six to eight weeks after receipt of all information and measurements.

ORDERING.

State number of section wanted. Send full-sized details of jamb, head and sill, indicating outside. Sizes to be given net "daylight." Give "hands" if side-hung casements, also state whether clear or leaded glass is to be used.

PRICES.

The prices below are for Rolled Steel Casements in one square and with square heads. The extras for saddle bars, groove bars, shaped heads, etc., can be found in our general Catalogue. Prices on bronze casements will be given on application.

SIDE-HUNG CASEMENTS, HUNG SINGLY, AND FIXED LIGHTS									
Height	Width	Side-Hung Casements						Fixed Lights Same plane of glass and same sight line as Casements	
		No. 34 Section			No. 35 Section				
		Qual. 1	Qual. 2	Qual. 3	Qual. 1	Qual. 2	Qual. 3	No. 34 Sec.	No. 35 Sec.
2 ft. and under.....	2 ft. and under	\$16.60	\$15.75	\$14.65	\$16.60	\$15.75	\$14.65	\$5.90	\$5.90
Above 2 ft. and under 2 ft. 6 in.	“ “ “	17.20	16.35	15.25	17.20	16.35	15.25	6.20	6.20
2 ft. 6 in. and under 3 ft.....	“ “ “	17.75	16.90	15.80	17.75	16.90	15.90	6.50	6.50
3 ft. and under 3 ft. 6 in.....	“ “ “	18.30	17.45	16.35	18.30	17.45	16.35	7.05	7.05
3 ft. 6 in. and under 4 ft.....	“ “ “	18.85	18.00	16.90	18.85	18.00	16.90	7.60	7.60
4 ft. and under 4 ft. 6 in.....	“ “ “	20.00	19.10	18.00	20.00	19.10	18.00	8.15	8.15
4 ft. 6 in. and up to 5 ft.....	“ “ “	20.10	20.35	19.10	21.10	20.25	19.10	8.70	8.70

SIDE-HUNG CASEMENTS, HUNG IN PAIRS (WITHOUT CENTER FIXED RAIL), AND FIXED LIGHTS									
Height	Width	Side-Hung Casements						Fixed Lights	
		No. 34 Section			No. 35 Section				
		Qual. 1	Qual. 2	Qual. 3	Qual. 1	Qual. 2	Qual. 3	No. 34 Sec.	No. 35 Sec.
2 ft. and under.....	4 ft. and under	\$34.60	\$32.90	\$30.65	\$34.20	\$32.90	\$30.65	\$9.00	\$9.00
Above 2 ft. and under 2 ft. 6 in.	“ “ “	35.75	34.05	31.80	35.75	34.05	31.80	9.60	9.60
2 ft. 6 in. and under 3 ft.....	“ “ “	36.85	35.15	32.90	32.85	35.15	32.90	10.15	10.15
3 ft. and under 3 ft. 6 in.....	“ “ “	38.60	36.60	34.05	38.00	36.60	34.05	11.25	11.25
3 ft. 6 in. and under 4 ft.....	“ “ “	38.10	37.40	35.15	39.10	37.40	35.15	12.40	12.40
4 ft. and under 4 ft. 6 in.....	“ “ “	41.35	39.65	37.40	41.35	39.65	37.40	13.50	13.50
4 ft. 6 in. and up to 5 ft.....	“ “ “	43.60	41.90	39.25	43.20	41.90	39.65	14.65	14.65

TOP AND BOTTOM-HUNG CASEMENTS							
Height	Width	No. 34 Section Hung at sill to fall back		No. 35 Section Hung at head to push out			
		Quality 1	Quality 2	Quality 1	Quality 2	Quality 3	
2 ft. and under.....	2 feet and under	\$14.65	\$13.10	\$14.20	\$13.65	\$13.10	
Above 2 ft. and up to 2 ft. 6 in.....	" " "	15.25	13.70	14.80	14.25	13.70	
Above 2 ft. 6 in. and up to 3 ft.....	" " "	15.80	14.25	15.35	14.80	14.25	

No. 1 quality fittings are in coinage metal, highly polished or toned. No. 2 quality fittings are plainly filed coinage metal. No. 3 quality fittings are in iron, with coinage metal working parts.



PHOTOGRAPH OF SIDE-HUNG AND TOP-HUNG CASEMENTS IN STONE MULLIONS

ESTIMATES.

Estimates will include two priming coats of paint, and all hardware required, ready for setting, but will not include glass.

REFERENCES.

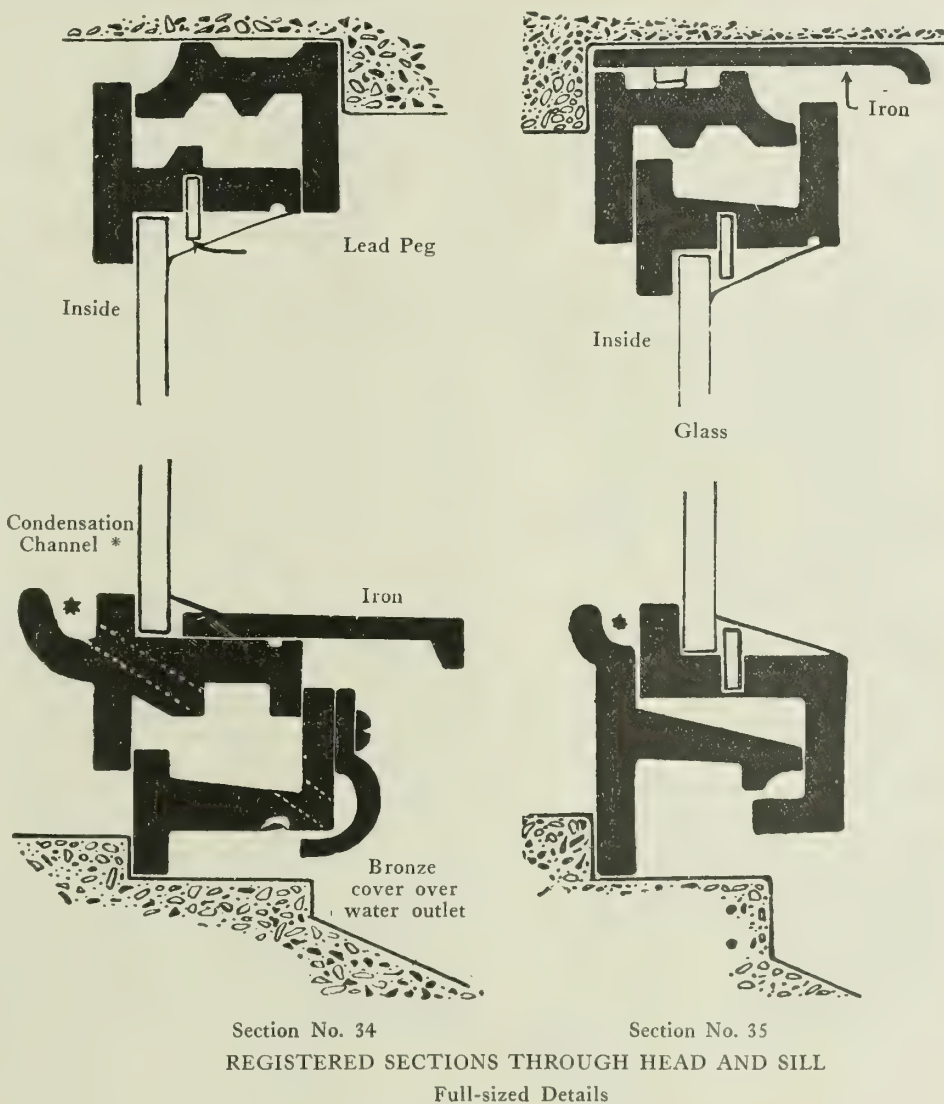
The 42-story Singer Building, Ernest Flagg, Architect, is equipped with about 3,000 of our sashes. We also refer to Taylor & Levi, New York, and Cram, Goodhue & Ferguson, New York and Boston.

ILLUSTRATIONS.

These illustrations show those sections which are recommended and which are mostly used, as follows:

No. 34 section, hung at side, *opening inwards*, either singly or in pairs; also, to fall back from sill.

No. 35 section, hung at side, *opening outwards*, either singly or in pairs; also, hung at head to push out.



Section No. 34

Section No. 35

REGISTERED SECTIONS THROUGH HEAD AND SILL

Full-sized Details

GRINDEN ART METAL CO.

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QUALITY.

Our door is the product of an expert mechanic long skilled in the art, and is the best that can be made in simplicity of construction, strength, durability, and artistic appearance. Each part is made in hardened steel dies which form sharp and accurate outlines.

ADVANTAGES.

Our process of reinforcing and our unique method for allowance of expansion and contraction under fire and water tests, entirely different from all others, produce a result fully 50 per cent stronger.

ADAPTABILITY.

Our construction has the endorsement of all the leading architects and engineers for high-class fireproof buildings, railway stations and terminals, power plants, steel railroad cars, battle-ships and other vessels, and is greatly superior to any kind of metal-covered work and at very little extra cost.

INSTALLATION.

We erect complete or deliver the material at the building or f. o. b. cars crated ready for erection by the carpenters. Hardware will be applied by us at our factory.

CAPACITY.

Our equipment is complete with the most modern machinery obtainable and we can undertake any contract, large or small.

STEEL FINISH.

Interior—Surfaces painted with metallic paint.

Exterior—Baked enamel, any color or grain, electroplate or plain.

COPPER OR BRONZE FINISH.

Natural or oxidized.

REFERENCES.

New Subway Loop, New York, N. Y., Cranford Co. and Degnon Contracting Co., Contractors.

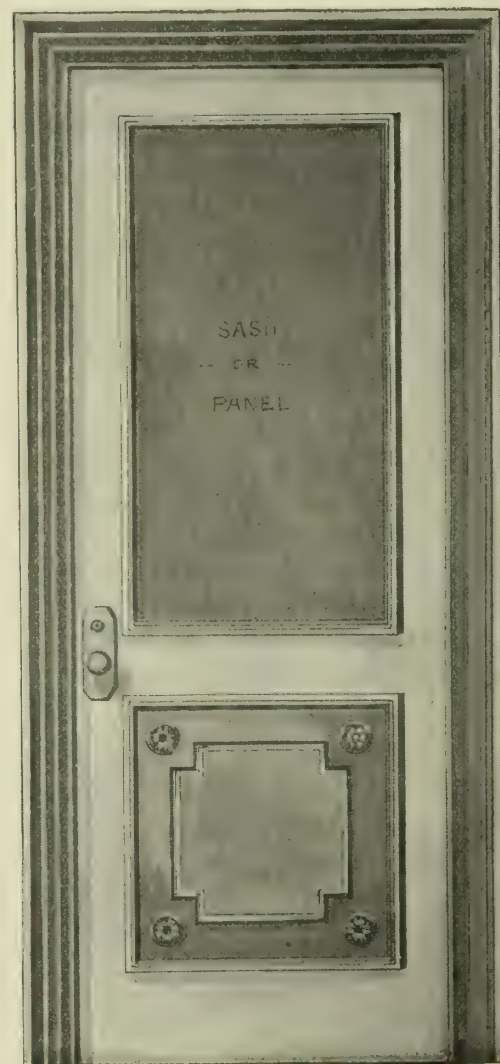
Pennsylvania Tunnel and Terminal Railroad Co., New York Terminal Service Plant

Pennsylvania Tunnel and Terminal Railroad Co., New York Terminal Signal Cabins.

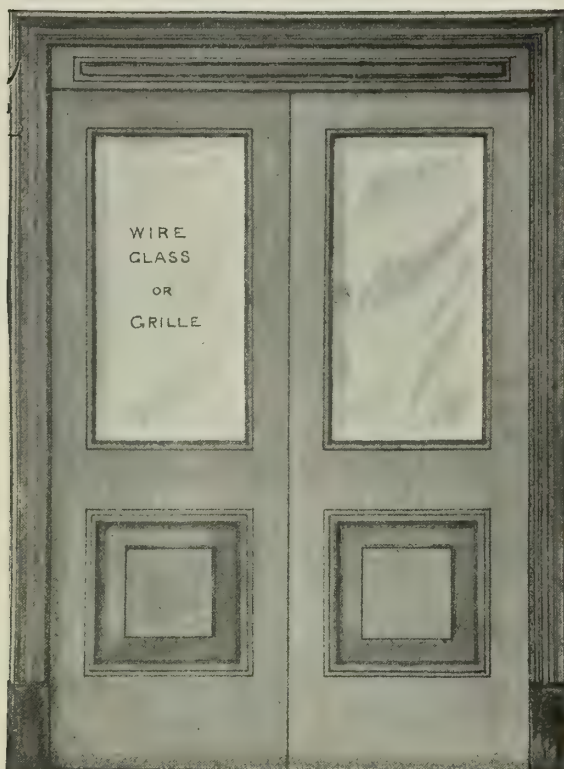
Pennsylvania Tunnel and Terminal Railroad Co., Long Island City Power Station, Extension.

New York Central and Hudson River Railroad, Sub Station, White Plains, N. Y.

Manual Training High School, Brooklyn, N. Y., and others.



TYPE "A" ALL-METAL DOOR



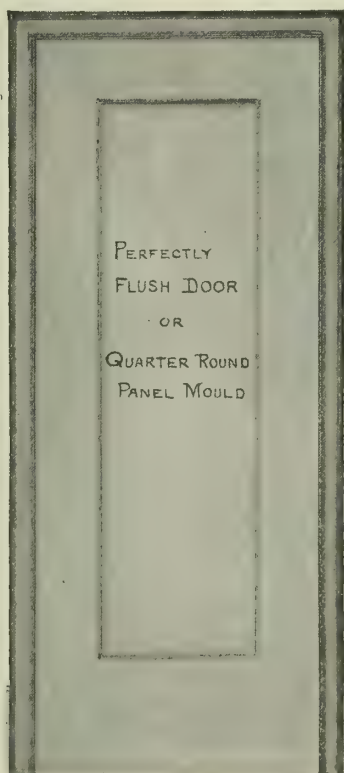
TYPE "B" COMBINATION SLIDING AND SWING
ELEVATOR DOORS IN STEEL, COPPER
OR BRONZE



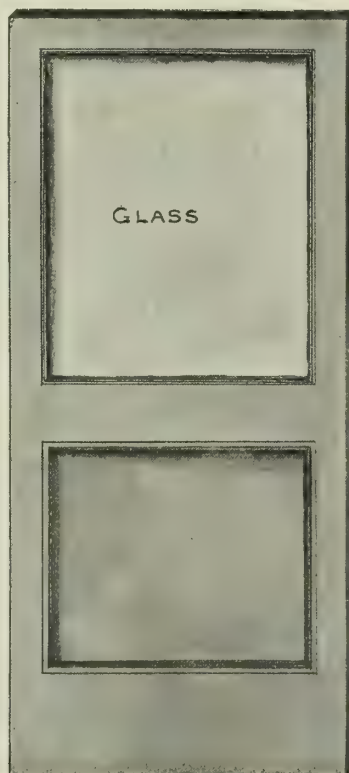
TYPE "C" SINGLE PANEL DOOR
IN STEEL, COPPER OR BRONZE
With or without Transom

SPECIFICA-
TION FORM.

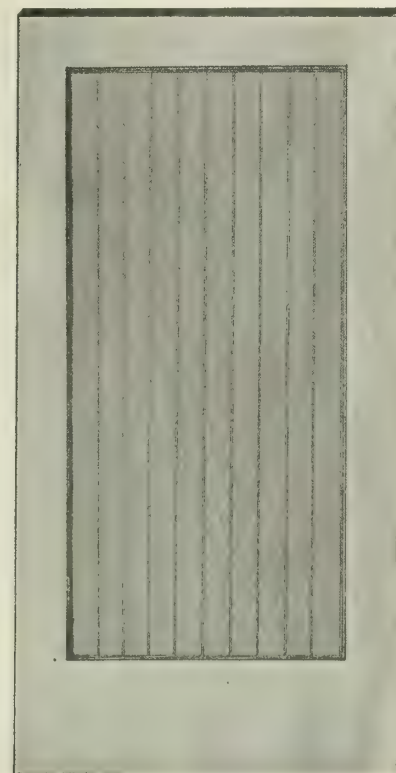
" All doors throughout to be 18 and 20 gauge O. H. Steel. Provide for expansion and contraction under the most severe fire and water tests by means of bracing and expanding channels. No rivets to be used. All members to be locked together by our special flanges, then all to be electrically welded. Asbestos to be used between the panels, also in stiles and rails, as manufactured by the GRINDEN ART METAL CO., of Brooklyn, N. Y."



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HOSPITAL DOOR
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TYPE "E" STEEL RAILROAD
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ROOM ALL-STEEL DOOR

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ILLUSTRATIONS.

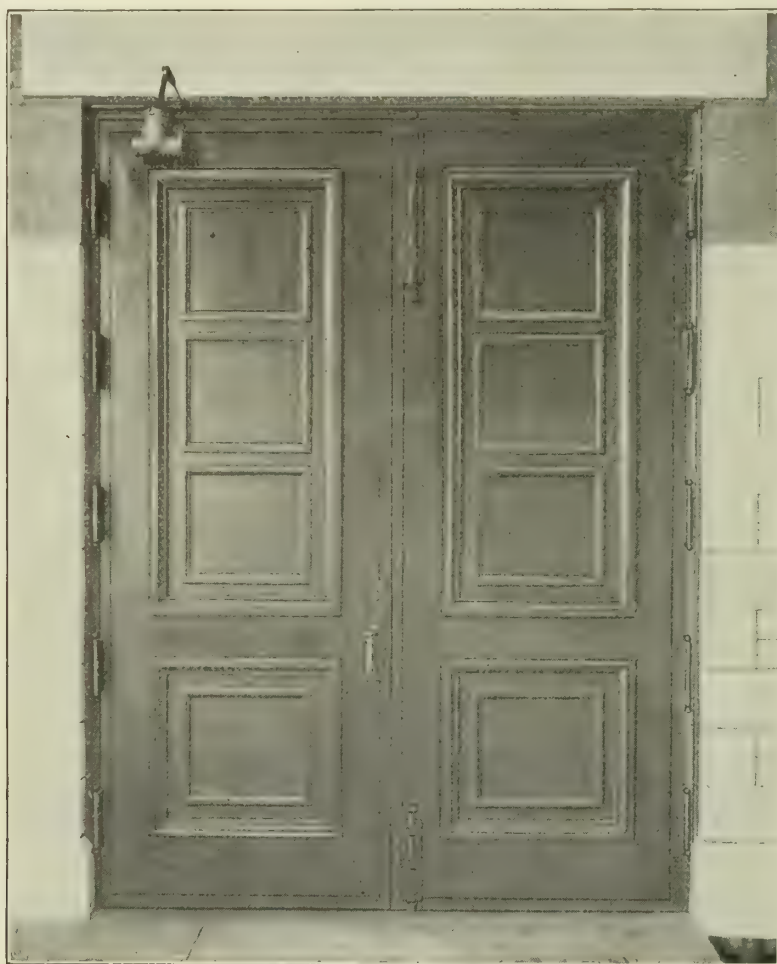
The following illustrations show a few types of our Steel-Door Construction and will convey an idea of the character of work executed by us.

CO-OPERATIVE SERVICE.

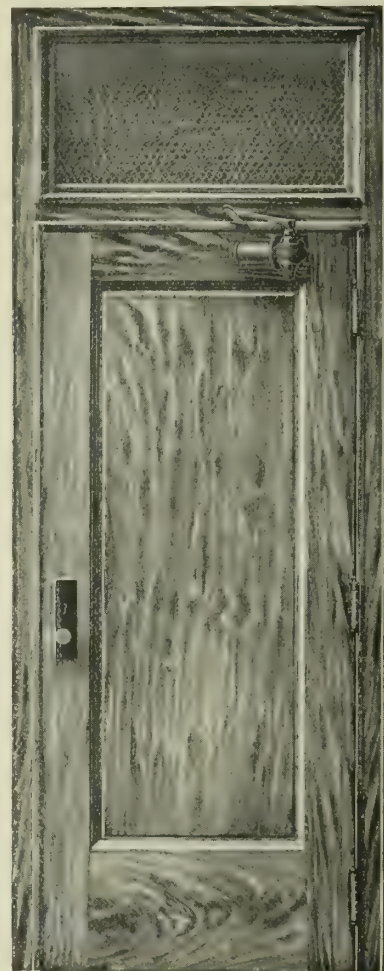
Estimates will be furnished on receipt of plans and specifications and special designs will be submitted upon request. If desired, we will supply drawings and photographs of similar work we have executed; also, special catalogues, if the architect will advise us what he wishes, giving information as to size and character of work desired.

STEEL CURTAINS.

We make Steel Theater Curtains having asbestos backing for proscenium openings which conform to the requirements of Building Departments and Underwriters.

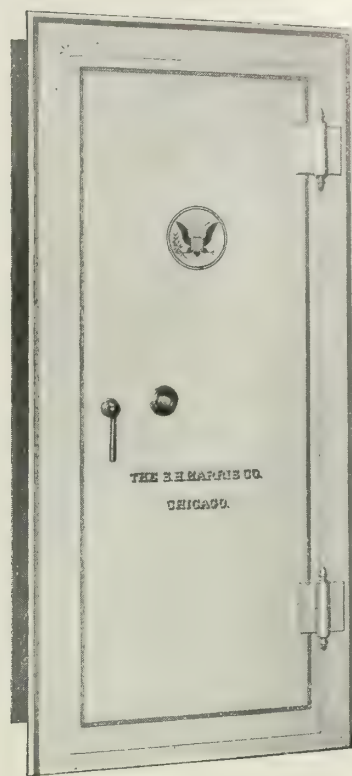


ORNAMENTAL STEEL DOORS

ORNAMENTAL STEEL DOOR,
WITH TRANSOM



FLUSH SIDEWALK DOORS



VAULT DOORS, STYLE M

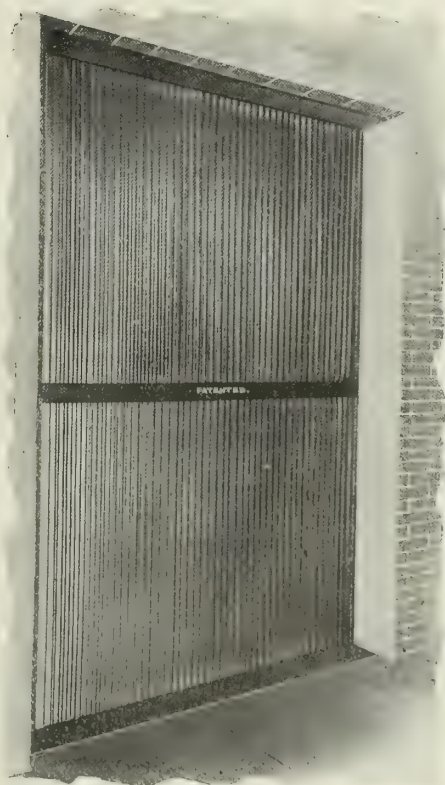
These doors consist of inner and outer doors with frames, connected with steel vestibule.

Outer plate $\frac{3}{8}$ inch thick, bolt frame of $2\frac{1}{2} \times 2\frac{1}{2} \times \frac{3}{8}$ inch angle iron. Lock rail $\frac{1}{2} \times 10$ inch. Bolts, 4 horizontal 2 vertical, all $1\frac{1}{4}$ inch diameter. Vestibule $\frac{1}{8}$ inch steel, inner doors built of $\frac{1}{8}$ inch sheet steel, paneled with flat bar arranged with pascal bolt system, checked with flat key lock. Approximate weight for shipment 1,800 pounds. Carried in stock in list sizes only. Other sizes built to order.

REFERENCES.

The following are a few representative buildings in which our work has been installed:

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Swift & Company, Chicago, Ill.	H. C. Gardiner
Morris & Company, Chicago, Ill.	R. Oesterle
Schwarzschild & Sulzberger Company, Chicago, Ill.	L. Levy
Agar Packing Company, Des Moines, Iowa	
American Dressed Beef & Prov. Company, Kansas City, Kan.	
Marshall Field & Company, Chicago, Ill.	D. H. Burnham & Co.
Alms & Doephe Company, Cincinnati, Ohio	D. H. Burnham & Co.
Merchants Exchange, San Francisco, Cal.	D. H. Burnham & Co.
Commonwealth Electric Company, Chicago, Ill.	Shepley, Rutan & Coolidge
Corn Exchange Bank Building, Chicago, Ill.	Shepley, Rutan & Coolidge
Lincoln Hotel Company, Lincoln, Neb.	
Toasted Corn Flake Company, Battle Creek, Mich.	J. C. Llewellyn
Mt. Carmel Hospital, Columbus, Ohio	Frost & Granger
Forest Theater, Philadelphia, Pa.	
Lyric Theater, Philadelphia, Pa.	
Daly's Theater, New York, N. Y.	
Academy of Music, Brooklyn, N. Y.	
Majestic Theater, Chicago, Ill.	
Star & Garter Theater, Chicago, Ill.	
American Theater, St. Louis, Mo.	
Majestic Theater, Milwaukee, Wis.	
Majestic Theater, Des Moines, Iowa	
United States Government Building, St. Paul, Minn.	
United States Government Building, Kansas City, Kan.	
Advance Thresher Company, Kansas City, Mo.	J. C. Llewellyn



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DESCRIPTION.

We show herewith a form of Metal Casement Window which we claim to be the most practical that can be devised, superior in every way to all forms of sliding windows, whether of wood or metal. The full-sized sections through the Sill, Jamb and Head show the substantial construction.

ADVANTAGES.

The merits and advantages of these windows are:

1. They are absolutely weather-tight and dust-proof.

2. They are fireproof from inside and outside.

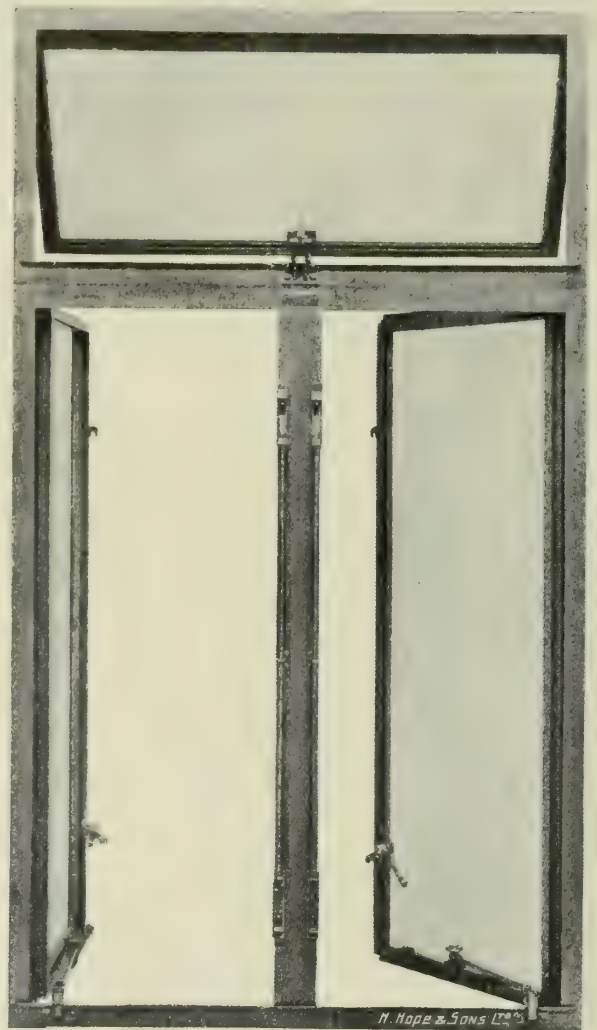
They do not warp and finally give way under fire like metal-coated wood, or so-called "fireproof windows" of sheet-iron or hollow-metal construction.

3. Any degree of ventilation can be obtained by adjusting the casement stays to suit. If desired, the full area of opening can be obtained for air; while with the sliding window, never more than half the area is available for ventilation.

The double casement, whether it opens inward or outward, has the further great advantage that the ventilation can be regulated to suit the direction of the wind. *Sliding sashes, if made loose enough to be practical, are draughty and admit rain and snow, and, if made tight, are very difficult to move.*

4. The "Hope" Metal Casement Window admits the maximum of daylight for a given size wall opening; its framework is the smallest in sectional area that can be designed for the required strength.

5. Sashes can swing either inward or outward, can hang either vertically or horizontally, giving the greatest adaptability possible and enabling us to meet any requirement of the architects' designs or personal ideas.



INTERIOR VIEW OF METAL CASEMENT WINDOW
Sashes opening out. Style and proportion of window suitable for Office Buildings, Hotels, Institutions, etc.
This window can be made without center mullion

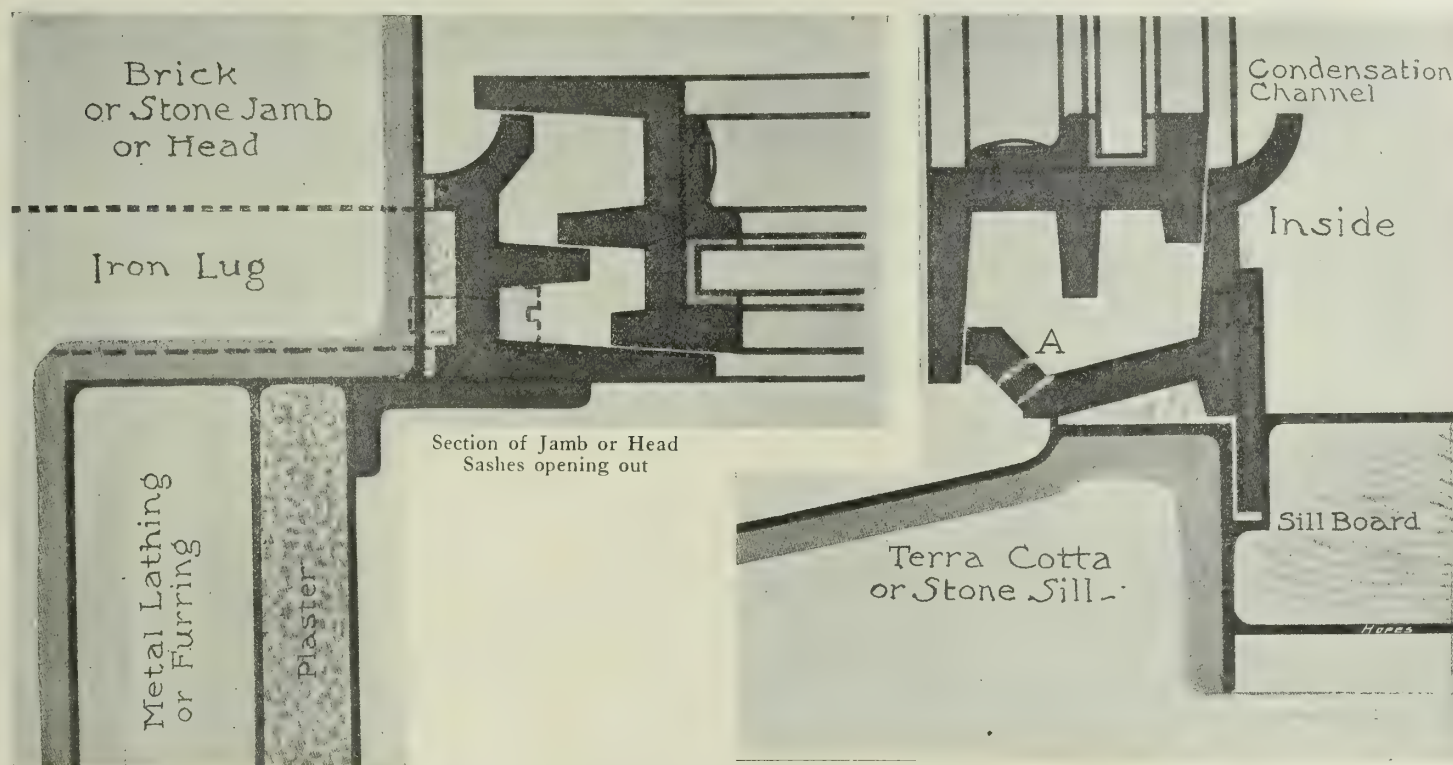
DETAILS OF MANUFACTURE.

Our windows are of solid rolled mild steel. All sections are made from rolls turned for our exclusive use. All joints are cut on milling machines and are riveted, brazed, and sandblasted. (Sandblasting removes sill flux and scale and leaves the surface in perfect state to receive the paint.) The hinges and the plates in which they work are mild steel forgings.

The plates are bushed with bronze metal to prevent corrosion. Everything is of the best possible material of its respective kind and of uniform excellence of workmanship.

QUALITY AND FINISH.

"Hope's" Windows are recognized as the standard of high quality. All casements are sandblasted, oiled and painted two coats and subjected to rigid inspection before leaving the works. Enameling, which we strongly recommend, can be done at a small extra charge.



Section of Sill—Sashes opening out
"A" shows outlets for drip

FULL-SIZED DETAILS OF "HOPE" SECTION 1

VARIETY, PRICES, COMPLETE INSTALLATION.

While all our goods are of the highest grade, we make a large variety of casements, from the simple cottage casement to those for residences and public buildings. We can therefore meet all conditions and requirements. As to cost, our simpler styles compare favorably with wood casements and are superior in operation, durability and appearance.

Quotations for special orders are promptly sent. We prefer to quote for windows set in place complete at the building.

SHOW ROOMS.

In introducing our metal casement windows to the architectural profession in the United States, we have been fortunate in securing the co-operation of the Winslow Brothers Company of Chicago, Ill. By arrangement with them we are now occupying offices at 103 Park Avenue, New York, N. Y., where we have a complete range of samples.

CATALOGUE.

Our new catalogue, containing 120 pages of illustrations and prices, will be gladly forwarded upon application.

REFERENCES.

"Hope's" Metal Casements have been adopted for the new buildings at:

Princeton University, Frank Miles Day & Brother, Architects, Philadelphia, Pa.
New Residence, Lake Erie, Ohio, McKim, Mead & White, Architects, New York, N. Y., Curtis Walton, Associate Architect, Cleveland, Ohio
The Pope Building, Cleveland, Ohio, Henry Bacon, Architect, New York, N. Y.
New Residence for I. N. Phelps Stokes, Greenwich, Conn., Howells & Stokes, Architects, New York, N. Y.

New Residence, New Haven, Conn., H. K. Murphy and R. H. Dana, Jr., Architects, New York.
McGill University, Montreal, Can., David Brown and Hugh Vallance, Architects, Montreal, Can.
Ecole Technique de Montreal, John S. Archibald, M. Perrault, Associated Architects, Montreal, Can.
Victoria University, Toronto, Can., Sproatt & Rolph, Architects, Toronto, Can.

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SANTIAGO, CHILI

PRODUCTS.

STEEL ROLLING DOORS and SHUTTERS; WOOD ROLLING DOORS and PARTITIONS; SLIDING FIRE-DOORS; FIRE-DOOR HARDWARE; GLAZING BARS and SKYLIGHTS.

IMPROVED
CONSTRUCTION.

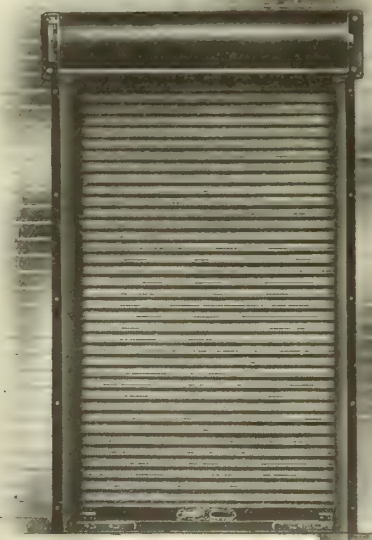
We are constantly making improvements. A department is devoted exclusively to development and designing. The following pages illustrate but few of the many constructions we are prepared to furnish. We invite correspondence relative to special or unusual requirements.

FIRE PRO-
TECTION.

Our Steel Rolling Doors and Shutters are built entirely of steel. They are one of the best types of fire retardants for the protection of window exposures on alleys and light courts, for elevator shaft openings and in many similar situations for buildings of all classes. For protection of fire-wall openings we recommend our sliding door or our steel rolling door. We are prepared to supply specially constructed doors sold under the trade-names of "Abacus" and "Ajax." They are included in the approved list issued by the National Board of Fire Underwriters and are inspected and labeled under the supervision of the Underwriters' Laboratories, Inc.

INSTALLA-
TION.

Any good mechanic can erect our material. Blue-prints and instructions accompany every shipment, showing the application and the method of erection.



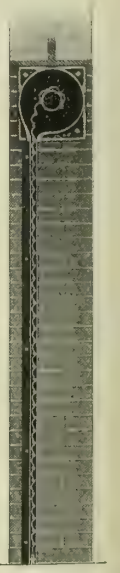
Elevation



Vertical Section



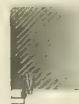
Elevation



Vertical Section



Cross-Section



CONSTRUCTION NO. F. M. 10

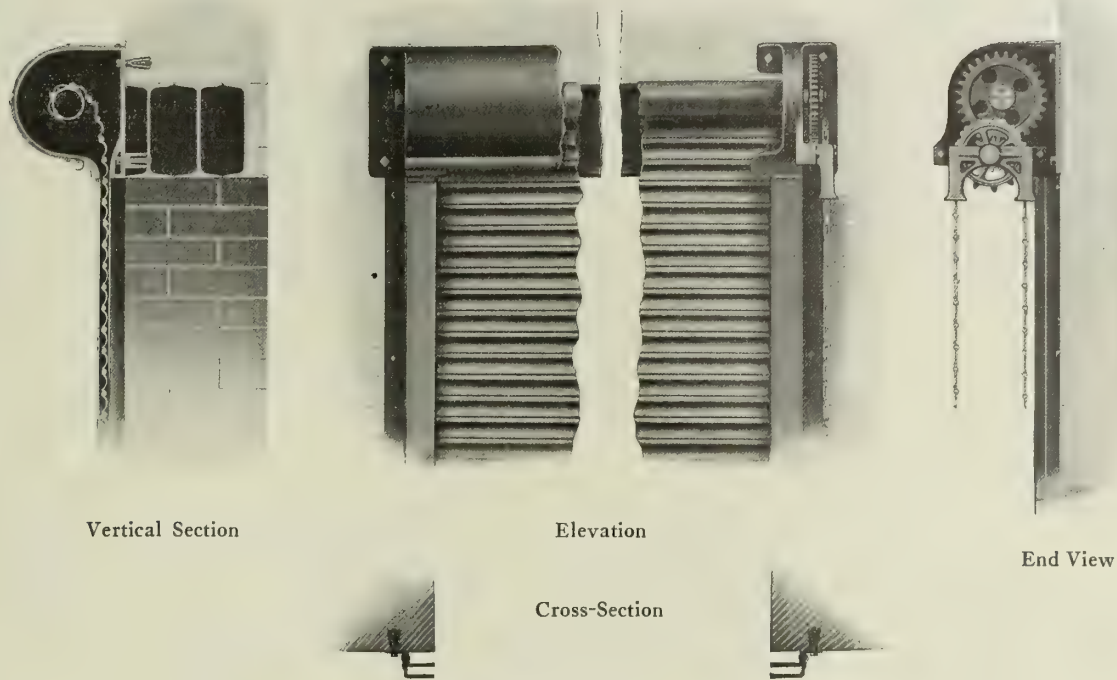
Doors overlap the opening at sides and top. Coil and grooves are placed on face of wall; door is counterbalanced by springs and operated by means of handle in bottom bar.



Cross-Section

CONSTRUCTION NO. B. M. 10

Grooves and coil are placed between jambs. The door is counterbalanced by springs and operated by means of handle placed in bottom bar. Coil is enclosed in a plain galvanized hood. For special requirements this can be ornamented as desired.



Vertical Section

Elevation

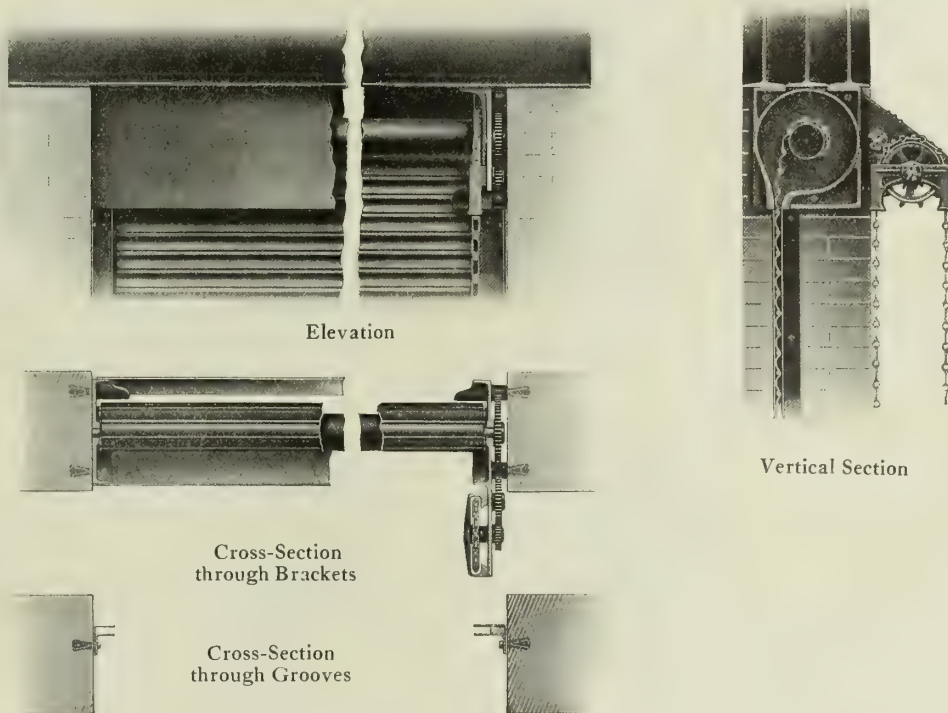
End View

Cross-Section

CONSTRUCTION NO. F. H. 20

CONSTRUC-
TION
NO. F. H. 20.

Grooves and coil are placed on face of wall. Door is counterbalanced by springs and operated by means of endless chain, sprocket, and gear. When used as a fire-door it can, if required, be equipped with an automatic closing device. Special designs will be furnished on application.



Elevation

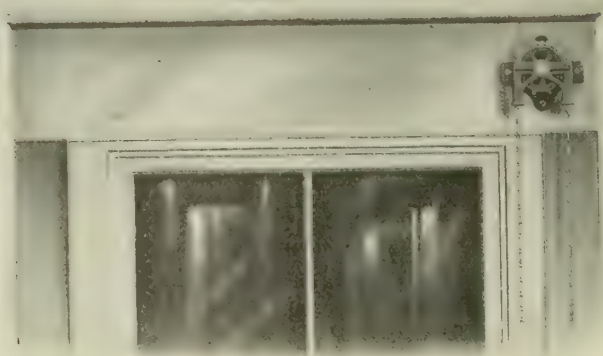
Vertical Section

Cross-Section
through BracketsCross-Section
through Grooves

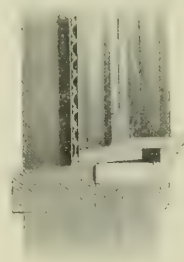
CONSTRUCTION NO. B. H. 20

CONSTRUC-
TION
NO. B. H. 20.

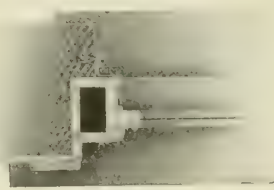
Coil and groove are placed between jambs. Door is counterbalanced by springs and operated by endless chain and gear. Coil is enclosed in plain galvanized hood. Modifications of this design can be furnished.



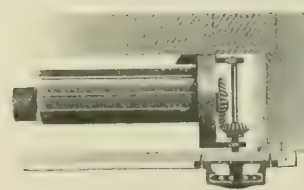
Elevation



Vertical Section



Cross-Section through Groove

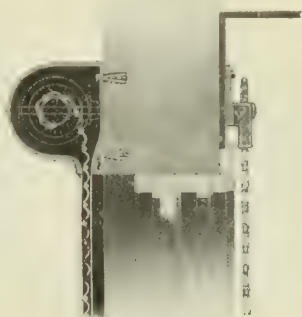


Top View of Bracket

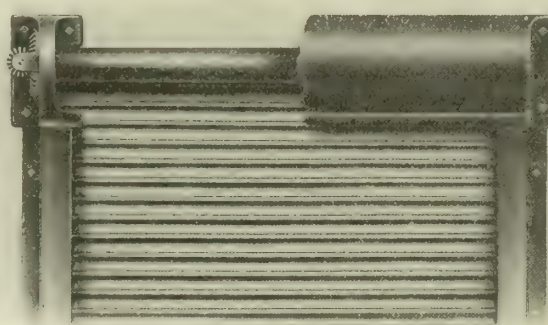
CONSTRUCTION NO. B. H. 40

CONSTRUC-
TION
NO. B. H. 40.

This construction is applicable to new buildings. It is neat and compact, the coil is concealed over window-frame, the shutter travels in grooves on outside. The casing covering coil-box should be removable to give access. The curtain is counterbalanced by springs and operated by chain and gear from inside.



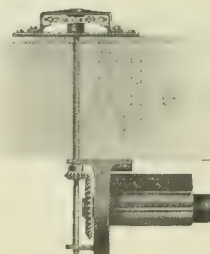
Vertical Section



Elevation



Cross-Section through Groove

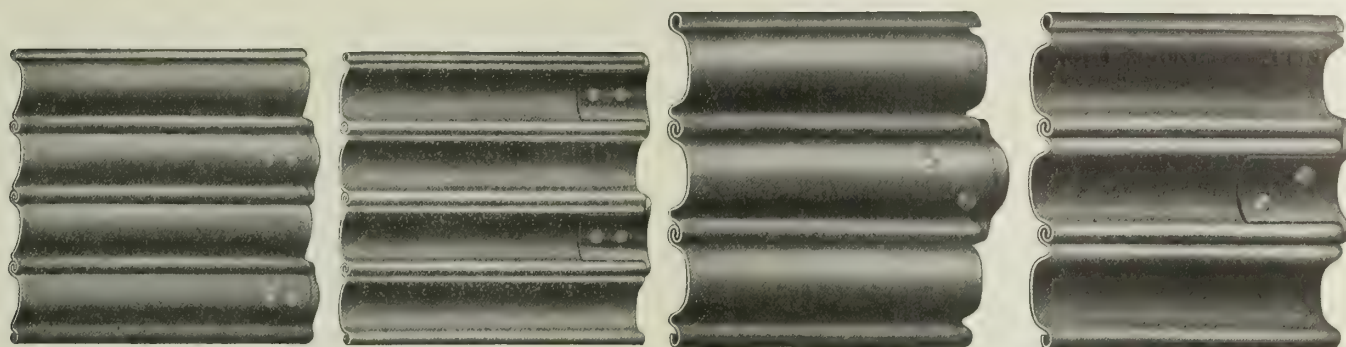


Top View of Bracket

CONSTRUCTION NO. F. H. 60

CONSTRUC-
TION
NO. F. H. 60.

Coil and grooves are placed on outside face of wall. Shutter is counterbalanced by springs and operated from the interior by means of endless chain, sprocket, and gear with connecting-rod extending through wall. This can be used advantageously for arched openings.



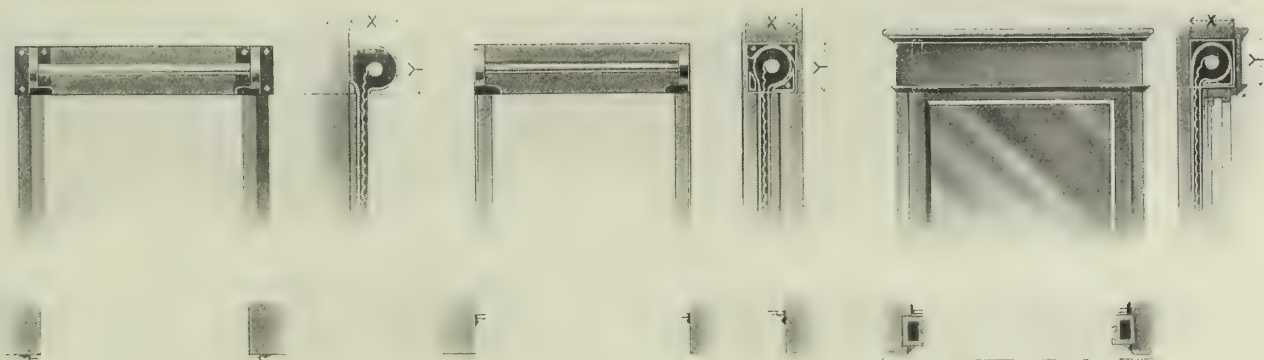
Slat No. 2

Slat No. 4

CONCAVE AND CONVEX SIDES OF THE INTERLOCKING STEEL SLATS

STEEL SLATS.

"Kinnear" Steel Rolling Doors and Shutters are composed of the slats illustrated above. The concaved and convex sides are shown and the method of interlocking. Attention is called to the fact that either side of the interlocking joint sheds water. The malleable end-locks reinforce the edges and prevent longitudinal separation. They also provide an excellent wearing surface in the guides.



PROJECTIONS

PROJECTIONS.

Above are indicated the salient dimensions of the more ordinary construction of usual sizes of "Kinnear" Steel Rolling Shutters. The cut to the left shows shutter placed on face of wall. Central view shows shutter placed between jambs, and that to the right shows curtain with concealed coil. Following dimensions are for shutters of height and width indicated:

SCHEDULE OF PROJECTIONS

Height	Width 3' 0" to 6' 0"					Width 6' 0" to 10' 0"					Width 10' 0" to 15' 0"					Width 15' 0" to 20' 0"				
	Groove Depth "D" 2"					Groove Depth "D" 2 1/2"					Groove Depth "D" 3"					Groove Depth "D" 3 1/2"				
	X	Y	P	A	W	X	Y	P	A	W	X	Y	P	A	W	X	Y	P	A	W
Ft. In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.	In.
6 0	12 3/4	14	2 1/2		3	13 1/2	15	2 1/2		3 1/2										
8 0	13 1/2	15	2 1/2		3	13 1/2	15	2 1/2		3 1/2										
10 0	14 1/4	16	2 1/2		3	14 1/4	16	2 1/2		3 1/2										
12 0	14 1/4	16	2 1/2		3															
6 0	9 1/2	11	2 1/2	3 1/2	3	10 1/2	12	2 1/2	4	3 1/2	12 3/4	14	2 1/2	5	4	12 3/4	14	2 1/2	7	4 1/2
8 0	10 1/2	12	2 1/2	3 1/2	3	11 1/4	13	2 1/2	4	3 1/2	12 3/4	14	2 1/2	5	4	12 3/4	14	2 1/2	7	4 1/2
10 0	11 3/4	13 1/2	2 1/2	3 1/2	3	11 3/4	13 1/2	2 1/2	4	3 1/2	12 3/4	14	2 1/2	5	4	15 1/4	17	3 1/2	7	4 1/2
12 0	12 3/4	14	2 1/2	4	3	13 1/2	15	2 1/2	4 1/2	3 1/2	13 1/2	15	2 1/2	6 1/2	4	15 1/4	17	3 1/2	7	4 1/2
14 0	14 1/4	16	2 1/2	4	3	14 1/4	16	2 1/2	4 1/2	3 1/2	15 1/4	17	3 1/2	6 1/2	4	16 1/4	18	4	7	4 1/2
16 0	15 1/4	17	3 1/2	4	3	15 1/4	17	3 1/2	4 1/2	3 1/2	16 1/4	18	4	6 1/2	4	16 1/4	18	4	7	4 1/2
18 0	15 1/4	17	3 1/2	4	3	15 1/4	17	3 1/2	4 1/2	3 1/2	16 1/4	18	4	6 1/2	4	16 1/4	18	4	7	4 1/2

Schedule is for No. 2 slats. Sizes above double line apply to shutters operated by handle in bottom of curtain. Those below double line apply to shutters operated by endless chain or crank and bevel gear.

Dimension "P" applies only to face of wall constructions. Dimension "W" only to between jamb constructions, as does also Dimension "D." Dimension "A" applies only to the chain hoist side of hoist-operated shutters placed between jambs. Dimension "B" should always be at least 8" wider than width of door opening for moderate-sized shutters and for very large shutters it should be 10" or 12", and more if possible.

We do not recommend manually operated construction for curtains of larger area than approximately 100 square feet; chain hoist should be used on larger sizes. Wherever desirable the automatic device may be combined with manually operated construction.

Regarding any further details and unusual sizes or special constructions we suggest direct correspondence.

OFFICIAL EN-
DORSEMENT.

Fire-Doors and Shutters constructed under the supervision of Underwriters' Laboratories, Inc.



CONSTRUCTION "ABACUS" NO. 1—Elevation



CONSTRUCTION "ABACUS" NO. 4—Elevation

"ABACUS"
NO. 1.

For stair and elevator openings not exceeding eight feet wide by nine feet high.

The door is installed on face of wall overlapping opening at sides and top. Manually operated by means of handle in bottom bar, and automatically closed by fusing either of the two links at a temperature of approximately 160° Fahr.

"ABACUS"
NO. 4.

For the protection of exterior openings not exceeding ten feet wide by ten feet high.

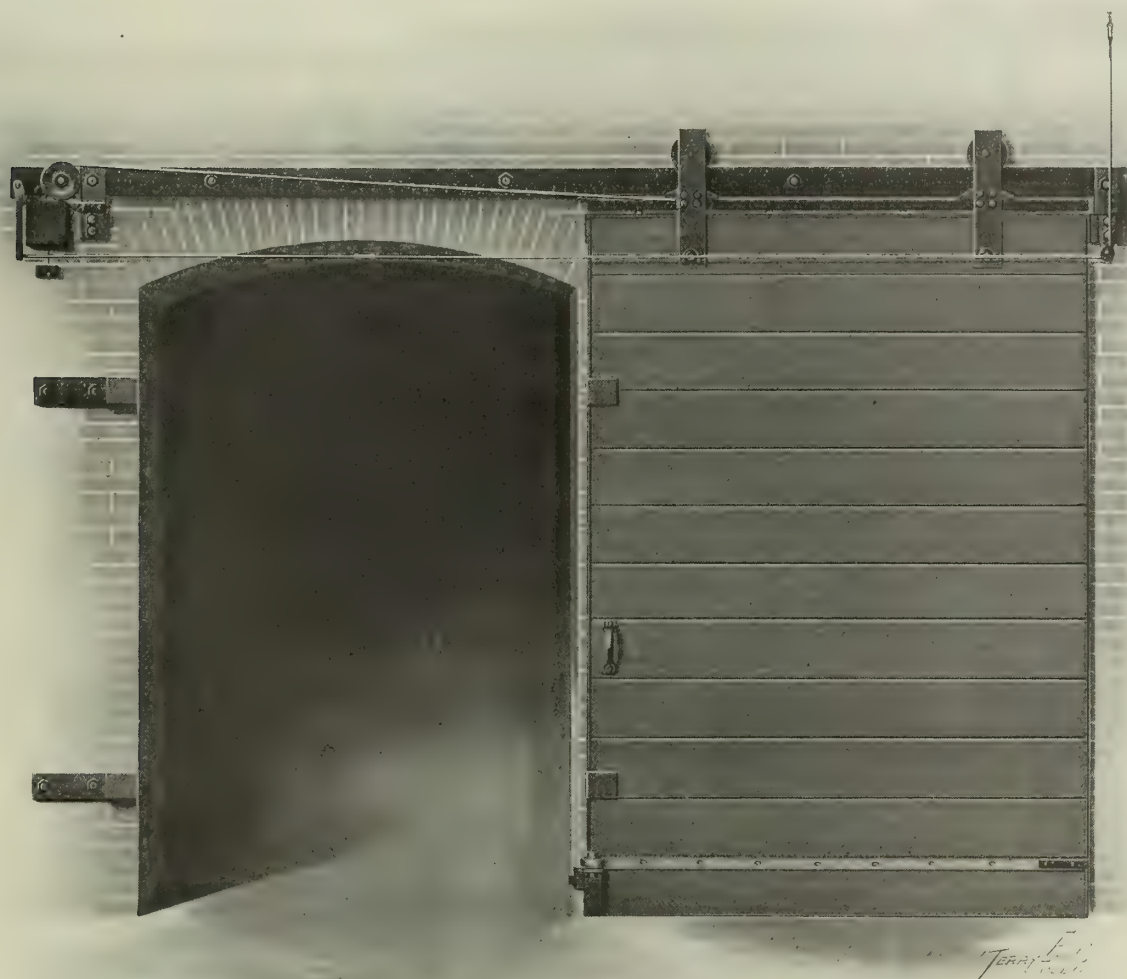
The shutter is installed on face of wall overlapping opening at sides and top. This shutter is distinctly automatic in its action, normally opened and closed only by releasing device actuated by fusible link. The design of releasing device admits of testing out without fusing the link, and the shutter can be recoiled simply by lifting on the handle on the bottom bar.

The "Abacus" Doors and Shutters are specially designed for fire protection. Details of construction have been carefully developed. The following are some of the important features:

- (1) An auxiliary or inner hood which is automatically dropped and closes the space between the barrel and outer hood, thereby preventing the passage of flame over the barrel.
- (2) Special end locks C-2 closing the concaved end of slats and preventing the passage of flame around the edge of the curtain.
- (3) Fusible washers employed in the construction of grooves which melt and allow the members composing the groove to expand without cramping.
- (4) Non-corrosive metal used for bearings and contact points of the automatic release.
- (5) Single line contact bearings in releasing levers.
- (6) Provision is made for expansion of parts for all temperatures up to 2,000 degrees.
- (7) Disposition of fusible links, insuring prompt closing.
- (8) The enclosure of automatic release, protecting it from the weather.

OFFICIAL EN-
DORSEMENT.

Fire-Doors constructed under supervision of Underwriters' Laboratories, Inc.



SLIDING FIRE-DOOR EQUIPPED WITH AUTOMATIC CLOSING-DEVICE

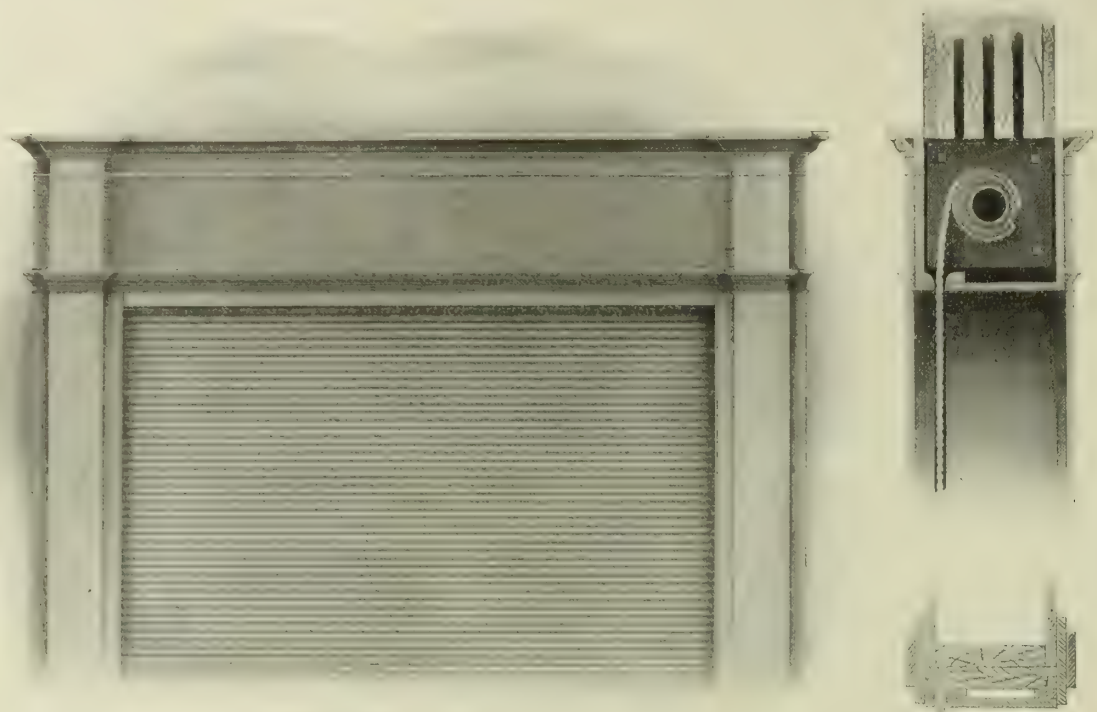
THE "AJAX"
FIRE-DOOR.

The "Ajax" Door is a new departure. * It is structurally strong and filled with non-combustible material which does not produce smoke or gas when highly heated. The correctness of principles involved in the construction have been thoroughly demonstrated by repeated tests. It has been subjected to fire of two hours duration, maximum temperature 2,550 degrees, followed by the application of a stream of water, the door remaining intact and capable of further resistance. As a fire retardant it is absolutely superior to a three-ply tin-covered fire-door, generally recognized as standard. In appearance it is a decided improvement. The door is prepared to receive the hardware which is specially designed for it. We can supply other arrangements of this door.

We manufacture a complete line of hardware for the standard tin-clad door.

OFFICIAL EN-
DORSEMENT.

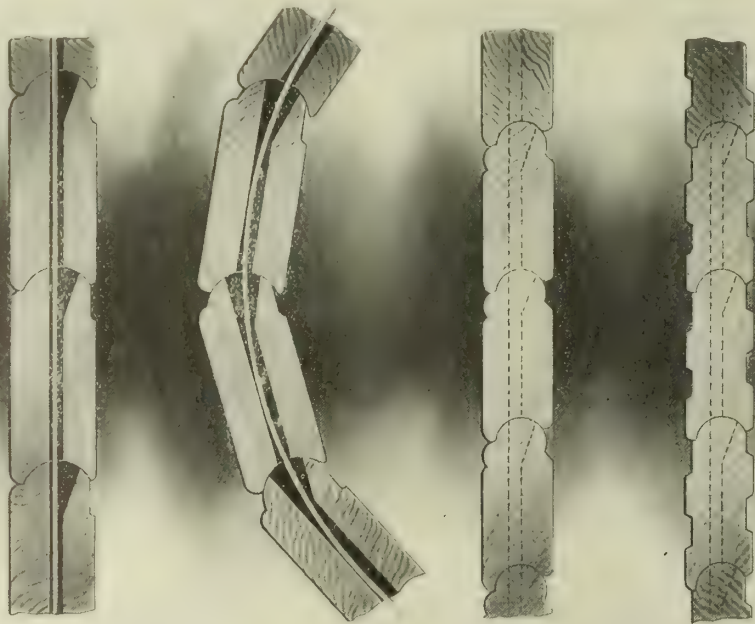
Our Fire-Doors and Shutters are inspected and labeled under the supervision of the Underwriters' Laboratories, Inc.



CONSTRUCTION NO. W. B. M.

CONSTRUC-
TION
NO. W. B. M.

The illustration shows the application of Wood Rolling Door or Partition to interior openings. It is extensively employed in schools and churches. It is readily adaptable to architectural treatment. Casing and finish can be arranged to harmonize with the surroundings. Door is counterbalanced by springs, several methods of operation being employed, depending on the size and weight of the door. For small doors a handle is fitted in the bottom bar; for large partitions an endless chain or crank and gear can be used.



No. 27 No. 27 No. 26 No. 24
SECTIONS OF WOOD SLATS

WOOD SLATS.

The above views show sections of Wood Slats of which doors and partitions are composed. They are strung on phosphor bronze ribbons. The method of flexing does not bend or indent the ribbon at the joint nor does it require a wide bottom bar with take-up springs. Slats are made of long-leaf yellow pine, plain oak, quarter-sawed oak, and birch. In ordering specify and send sample of finish desired. Slat No. 27 is used for exterior work; Nos. 26 and 24 for interior work.

The following cuts illustrate the "Kinnear" System of Skylight Glazing:



Bar No. 1. For spans up to eight feet between purlins

Bar No. 2. For spans up to twelve feet between purlins

THE "KINNEAR" SYSTEM OF SKYLIGHT GLAZING

"KINNEAR" SYSTEM OF GLAZING.

This system is radically different from those now on the market and possesses many advantages. Oxidation produced by chemical and atmospheric conditions is successfully met. The steel bar is entirely enveloped in lead with ends hermetically sealed so that it is not affected.

Method of fastening consists of gripping hooks engaging edges of condensation gutters; the protective coating is not pierced.

The cost of erection is low. Glass is laid upon the sharp edge, which crushes to a uniformly even bearing conforming to its surface; the sheaths which hold it firmly are then turned down.

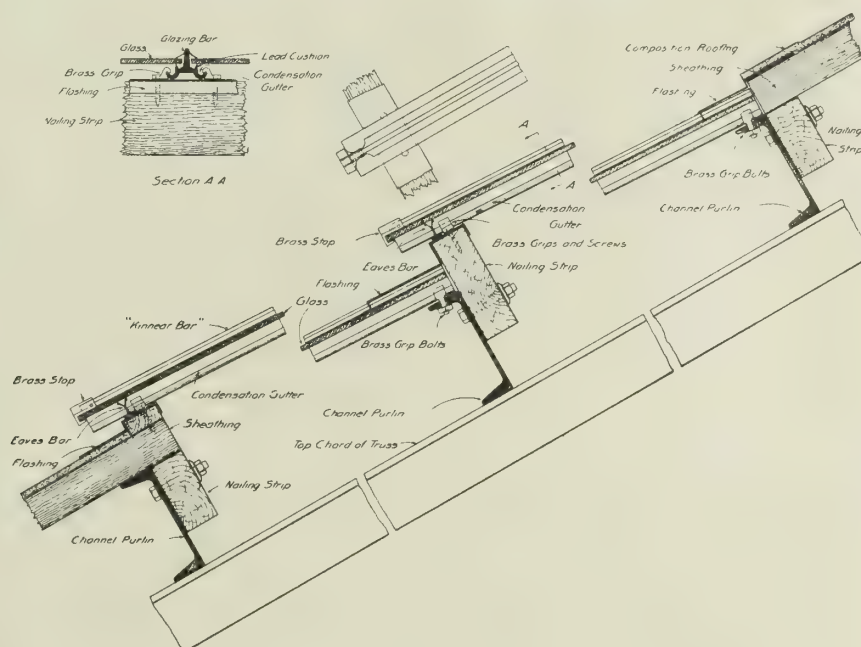
No breakage of glass from expansion or contraction; this is prevented by the omission of putty and by providing sufficient clearance between edge of glass and web of bar.

Glass broken by accident is easily replaced by lifting lead sheathing and inserting the same.

Cost of maintenance is absolutely the lowest; no painting or re-puttying required.

This system is perfectly water and dust proof.

It is recommended for mills, train-sheds, factories, and in other places when the air is impregnated with sulphurous gases or other corroding agents.



DETAILS SHOWING CONTINUOUS SKYLIGHTS

VARIETY OF DESIGNS.

Other designs will be sent upon application.

THE KINNEAR & GAGER MANUFACTURING CO.

Metal-Covered Doors, Metal Ceilings and Metal Shingles

Mt. Vernon Avenue, 6th and 7th Streets

COLUMBUS, OHIO

EASTERN OFFICE AND WAREROOMS: BOSTON, MASS., 125 Broad Street

PRODUCTS.

Manufacturers of THE "COLUMBUS" DOOR, METAL-COVERED; ORNAMENTAL ENTRANCE DOORS; ELEVATOR DOORS; CORRIDOR WINDOWS; METAL-COVERED FRAMES and SASH; DRAWN MOULDINGS; METAL CEILINGS; WAINSCOTING; METAL TILING; "BUCKEYE" METAL SHINGLES; STANDARD TIN-CLAD DOORS.

THE "COLUMBUS" DOOR.

Metal-covered, made in paneled, sash, or upper panel glass types, jambs, casings and transoms. Fig. 2 shows detail of the "Columbus" Door. The core is of three thicknesses tongued and grooved, laid crosswise and clinch-nailed together. The upright, top, bottom, cross-rails and panels are each stamped in separate pieces of metal. All connecting joints in metal throughout are lock-seamed, concealing nails from view. No open miter joints. The whole produces a fireproof door. By this method of construction the panels are stamped in well defined moulds to sufficient depth, and the metal being secured close to core produces a smooth and finished surface.

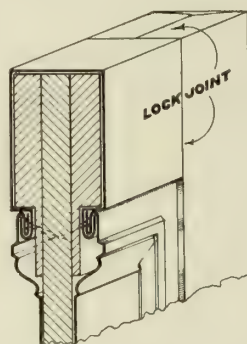


FIG. 2. DETAIL OF "COLUMBUS" DOOR



FIG. 1. "COLUMBUS" DOOR AND TRIM

COVERING.

Kalamine metal, sheet steel, galvanized steel, sheet copper or bronze.

FINISH.

Finish when required: priming paint, electroplated, imitation oak or mahogany.

PRICES.

Prices submitted upon receipt of plans or schedules. Details furnished when required.

ORNAMENTAL ENTRANCE DOORS.

Made to architects' details for entrances, covered with sheet or plate bronze and copper. These doors have all the appearance of heavy cast doors at less cost and weight.

METAL CEILING.

The prominent features of our ceilings are superior method of lock-joint construction; perfect alignment and simplicity of design; affording artistic decorative features. Their durability, sanitary and acoustic properties, and protection against fire and water are established facts. Estimates furnished upon receipt of diagram and measurements. Large variety of designs to select from. Send for catalogue. Architects' special designs executed in galvanized steel or copper.

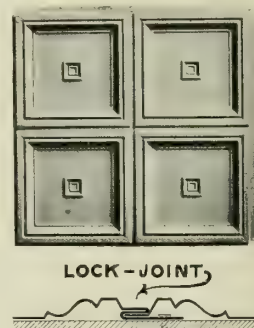


FIG. 3. METAL CEILING

METAL SHINGLES.

"Buckeye" Metal Shingles, wind, storm, and fire-proof. Stamped in best quality heavy tin terne-plate 10 x 14 inches. Surface exposed to weather 8 $\frac{3}{4}$ x 12 inches. To cover 100 square feet of surface requires 144 shingles. Tin-plate painted or galvanized after stamping, applied without soldering or the use of special tools, by an ordinary mechanic.

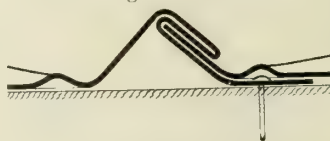


FIG. 5. SECTION SHOWING SLIP-JOINT



FIG. 4. METAL SHINGLES

T. C. PROUTY CO., LTD.

Manufacturers of Automatic Fire-Door Fixtures

ALBION, MICH.

BRANCH OFFICES

NEW YORK, N. Y., 17 Reade Street
BOSTON, MASS., 161 Summer Street

PHILADELPHIA, PA., 50 North Sixth Street
DENVER, COLO., 1735 Arapahoe Street

SAN FRANCISCO, CAL., 693 Mission Street

PRODUCTS.

The "PROUTY" AUTOMATIC FIRE-DOOR FIXTURES.

DESCRIPTION.

The "Prouty" Automatic Fire-Door Fixtures include the very latest designs of construction, particularly in the arrangement of track and the automatic device.

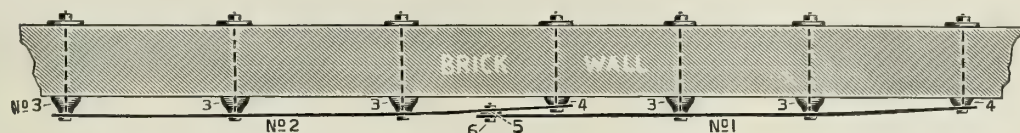


FIG. 1. CONSTRUCTION OF TRACK

TRACK.

The Track (Fig. 1) is so constructed that when the door is opened and on the back wall it throws the door away from the wall, thus preventing any possible contact of friction that would retard the door in closing in an emergency. When the door is closed it is placed directly over the opening, completely closing it and preventing any space appearing on top or sides for draughts, smoke or flame.

HANGERS.

Hangers are operated on a parallel track, avoiding the necessity of constructing ill-shaped doors, and permitting doors (Fig. 2) to be used as ordinary warehouse or sliding doors in daily use, free from weights and counterweights.

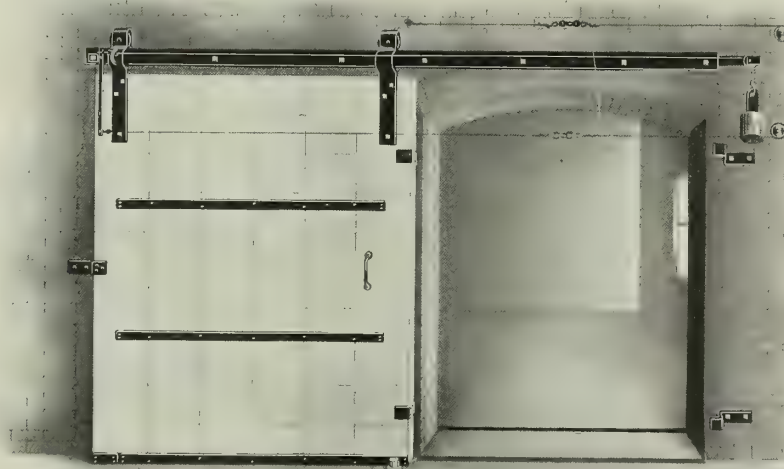


FIG. 2. FIXTURES INSTALLED

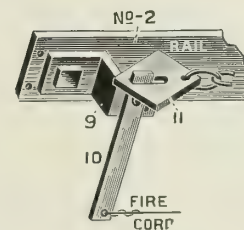


FIG. 3. AUTOMATIC DEVICE

AUTOMATIC DEVICE.

The Automatic Device (Fig. 3) is entirely free from the door. In case of emergency the weight drops from four to six inches, instantly starting door in motion and insuring its being closed. Fuse cord can be carried across top of opening, then over same near the ceiling, to conform to underwriters' requirements, and then passed to any part of building desired. A series of doors can be attached to same line, so that by its parting in any one place it will close all doors simultaneously.

MATERIAL USED IN MANUFACTURE.

The Hangers and Track are constructed of $3\frac{1}{2} \times \frac{3}{8}$ inch steel, as required, and all other parts are standard.

KNISELY BROTHERS

MANUFACTURERS OF

Patent Automatic Fireproof Windows and Doors

Twenty-Eighth Street and Fifth Avenue

CHICAGO, ILL.

TELEPHONE CONNECTION

PRODUCTS.

We are manufacturers of AUTOMATIC FIREPROOF WINDOWS with WIRE-GLASS; HOLLOW METAL FIREPROOF DOORS and SKYLIGHTS; SLATE and TILE ROOFING.

ADAPTABILITY.

Our Fireproof Windows meet all the requirements of the Chicago Fire Underwriters' Association, also of the National Association of Underwriters, for wire-glass and metal window frames and windows to replace "Fire Shutters."

ESTIMATES.

In order that estimates may be furnished, kindly specify the windows desired and observe the measurement instructions given below. With this information, we will send an estimate which will, unless otherwise requested, include a priming coat of paint, all hardware, sash chains and weights where construction requires them. We are in a position to accept and fill orders of any size in any part of the United States, and any inquiry will receive prompt and accurate attention.

MEASURE- MENT IN- STRUCTION.

The letters refer to Figs. 1, 2 and 3. (a) Give width of clear opening in the wall. (b) Give clear height of square head opening. (c) Give rise of arch. (d) Give offset at the top. (e) Give depth of reveal. (f) Give inner edge of reveal to face of wall. (g) Give offset. (j) Give thickness of wall.

HOLLOW METAL FIREPROOF DOORS.

Hollow Metal Fireproof Doors, including jambs and casings, are made of No. 20 best sheet steel, space between panels on inside being filled with asbestos board. These doors can be made for glass panel if so desired.

INSTALLA- TION.

Our work can be installed by any contractor or by any local workman, or installation will be undertaken by ourselves, through local agents.

STYLES.

The "Knisely Brothers" Patent Window is made in all styles, embracing the vertical and horizontal swing on either one or both sashes; also, the double-hung or sliding-sash window, with either one or both sashes movable, as desired. These windows can be equipped with special automatic closing devices, operating in case of fire.

MANUFAC- TURE.

Every piece of work turned out from the factory of KNISELY BROTHERS is of the highest grade of excellence. No careless workmanship or poor material is tolerated in our works, and nothing but the best is produced. Our experience is wide, and we know how to handle the problem of Fireproof Window manufacture. Our windows are manufactured under several patents. Our ideas have been copied by other manufacturers, and all such copies are infringements.



FIG. 1. VER-
TICAL
SECTION

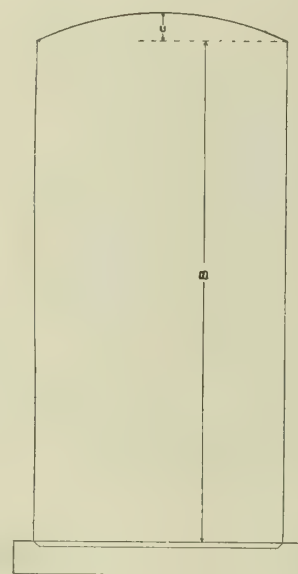


FIG. 2. FRONT
ELEVATION



FIG. 3. HORIZONTAL SECTION



FIG. 4. HOLLOW METAL
FIREPROOF DOOR

ILLUSTRATIONS.

We illustrate below the principal standard types of windows. These are made in all variations, and for all purposes, to fit all needs.

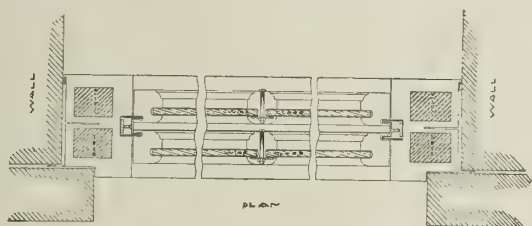


FIG. 5. GROUND PLAN OF FIG. 6

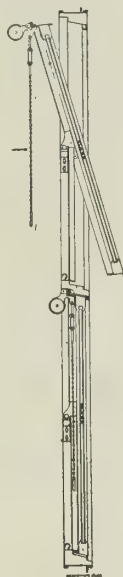


FIG. 13. VERTICAL PLAN OF FIG. 12

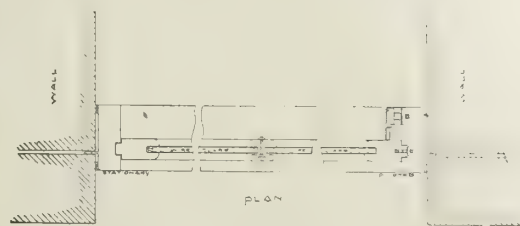


FIG. 9. GROUND PLAN OF FIG. 10



FIG. 6. STANDARD DOUBLE-HUNG WINDOW

This can be made to counterbalance without weights

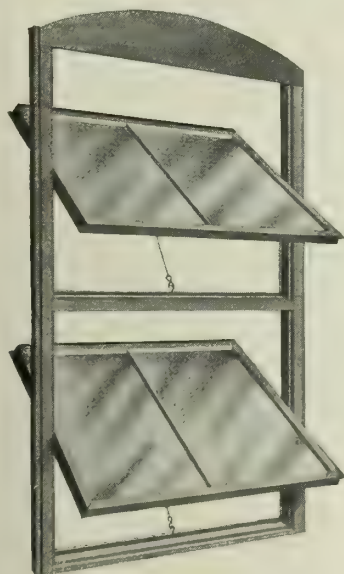
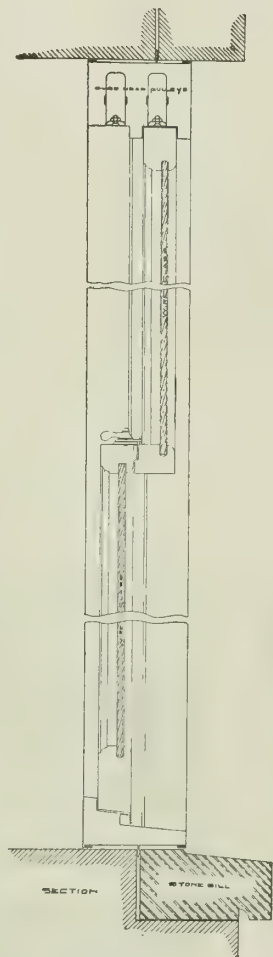
FIG. 11. DOUBLE-PIVOTED WINDOW
Outside View

FIG. 7. VERTICAL PLAN OF STANDARD DOUBLE-HUNG WINDOW

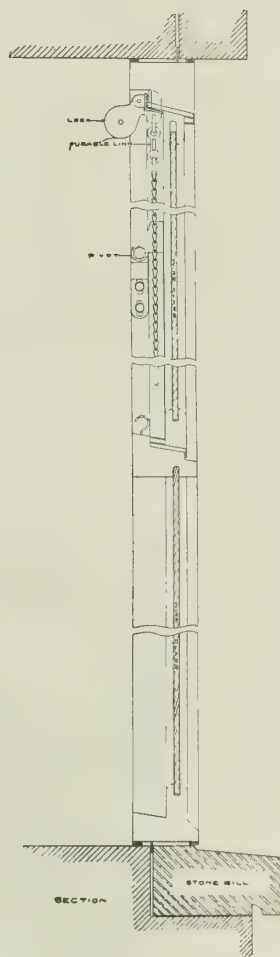


FIG. 8. VERTICAL PLAN OF STANDARD PIVOTED WINDOW

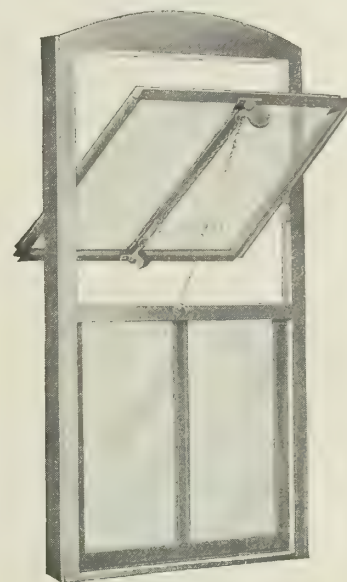
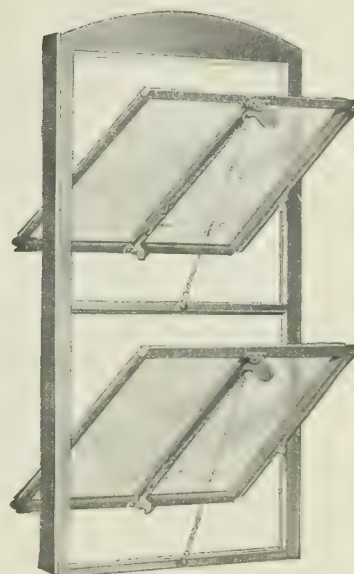


FIG. 10. STANDARD PIVOTED WINDOW

FIG. 12. STANDARD DOUBLE-PIVOTED WINDOW
Inside View

SPECIAL CONSTRUCTION.
SPECIFICATION.

Details for special construction will be furnished upon application.

We make all windows to architects' specifications.

DAVID LUPTON'S SONS CO.

Architectural Sheet Metal Workers

Allegheny Avenue and Weikel Street

PHILADELPHIA, PA.

NEW YORK OFFICE: 1768 Fulton Building

PRODUCTS.

The "LUPTON" STANDARD FIREPROOF HOLLOW-METAL WINDOWS, with Underwriters' Laboratories Labels; UNDERWRITERS' STANDARD DOORS and SHUTTERS; the "LUPTON" HOLLOW-METAL FIRE DOOR, bearing label of Underwriters' Laboratories; "POND" OPERATING DEVICE for long lines of Sash and Louvers; SKYLIGHT GEARING; APPLIANCES for GREENHOUSE VENTILATION; "WALDMIRE" LOUVERS; VENTILATORS; SKYLIGHTS; TRANSOMS; CASEMENT ADJUSTERS; "LUPTON" ROLLED-STEEL BAR SKYLIGHTS; ARCHITECTURAL SHEET-METAL WORK; WINDOW HEADS; CORNICES; STATUARY; ORNAMENTAL STAMPED WORK; FINIALS; WEATHER-VANES; CONDUCTOR PIPE; EAVES-TROUGH; ELBOWS and SHOES; VENT-PIPE ELBOWS; LIGHT STRUCTURAL IRON; METAL, SLATE and TILE ROOFING; SPECIAL "MONITOR" and "SAWTOOTH" VENTILATING ROOF CONSTRUCTION, entirely of Metal with Welded Joints.

FACILITIES.

Equipped with latest and best machinery, fully described in catalogue sent upon application. Plant covers 323,400 square feet of ground area, with Railroad Siding. Deliveries unequaled for promptness.

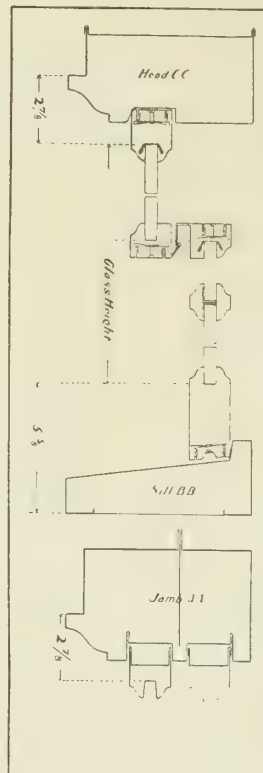
"LUPTON" FIREPROOF HOLLOW-METAL WINDOWS.

These Windows are made of galvanized steel, galvanized iron, sheet copper, and sheet bronze.

The "Lupton" System of dovetail clinches, used on all joints of frames and sashes, prevents collapse of windows when exposed to fire and water. Solder is used only for finish of joints.

NOTE—No. 22-gauge Galvanized Steel or Iron is used in "Lupton" frames and No. 24-gauge in sashes, and their equivalent in Copper and Bronze.

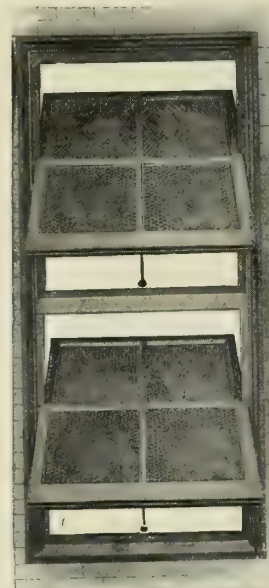
Lighter material in either frames or sashes is not conducive to best results. Close-fitting miters and true mouldings, made on special dies for the standard types of the "Lupton" Windows, produce the straight lines and sharp angles so necessary to architectural design. This result is obtained with our unequaled equipment and skilled workmen.



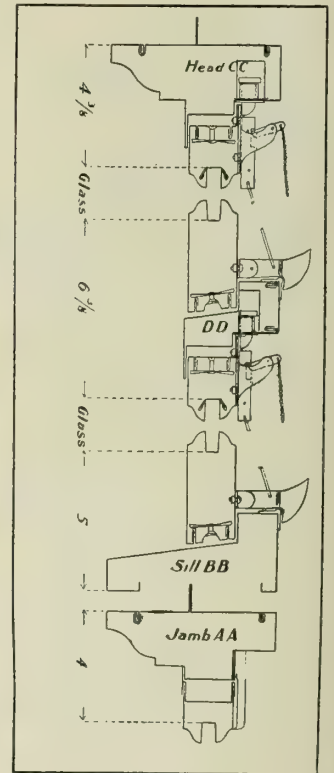
SECTIONAL VIEWS
OF TYPE A



LUPTON WINDOW,
TYPE A



LUPTON WINDOW,
TYPE I



SECTIONAL VIEWS
OF TYPE I

“LUPTON”
ROLLED-STEEL
SKYLIGHTS.

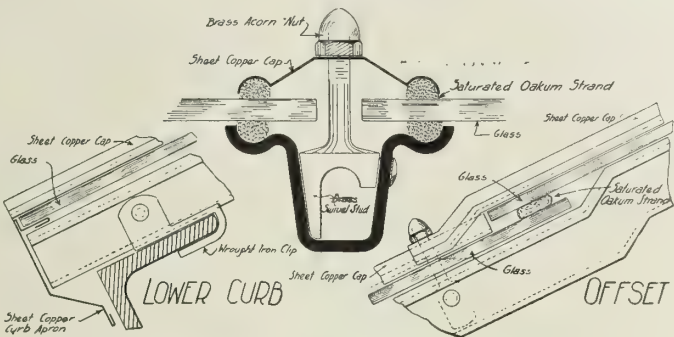
METHOD OF
GLAZING.

The “Lupton” method of glazing increases the efficiency of wire-glass. The glass is set three fourths inch in muntin, and sash constructed to hold glass when exposed to heat. The “Lupton” Window is superior in detail and workmanship, and is of the highest type of hollow-metal window known to the trade.

The “Lupton” Rolled-Steel Skylight is not an experiment but an assured success, being practical in addition to the other point of superiority enumerated.

The formation of the upper part of “Lupton” Rolled-Steel Skylight Bar (see illustration) more than doubles its efficiency. No cross-bars are used; glass is lapped. Bars and caps are offset as shown. The swivel-stud bolts hold caps in perfect alignment.

Saturated oakum strand is used for glazing, forming a double impervious connection between glass and metal. This method overcomes the objections to puttyless skylights.



SECTION OF “LUPTON” ROLLED-STEEL SKYLIGHT BAR



“LUPTON” ROLLED STEEL SKYLIGHT ON HON. PERRY BELMONT’S RESIDENCE, WASHINGTON, D. C.
HORACE TRUMBAUER, Architect

ESSENTIAL
FEATURES.

DELIVERIES.

Strength of Bar. Not affected by vibration. Glass not in contact with metal. No cross-bars. Weather-tight connections over and under glass. The dead-air space, which protects inside of bars from corrosion. Exterior of bar accessible for painting. Metal above glass is brass, copper or monel metal, all of which are impervious to rust and acids.

We carry in stock fifty tons of bars, and can make immediate deliveries.

"POND"
OPERATING
DEVICE
(PATENTED)
EXCLUSIVE
FEATURES.

The "Pond" Operating Device is different in mechanical principle and different in results from any other kind of opening device. The power is transmitted by tension-rods without torsion or friction. All bearings are phosphor-bronze, and gears are immersed in oil. It is designed to meet every condition, and its capacity is unlimited. It stands without a rival.

Catalogue illustrates unusual installations that no other device can operate. Ask for special details to meet your requirements.



TRANSMISSION BRACKET AND OPER-
ATING GEAR USED AT OPPOSITE
ENDS OF EACH LINE
OF SASH

We have exclusive right to transmit power by tension to hinged levers, and by connecting-rods to sash or louvers. There is no torsion, less friction, and greater capacity than by other methods.



"POND" OPERATING DEVICE
(Patented)
Installation in one of our buildings



FREIHOFFER BAKERY, 19TH AND CLEARFIELD STREETS, PHILADELPHIA, PA.
WM. STEELE & SONS Co., Designers

1284 square feet; 68 sash in double lines, each 300 feet long, operated with one gear

ECONOMY.

Phosphor-bronze bearings in all working parts prevent corrosion. All material protected by aluminum paint.

VENTILATION. In foundries or other buildings requiring special ventilation during certain processes of manufacture, all sash are operated from one end of building; by this method there is less interruption from gas or smoke and labor is saved in operation of sash.

PRICE. Prices are made as desired, f. o. b. Philadelphia, with freight allowed to destination, or for work erected complete. Send plans and elevations at our expense with inquiry.

DELIVERIES. Gears and all standard parts shipped on receipt of order. Plans and specifications are required to prepare proper fastening to structure and locate operating chains. On special designs, allow time for submission and approval of our drawings.

GUARANTEE. The "Pond" Operating Device is guaranteed to work satisfactorily when properly erected. We invite competitive tests. We will erect a sample run and guarantee it to operate a long line of sash with less power than any other device; if it does not, we will remove it without charge.

" WALDMIRE " LOUVERS. "Waldmire" Louvers (see illustration) are continuous, with lap-joints, fastened with ferrules and spikes to posts, or bolts to angles.

ECONOMY. Any building foreman can erect "Waldmire" Louvers with unskilled labor, without solder, rivets or metal working tools. Less labor and material are used, and the "Waldmire" Louver is more durable than louvers in panels between posts that depend on soldered joints for weather-tightness.

VENTILATING SIDING. For tobacco barns use "Waldmire" Siding, the same construction as Louver, except it is 12" instead of 6" on vertical centers. The cost is less than other ventilating siding.

ESTIMATES. Send plans and specifications at our expense. Unless requested to erect Louvers, bids are f. o. b. Philadelphia. Shipping weight and freight rate are stated on estimate.

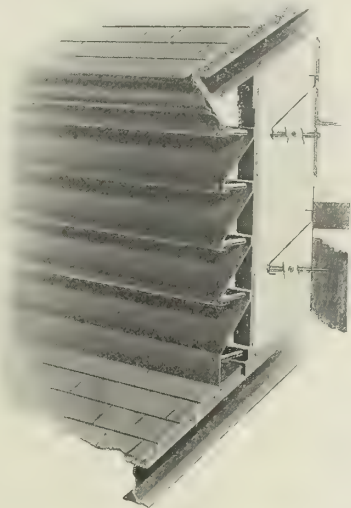
DELIVERIES. Louvers in ten-foot lengths are in stock. Space vertical supports 59¼ inches on centers to provide 1½ inches lap-joints. We guarantee quick shipment on special cornice mould and roof aprons in connection with Louvers.

" LUPTON " HOLLOW-METAL FIRE DOOR. The "Lupton" Hollow-Metal Fire Door is a series of rectangular galvanized-steel sections, locked together in horizontal position. Continuous caps close ends of sections and form edges of door.

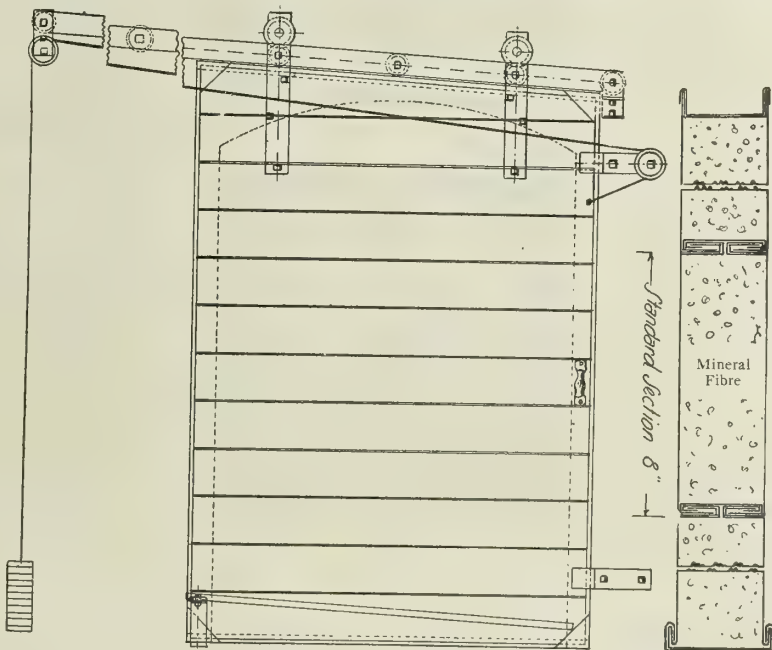
The sections are filled with mineral fiber, specially prepared, so that gas can not be developed under any fire test.

When exposed to heat equal to breakdown test for Underwriters' Standard Tin-clad Wood Fire Doors the "Lupton" Door will not radiate sufficient heat to ignite muslin six inches from opposite side of the door.

INSTALLATIONS. Our manufactures are installed in the best class of office and industrial plants in the United States and foreign countries. We can refer you to buildings in your own city or vicinity.



" WALDMIRE " LOUVER



SECTION " LUPTON " HOLLOW-METAL FIRE DOOR

JAMES A. MILLER & BRO.

Sheet Metal Window Frames and Sash; Slate; Tile and Metal Roof Work

114 South Clinton Street

CHICAGO, ILL.

LONG DISTANCE TELEPHONE, MAIN, 145

PRODUCTS.

Manufacturers of FIRE-RESISTING SHEET-METAL WINDOW FRAMES and SASH filled with Wire-Glass; also, SKYLIGHTS, CORNICES, and GENERAL SHEET-METAL WORK for BUILDING.

Contractors for SLATE TILE and METAL ROOF WORK.

FACILITIES.

We have not only extensive factory space and the best machinery, but also an experience of thirty years in our line of manufacture. These facilities enable us to produce superior work and to guarantee it.

TERRITORY.

We are prepared to ship our products or put them in place anywhere in the United States or Canada.

ADAPTABILITY.

Our windows have been tested and accepted by the Underwriters; they have labels furnished by the Underwriters' Laboratories, and our shop is visited by their inspectors to see that windows are made like those tested.

WIRE-GLASS.

Wire-Glass is either ribbed or rough rolled glass having Wire Netting embedded in its center during the process of manufacture. Skylight glass wired in this manner possesses the combined strength of the wire netting and the glass plate, and the wire being thoroughly covered is protected from dust and corrosion.

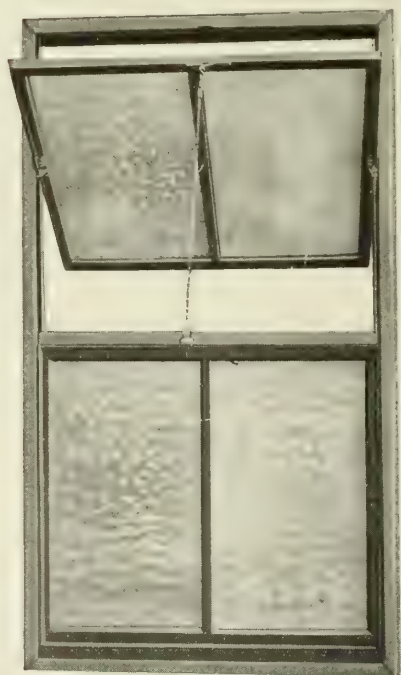


FIG. 1. STANDARD WINDOW



FIG. 2. SLIDING DOUBLE-HUNG OR BOX-FRAME WINDOW



FIG. 3. CASEMENT WINDOW WITH TRANSOM
Used at Fire-Escapes

WIRE-GLASS WINDOWS.

We manufacture three general styles of Wire-Glass Windows (Figs. 1, 2, and 3). Our Sheet-Metal Wire-Glass Windows are made in a variety of forms to suit requirements. There are Stationary Windows; Pivoted in whole or in part; Sliding Double-Hung, Box-Frame or Counterbalanced; and Casement. All styles can be made in any size desired, subject of course to the Underwriters' rules.

The glass used in our windows is either $\frac{1}{4}$ " Ribbed or Rough Plate. It is also ground and polished the same as polished plate without wire—thus combining the qualities of plate glass with the fire-retarding properties of wire-glass.

ADVANTAGES.

Following are some of the advantages of Wire-Glass Windows: (1) They offer a positive resistance to spread of fire. (2) Iron or metal shutters must be opened for lighting, closed for protection. (3) Windows are shut nine times where shutters are closed once. (4) Closed shutters hinder the watchman from detecting an interior fire. (5) Wire-glass windows aid the watchman; the blaze will reveal the fire. (6) Closed shutters are an obstacle to the fire department. (7) Wire-glass windows can readily be broken through by the axes in the hands of the firemen. (8) Wire-glass windows admit light, giving access to the building at all times without the labor of opening shutters. (9) Wire-glass in approved metallic frames or sashes will reduce rate of insurance in many cases 10 per cent or more.

RESISTANCE TO EXPLOSIVES.

While buildings are probably never designed to resist dynamiting, it is well to know that at the explosion of dynamite in Chicago, June 27, 1909, where a total damage to property of fifty thousand dollars was done, the building nearest the explosion (the Randolph Exchange of the Chicago Telephone Company) suffered comparatively little damage. This is due to the fact that all its windows were glazed in wire-glass in sheet copper frames, made and installed by us. Not one of the employees of the Exchange was injured, despite the fact that it was as full of operators as is usual at the busy hour of the accident's occurrence.

COST.

In a general way it may be said that a window like the one shown in Fig. 2, and made in galvanized iron, would cost about the same as an ordinary wooden window with iron shutters.

A sliding window would cost about 50 cents per square foot more. This price is for windows fitted with ribbed or rough wire-glass. The additional cost for polished wire-glass would be from 75 cents to \$1 per square foot of glass. Where polished wire-glass is desired, it is often sufficient to use it in the lower sash, using the rough or ribbed wire-glass in the upper sash. Where copper, instead of galvanized iron, is desired, there is an additional cost of 75 cents per foot of window.

Really, the only way to get accurate prices is to send us a set of plans or diagrams, showing the number, styles and sizes of the windows, with information as to the materials to be used. We can then tell just what the windows for that particular building will be worth.

SUGGESTIONS.

In planning a building where Wire-Glass Windows are to be used, it is well to know that it is economy to have the windows in as little variety of sizes as possible, and also to have windows large. It materially cheapens the cost of making a number of windows if there are many of the same size. The labor of making a window say 2' 6" x 6' is the same as it is for one 4' x 8'.

REFERENCES.

We have a large list of buildings in which our windows are installed or in the course of installation. The following is a partial list:

BUILDING	LOCATION	ARCHITECT
Majestic Theater	Chicago, Ill.	E. R. Krause
Paper Mills Building	Chicago, Ill.	Geo. L. Harvey
Vette & Zunker	Chicago, Ill.	Huehl & Schmid
W. H. Caldwell & Sons Co.	Chicago, Ill.	W. L. Stebbings
Winslow Bros. & Co.	Chicago, Ill.	Raeder & Coffin
National Biscuit Co.	Chicago, Ill.	A. G. Zimmerman
Butler Bros. Warehouse	Chicago, Ill.	Jarvis Hunt
Rector Building	Chicago, Ill.	Jarvis Hunt
American Trust & Savings Co.	Chicago, Ill.	Jarvis Hunt
United States Brewing Co.	Chicago, Ill.	Louis Lehle
S. Franklin Co.	Chicago, Ill.	R. E. Schmidt
C. H. Besley	Chicago, Ill.	A. F. Pashley
J. Harley Bradley	Chicago, Ill.	A. F. Pashley
Hibbard Spencer Bartlett Co.	Chicago, Ill.	Frost & Granger
Chicago Dock & Canal Co.	Chicago, Ill.	C. A. Eckstrom
Union League Club	Chicago, Ill.	D. H. Burnham Co.
Commercial National Bank Building	Chicago, Ill.	D. H. Burnham Co.
Chicago Telephone Co.	Chicago, Ill.	Pond & Pond
Albaugh Bros., Dover & Co.	Chicago, Ill.	Howard Shaw
Ginn & Co.	Chicago, Ill.	Howard Shaw
Mentor Building	Chicago, Ill.	Howard Shaw
Allis Chalmers Co.	Milwaukee, Wis.	
J. I. Case Threshing Machine Co.	Racine, Wis.	
Deere & Co.	Moline, Ill.	
Simmons Hardware Co.	Sioux City, Iowa	
Advance Thresher Co.	Battle Creek, Mich.	

THE PELLE COMPANY

Underwriters' Fire Doors and Safety Gates for Elevator Shafts

123 Liberty Street

NEW YORK, N. Y.

TELEPHONE 2482 CORTLANDT

PRODUCTS.

Manufacturers of UNDERWRITERS' FIRE DOORS and SAFETY GATES for OPENINGS and ELEVATOR SHAFTS, including the "PEELLE" UNDERWRITERS' COUNTERBALANCE FIRE DOORS (patented); also, LIGHT IRON WORK.

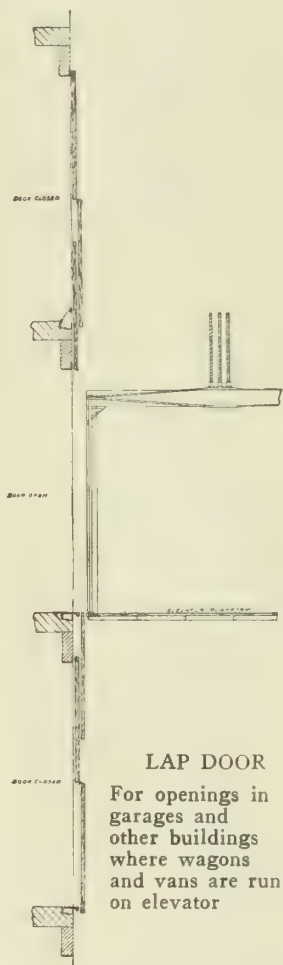


TRADE-MARK

CONSTRUCTION.

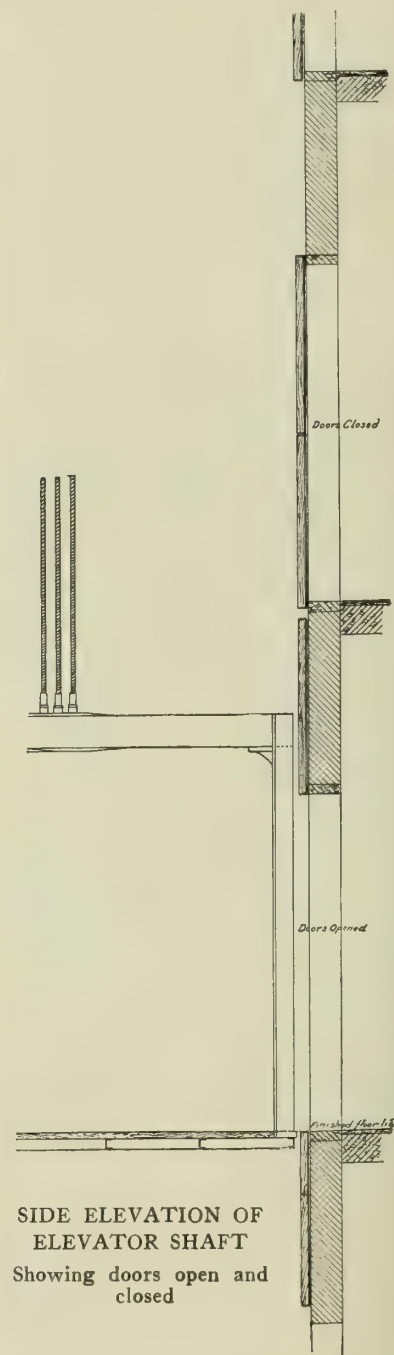
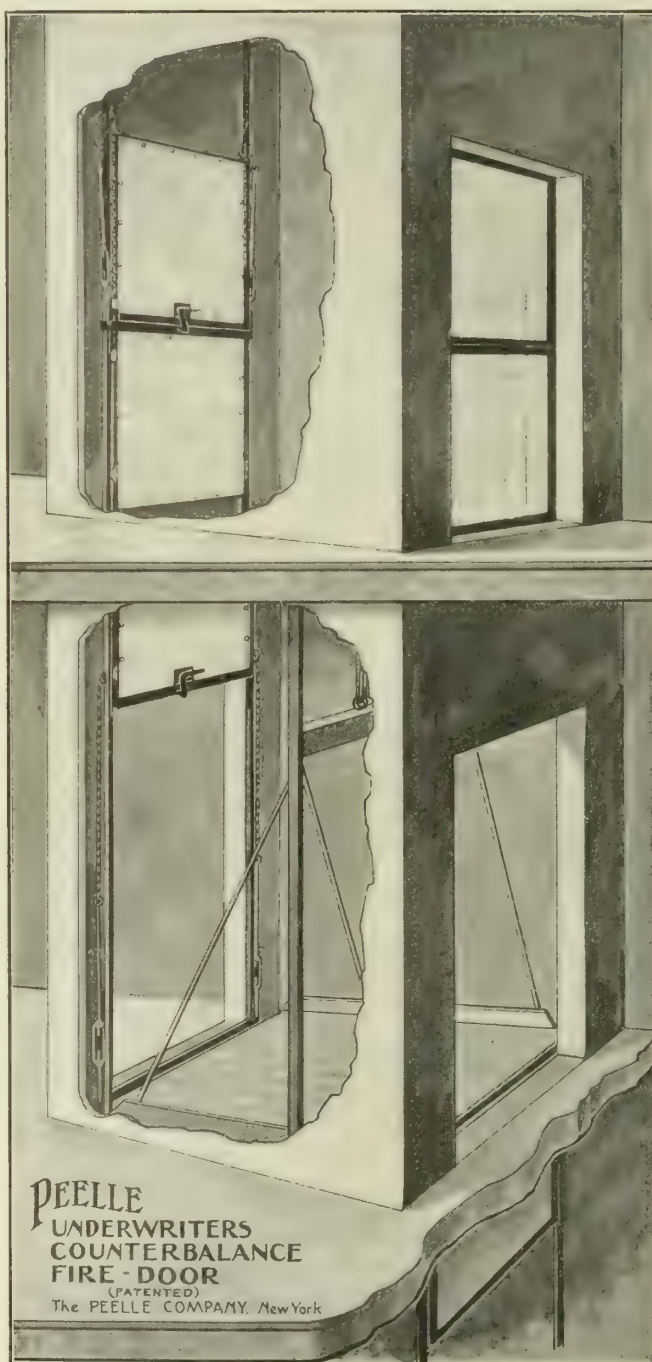
These Doors are made of two thicknesses of wood, tin-covered, bolted into steel frames, hung with latest improved chains, hangers, and ball-bearing pulleys; operated in an anti-friction track.

We shall be pleased to give full details, furnish blue-prints, etc., and prepare estimates on request. Send postal for our detail set drawings.



LAP DOOR

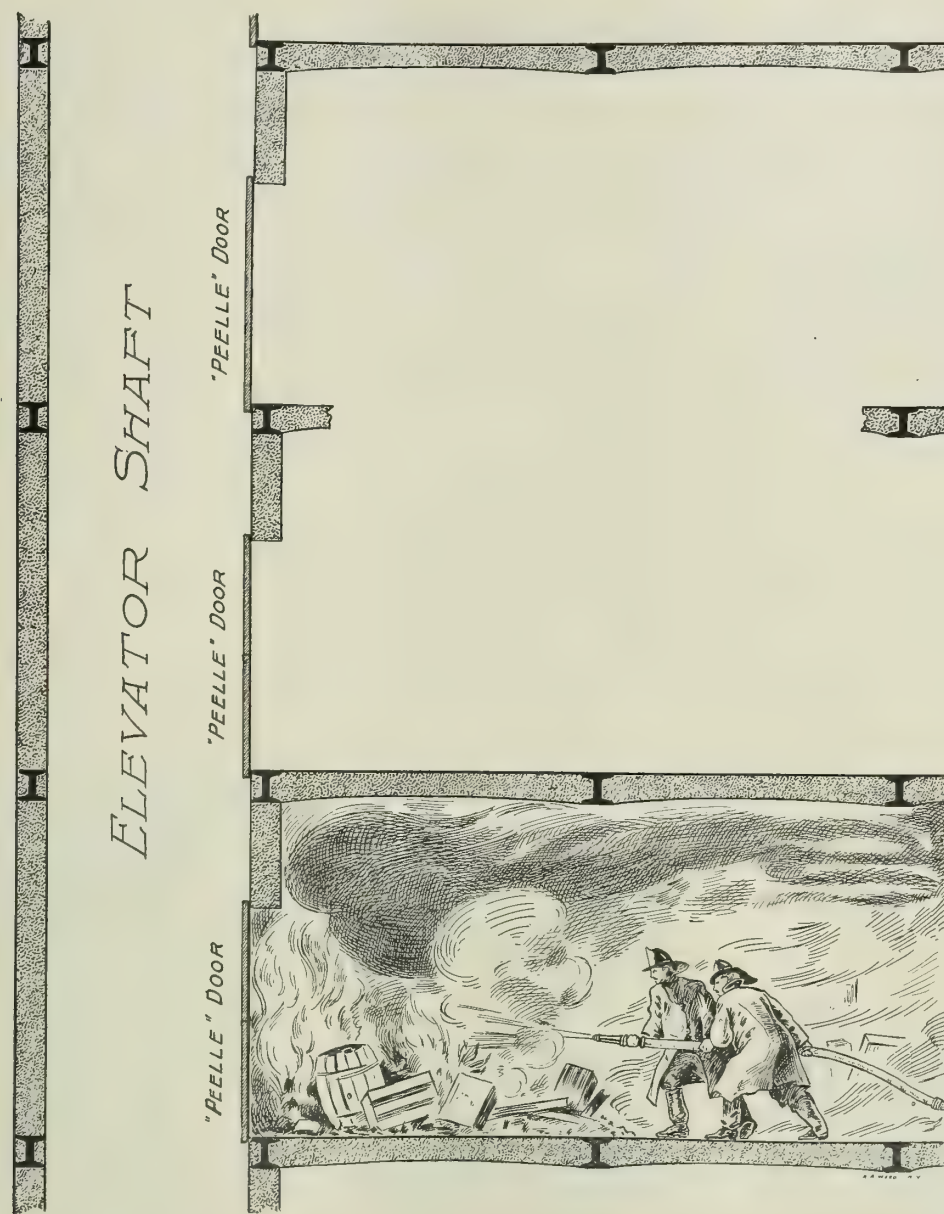
For openings in garages and other buildings where wagons and vans are run on elevator



"PEELLE" UNDERWRITERS' COUNTERBALANCE FIRE DOORS

"PEELLE"
FIRE DOORS.

We claim that C. M. Peelle and associates originated the first Underwriters' Counter-balance Fire Doors for elevator shafts, and that these doors have become a recognized standard. They are not only fireproof but are made for constant usage and to stand the necessary trucking over them while loading and unloading. That is the reason why we give so much attention to every detail in the manufacture of "Peelle" Doors. Another point is, they are patented, grants being given April 5, 1904, June 18, 1907, and November 19, 1907.



FIRE-PROTECTING QUALITY OF "PEELLE" DOOR

REFERENCES.

A few buildings in which the "Peelle" Doors and Gates are in use:

BUILDING	LOCATION	BUILDING	LOCATION
General Electric Co.	Ft. Wayne, Ind.	Brunswick-Balke-Collender Co.	Long Island City, N. Y.
National Biscuit Co.	New York, N. Y.	United States Marine Corps	Philadelphia, Pa.
Great Atlantic & Pacific Tea Co.	Jersey City, N. J.	Rochester Optical Co.	Rochester, N. Y.
Singer Sewing Machine Co.	Bridgeport, Conn.	Newark Warehouse Co.	Newark, N. J.
Bush Terminal Factories	Brooklyn, N. Y.	Sheriff Street Market & Storage Co.	Cleveland, Ohio
Colgate & Co.	Jersey City, N. J.	General Electric Co.	Harrison, N. J.
John Wanamaker	New York, N. Y.	A. Booth & Co.	St. Paul, Minn.
A. Booth & Co.	Detroit, Mich.	Packard Garage	New York, N. Y.
Keuffel & Esser Co.	Hoboken, N. J.	Phelps Publishing Co.	Springfield, Mass.

THE C. D. PRUDEN CO.

All-Steel, Steel and Copper Covered Doors, Windows, Casings, and Mouldings
BALTIMORE, MD.

PRODUCTS.

"PRUDEN" ALL-STEEL DOORS.

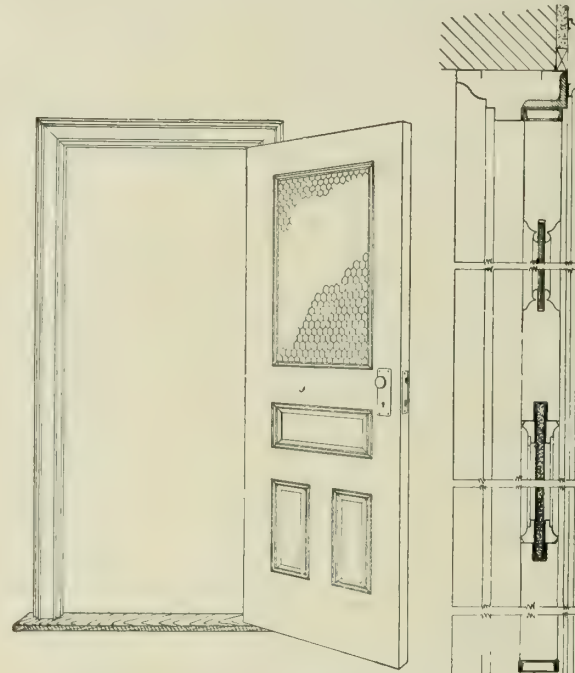
Manufacturers of ALL-STEEL, STEEL and COPPER COVERED DOORS, WINDOWS, CASINGS, and MOULDINGS.

Our Hollow All-Steel Doors are the best and prices are the lowest. They are constructed of No. 20 galvanized steel, reinforced with channel iron frame all around. The side rails are moulded and interlocked in such a manner as to be inseparable and rigid. All fastenings are concealed and the finish is superior to any hollow door made. The space between faces of panels is reinforced with $\frac{1}{4}$ -inch asbestos board, making an absolutely fireproof door. Frames and casings are made of same material as door, reinforced with angle-irons to which the hinges are attached.

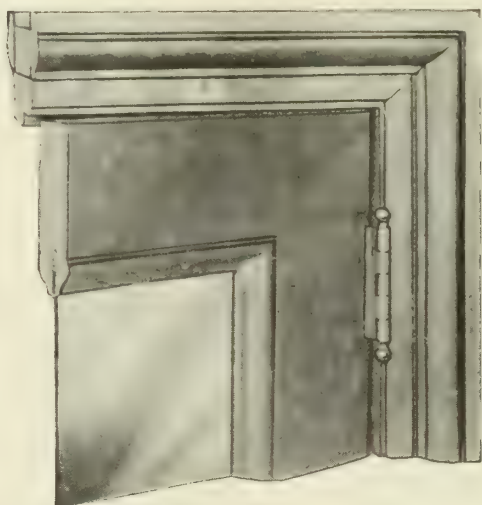
METAL-COVERED DOORS.

Our Metal-Covered Doors are built of thoroughly seasoned white pine, covered with painted steel, copper-plated steel, or cold-rolled 20-oz. copper. Each face of door is made in one solid sheet of metal, and is secured on all edges by our patented "seam lock," making a perfectly flush finish on all edges. This arrangement makes the "Pruden" Metal-Covered Doors as fireproof as is possible to make a wood-filled door.

All casings, mouldings, or other loose stops are made of the same metal, drawn over wood through steel dies.



DETAIL SHOWING CONSTRUCTION OF
"PRUDEN" ALL-STEEL DOORS WITH
ASBESTOS-FILLED PANELS



CORNER SECTION OF "PRUDEN" COPPER
OR STEEL COVERED DOOR,
FRAME AND TRIM

Showing Absence of Seams or Miters in Door
Covering



COPPER-COVERED ENTRANCE
DOORS, FREDERICKTOWN
SAVINGS INSTITUTION,
FREDERICK, MD.

F. E. AND H. R. DAVIS, Baltimore,
Architects



COPPER-COVERED ENTRANCE DOORS,
BUILDING, BALTIMORE, MD.

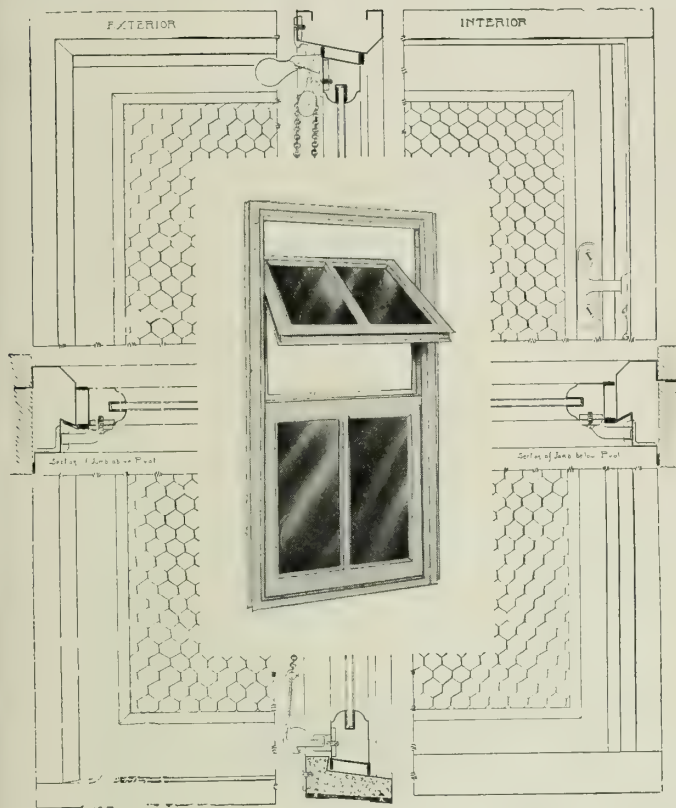
BALDWIN & PENNINGTON, Architects

TERRITORY.

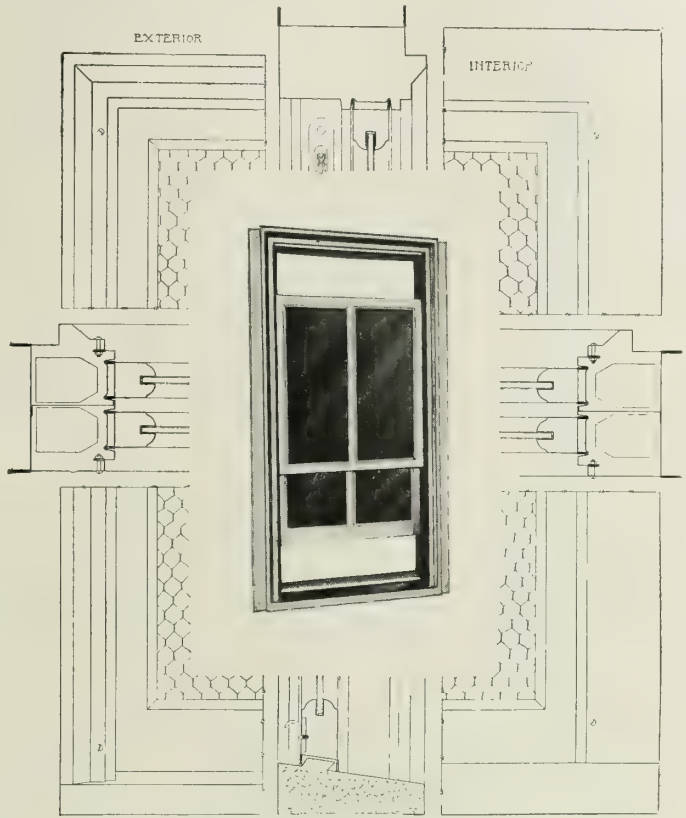
We sell anywhere and everywhere. Indorsed by Engineers, Architects, and Builders in nearly every State. In use in Office Buildings, Banks, Hospitals, and Warehouses from Ocean to Ocean.

"PRUDEN"
FIREPROOF
WINDOWS.

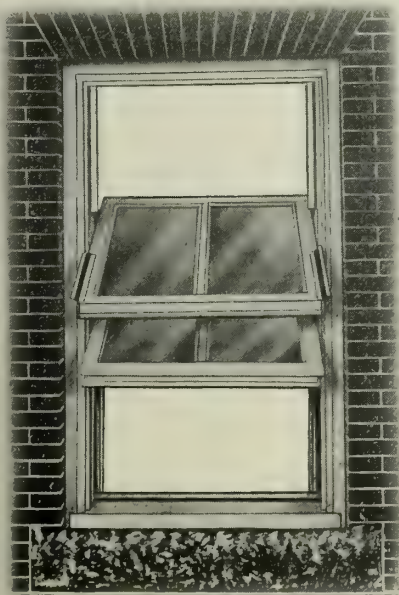
Made of No. 22 galvanized steel or 20-oz. copper; are weather, dust, and fireproof; simple of construction and easy of operation.



DETAIL OF "PRUDEN" FIREPROOF WINDOW
Pivoted Upper and Lower Sash

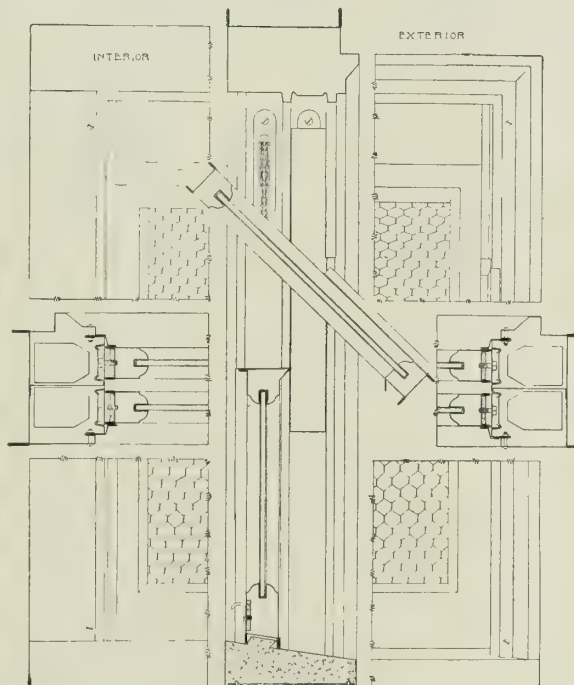


DETAIL OF "PRUDEN" STANDARD SLIDING SASH
WINDOW



"PRUDENTIAL" WINDOW

Both sashes open. Embracing all the advantages of a sliding and a pivoted window



DETAIL SHOWING CONSTRUCTION OF "PRUDENTIAL" COMBINATION SLIDING AND
PIVOTED SASH WINDOW

Cost of this frame is little more than Standard Sliding Sash



"PRUDENTIAL" WINDOW

Sash Closed and Locked

OFFICIAL IN-
DORSEMENT.

Approved by the National Board of Fire Underwriters.

JOHN W. RAPP COMPANY

Metal Doors, Windows and Interior Trim, "Sagax" and
Asbestos Protected Metal

GENERAL OFFICES AND WORKS

3rd and 4th Avenues, 8th and 10th Streets

COLLEGE POINT, NEW YORK, N. Y.

SHOW ROOMS AND SALES DEPARTMENT: Metropolitan Life Building, 1 Madison Avenue, NEW YORK, N. Y.

AGENCIES

BOSTON, MASS., E. D. CHANDLER, 1150 Tremont Building
DENVER, COLO., GEORGE W. SUMMERS & Co., 417 Mining Exch. Bldg.
PHILADELPHIA, PA., E. E. NICKSON, Land Title Building

KANSAS CITY, MO., JACQUES STEEL Co., R. A. Long Building
NEW ORLEANS, LA., A. J. NELSON, 428 Lowerline Street
LOS ANGELES, CAL., GEORGE W. CLARK Co., 233 Bradbury Building

PRODUCTS.

Manufacturers of HOLLOW-METAL and METAL-COVERED EXTERIOR and INTERIOR DOORS, WINDOWS, TRIM and MOULDINGS of every description.

"SAGAX" FIRE UNDERWRITERS' LABELED DOORS. (For full information see Trade-Name in General Index of this catalogue.)

Distributers of ASBESTOS-PROTECTED METAL for Roofing, Siding, Interior Finish of Buildings and Steamboats; also, Railroad and Traction Equipment.



GENERAL OFFICES AND FACTORY OF JOHN W. RAPP COMPANY, COLLEGE POINT, NEW YORK

REFERENCES.

We request that architects and owners contemplating the use of this type of construction communicate with the architects below mentioned, particularly the architects and owners of the Fifth Avenue Building, which is the largest contract ever executed in hollow steel:

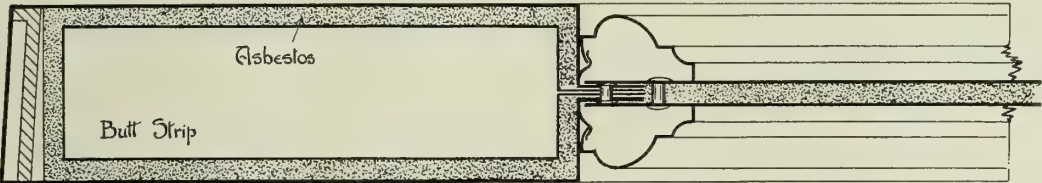
BUILDING	LOCATION	ARCHITECT
Metropolitan Tower	New York, N. Y.	N. LeBrun & Sons
Fifth Avenue Building	New York, N. Y.	Maynicke & Franke
City Investing Building	New York, N. Y.	F. H. Kimball
Masonic Hall	New York, N. Y.	H. P. Knowles
State Educational Building	Albany, N. Y.	Palmer & Hornbostel
Cameron Building	New York, N. Y.	Clinton & Russell
Centurian Building	New York, N. Y.	W. L. Rouse
Metropolitan Life Insurance Building	San Francisco, Cal.	N. LeBrun & Sons
Silversmith Building	New York, N. Y.	Clinton & Russell
Lawyers Title Building	New York, N. Y.	Clinton & Russell
Trust Company of America	New York, N. Y.	F. H. Kimball
Stuyvesant Theater	New York, N. Y.	George Keister

DESCRIPTION. Our products have been recognized by the leading architects for many years as standards of good workmanship and are specified where the best is required.

CONSTRUCTION, DOORS. All Metal Doors are made of the best grade of steel and bronze, specially prepared. Stiles and rails of 18-gauge metal connected at the joints by a patented device, lined with asbestos board, and an inner shell of 26-gauge steel forcing the asbestos tightly against the outer shell. The center air-space and the asbestos lining absolutely prevent heat radiation. The panels are composed of two sheets of 18-gauge steel hydraulically cemented to a compressed asbestos board $\frac{1}{5}$ inch in thickness. The edges of the panels are riveted to the flanges of the stiles and rails. The mouldings are cold-rolled to any design, with welded miters, and are secured in place with specially prepared clips.

Reinforcing is provided for all types of hardware.

The faces of the doors have no rivet or screw-heads as in many types of construction, to eventually work loose and show through the finish.



SECTION THROUGH STILE

JAMBS AND TRIMS. Jambs and Trims are cold-rolled to any design of 18-gauge steel with welded miters, and are sent to the building in sets, ready for erection. The jambs are prepared for butts and locks, so arranged that any carpenter can make the installation.

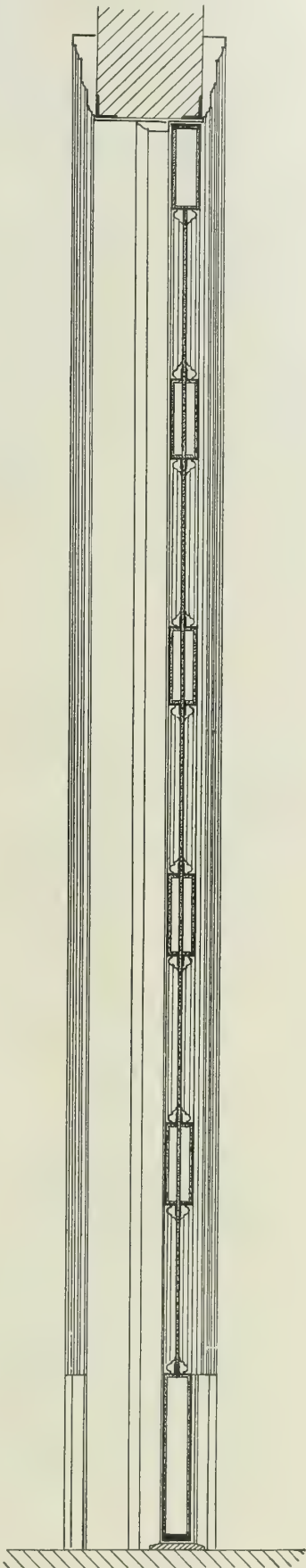
FINISH. The finish of all steel doors and trim consists of six coats, rubbed and baked in ovens after each coat, and grained by expert grainers to imitate any hardwood finish.

Bronze doors and trim can be finished in any bronze effect.

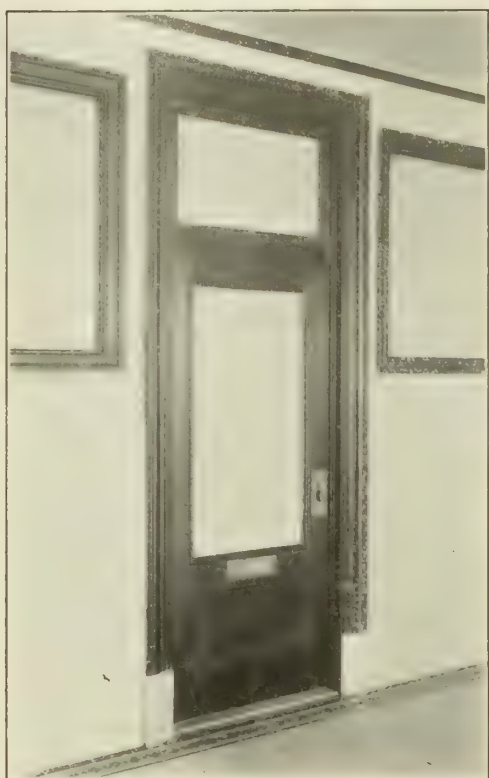
MOULDINGS. Mouldings are supplied cold-rolled in any design to manufacturers of ornamental iron and similar lines.

FACILITIES. We undertake the manufacture and installation of our work in any part of the world, our factory being by far the largest and best equipped, with modern machinery only, and it is unlimited in capacity. Our field force is composed of men who know how to anticipate the requirements in buildings of large magnitude.

CO-OPERATIVE SERVICE. We are pleased at all times to assist architects and engineers in the preparation of their drawings and specifications as well as with preliminary and final estimates.



LONGITUDINAL SECTION



TYPICAL CORRIDOR DOOR, FIFTH AVENUE BUILDING, NEW YORK, N. Y.



TYPICAL COMMUNICATING DOOR, FIFTH AVENUE BUILDING, NEW YORK, N. Y.

These Doors are Hollow-Steel Construction, Mahogany Finish

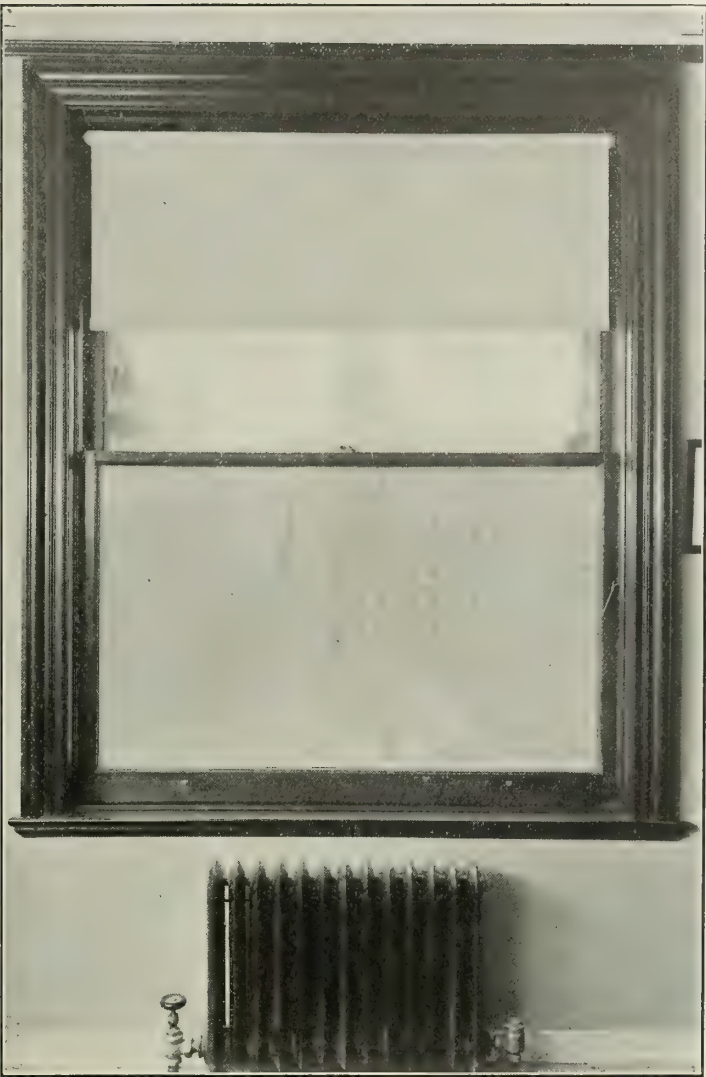
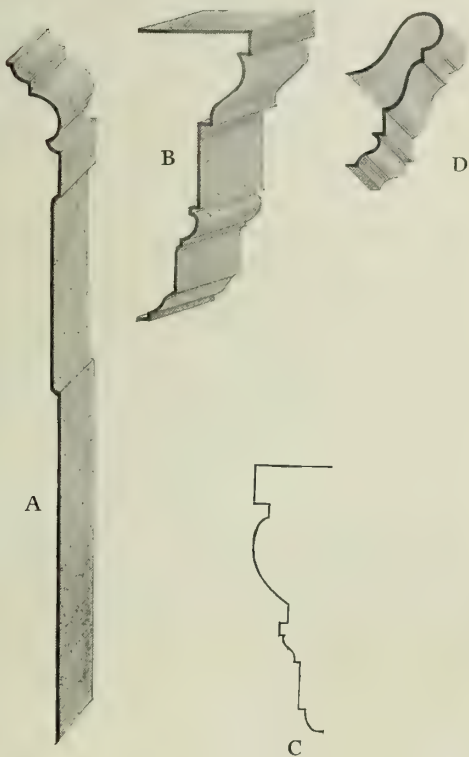


HOLLOW-STEEL MAHOGANY SECTIONAL PARTITION USED THROUGHOUT THE FIFTH AVENUE BUILDING
This partition is made in standard size units, is handsome, durable, and absolutely fireproof. Can be taken down and re-erected as readily as wood

Continued on next page

BRONZE-
COVERED
DOUBLE-
HUNG
WINDOW.

These windows are bronze-
covered over a wood core and are
equipped with our own metal
weather-strip which we have guar-
anteed to be absolutely weather-
proof.



BRONZE-COVERED DOUBLE-HUNG WINDOW, FIFTH
AVENUE BUILDING, NEW YORK, N. Y.

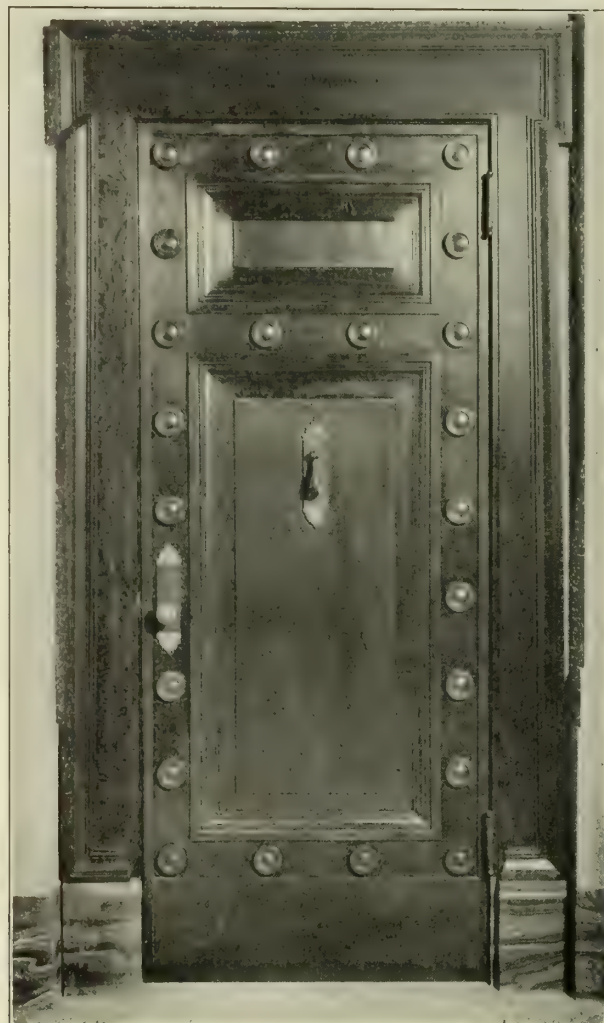


A FEW SECTIONS OF HOLLOW DRAWN MOULDINGS



SLIDING DOOR FOR PASSENGER USE

By drawing two bolts the two doors swing out, giving the full width of opening for freight service



BRONZE-COVERED DOOR WITH CAST-BRONZE ORNAMENTS

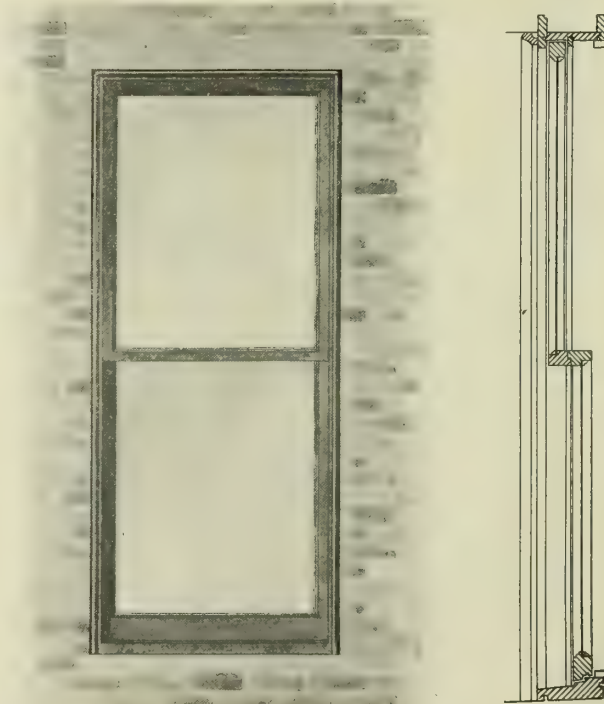
Installed in Lodge Room of Masonic Hall, New York, N. Y.

Furnished in hollow drawn steel, bronze, and copper; also, with wood cores covered with bronze, copper, or sempermerus charcoal iron. Can be made to any design, the metal drawn through steel dies making all members sharp and true.

Also interior, partition, office, and ventilating-shaft frames and sash, pivoted, hinged, or stationary.



EXTERIOR DOUBLE-HUNG PIVOTED OR CASEMENT WINDOW FRAMES AND SASH



VARIETY MANUFACTURING COMPANY

Fireproof Doors

Sacramento and Carroll Avenues

CHICAGO, ILL.

SALES REPRESENTATIVES IN ALL LARGE CITIES

PRODUCTS.

"CROSS" ELEVATOR and FREIGHT-HOUSE DOORS. Manufacturers of "CROSS" PATENT HORIZONTAL FOLDING DOOR, "CROSS" PATENT IMPROVED ELEVATOR DOOR, ROLLING STEEL SHUTTERS, IRON FIRE DOORS and WINDOW SHUTTERS, FIREPROOF WINDOW FRAMES, STIRRUPS, ANCHOR BOLTS and TIE RODS, etc.

"CROSS" HORIZONTAL FOLDING DOOR.

This door is designed for use in railroad freight houses, express houses, warehouses, docks, piers, cold-storage plants, wagon and car entrances, shipping platforms, baggage rooms and garages.

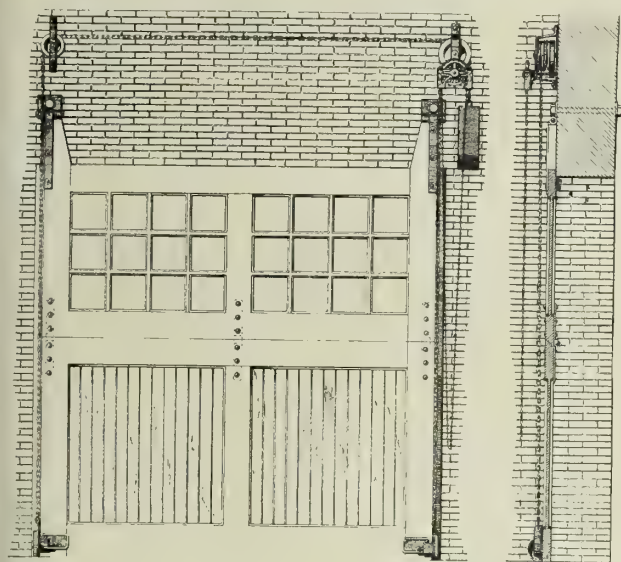


FIG. 1. "CROSS" HORIZONTAL FOLDING DOOR
Combination style, upper half glass, lower half wood.
Working parts exposed

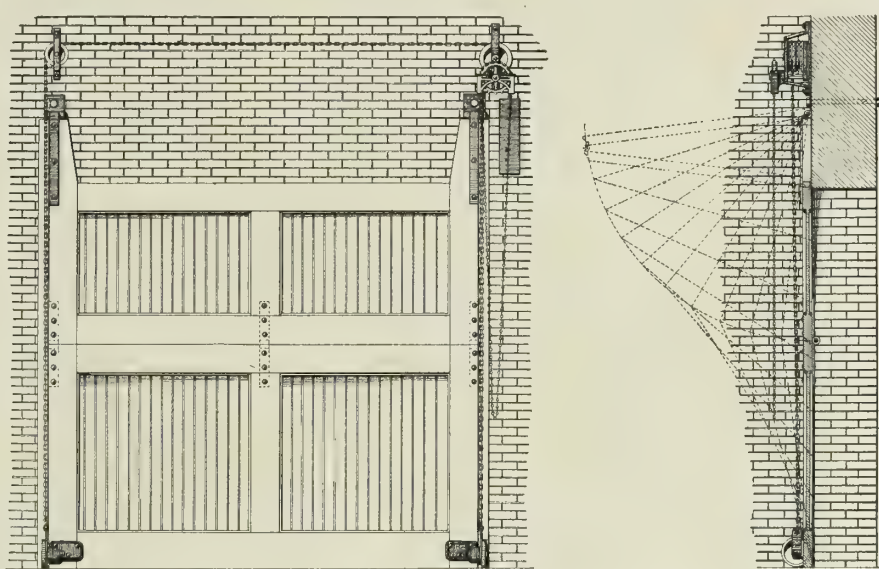


FIG. 2. "CROSS" HORIZONTAL FOLDING DOOR
Wood construction, with diagram showing economy of space used in operating

OPERATION.

The "Cross" Horizontal Folding Door is divided horizontally into two equal sections. The top half is secured to the wall by heavy hinges and bolted to the bottom section by substantial strap hinges.

At the lower corners of the bottom section are the guide rollers rotating upon shafts housed in special shoe castings which are secured to the door by through bolts. Attached directly to the shoes are heavy plates which serve the double purpose of retaining the bottom of the door against the wall and preventing same from being blown inward as door is closed, due to wind pressure, and also for attaching the counterbalancing weight chains. These chains pass up the sides of the door, the one passing over a sheave mounted in a special bracket to the opposite side of door where both chains pass over pulleys to a common counterbalancing weight.

At the sides of the door are the angle guides upon which the guide rollers travel when the door is opened and which also form a 2" rabbet into which the door closes.

The door is readily opened or closed by means of a pair of bow-shaped handles at the center. This arrangement suffices for all openings where the height is not greater than the reach of the ordinary man. Where such is the case, a special differential gear-hoisting device operated by means of an endless chain is used for displacing the weight so that the door will open or close. This device thus makes the door adaptable to any size opening.

CONSTRUCTION.

This is the only door taking up no valuable space when opened or closed which can be made of any material.

It can be constructed entirely of wood, iron or concrete, of any desired thickness or any combination of the above, such as wood covered with iron. Where light is of value, provision can readily be made in any of the above forms for the installation of glass.

Almost any of the constructions are indestructible. We would not advise the installation of iron doors where they are for outside use, as the weather will, in less than eight years, corrode and eat holes in almost any gauge of iron up to number twelve. This is why a door of wood is so much more serviceable for freight houses than the iron rolling shutter. This door has no springs to wear out. Every part is in plain view. It can easily be adjusted by an ordinary mechanic if by chance it should be accidentally put out of order. For instance —if, by accident, a wagon in backing up broke a hole in the door, so that the structural stability of the door itself was not impaired, it would only be necessary to nail a piece of wood over the broken space. The door would not be out of service for ten minutes. This is practically the only way the door could get out of order, as the attachments, chains, etc., are built to last a lifetime, and are always on the inside, where the weather has no effect on them.

LIST OF
RAILROADS
USING
" CROSS "
DOORS.

Chicago & Northwestern Ry.
Chicago & Alton Ry.
Chicago Terminal Transfer Co.
Chicago, Burlington & Quincy Ry.
Missouri, Kansas & Texas
Chicago, Milwaukee & St. Paul Ry.
Lake Shore & Michigan Southern Ry.
Chicago, Rock Island & Pacific Ry.
Chicago & Great Western Ry.
Delaware, Lackawanna & Western Ry., used as standard
Pennsylvania Ry., Chicago to New York City
Lehigh Valley Ry.
Long Island Ry.
Erie Ry.

White Star Line
New York Central Ry.
Illinois Central Ry.
Baltimore & Ohio Ry.
Central Ry. of New Jersey
Metropolitan Express Co.
Adams Express Co.
Louisville & Nashville R. R.
American Express Co.
U. S. Express Co.
Chicago Junction Ry.
Chicago, Indianapolis & Louisville Ry.
Des Moines Union Ry.
And many others

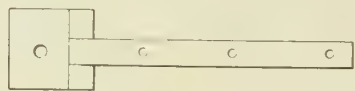


FIG. 3. SUPPORTING HINGES
Which hold top of door to wall

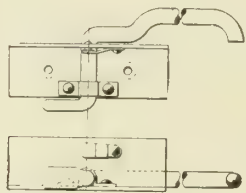


FIG. 6. HAND LOCKS
Or bolts furnished on all doors unless otherwise specified

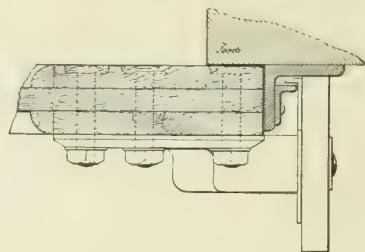


FIG. 7. DETAIL SHOWING GUIDE WHEEL AND SHOE IN PLACE



FIG. 4. CENTER HINGES
Which join the two sections of the door, and allow lower section thereof to lap in under top half when door is opened

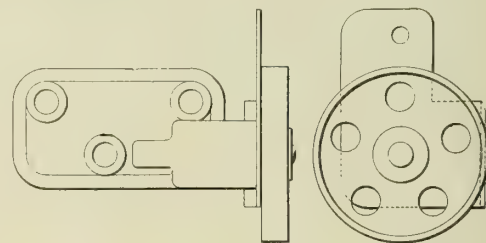


FIG. 5. GUIDE WHEELS AND SHOES
Affixed to lower corners of lower half of door. When door is opened and closed these wheels run up and down tracks and facilitate operation of door

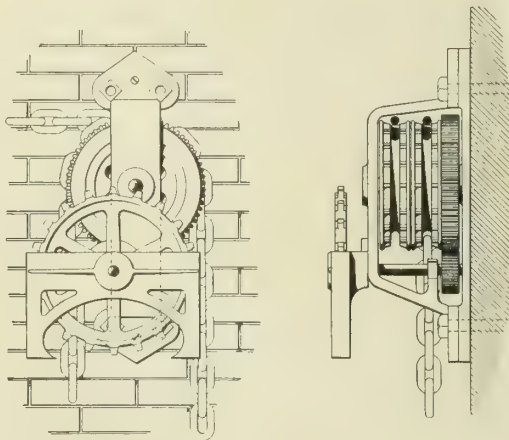


FIG. 8. PATENT HOIST APPARATUS
Which materially assists counterweight device in holding door constant, and facilitates ease of operation

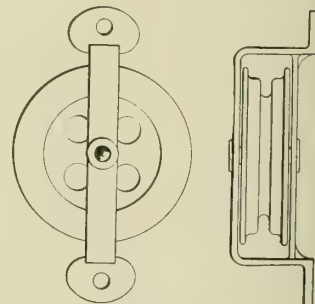


FIG. 9. SINGLE-CHAIN WHEELS

Usually furnished for chain to off-side wheel and shoe. Where this wheel can not be used, we furnish one supported from top only

ADAPTABILITY.

It is especially serviceable in docks, piers, and other structures on or near waterways, or in factories where acid gases and other substances would in a short time corrode or eat out iron.

SPECIAL
DESIGNS.

We take pleasure in getting up details for special construction and submitting estimates; and our years of experience in the door business are at your service.

"CROSS"
COUNTER-
BALANCE
FREIGHT
ELEVATOR
DOOR.

This elevator door (Figs. 10 and 11) is made in two parts, of corrugated iron riveted to an angle-iron frame (size of frame depending on size of door), or of wood, tin-clad. It slides on the inside of the shaft, extending only $2\frac{3}{4}$ " from the wall. The upper and lower halves of the door are fastened together with a strong, flexible chain, which is attached to the side of the lower half of the door passing up over a pulley fastened to the guide in which the door slides, where the other end is securely attached to the top half of the door. In opening the door, half of it slides up, the other half sliding down; both halves, being constructed exactly alike, weigh the same, thereby making the door a counter-balance in itself, which makes it very easy to open and close, yet simple and very durable.

The fact that all the doors slide in the same guide prevents any two consecutive doors being open at the same time; for instance, when the door on the third floor is open the upper half occupies the space between the top of the opening and the floor line of the fourth floor, and the lower half occupies the space between the floor line of the third floor and the top of the second floor opening; now in order to open the second floor door, or the fourth floor door, the elevator operator would have to close the third floor door; thus almost insuring a closed shaft under any conditions.

CATALOGUE.

Send for our latest catalogue.

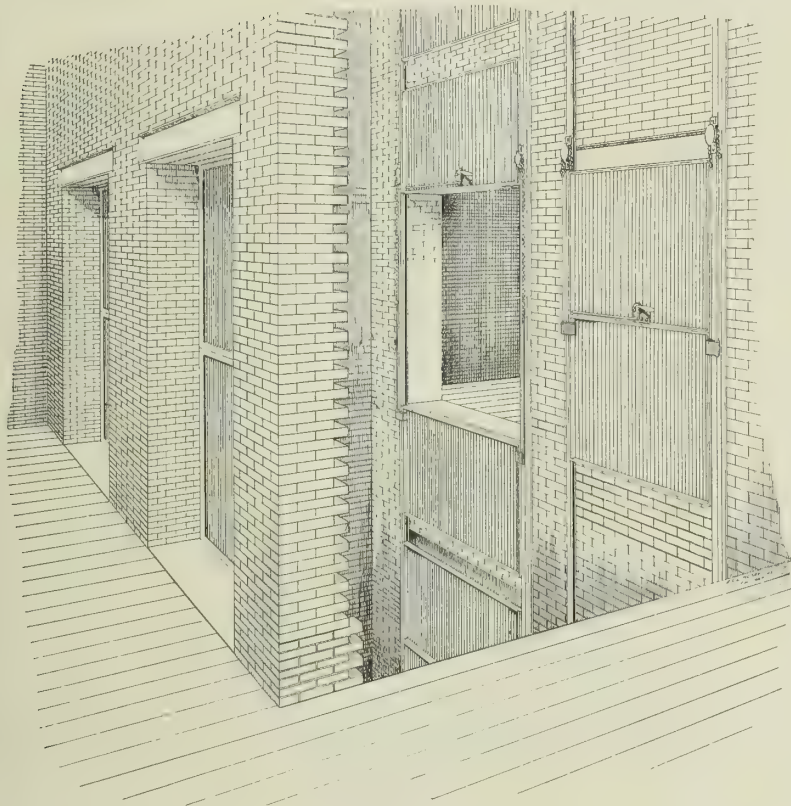


FIG. 10. ELEVATOR DOORS

Looking through double shaft, showing doors open and closed from inside

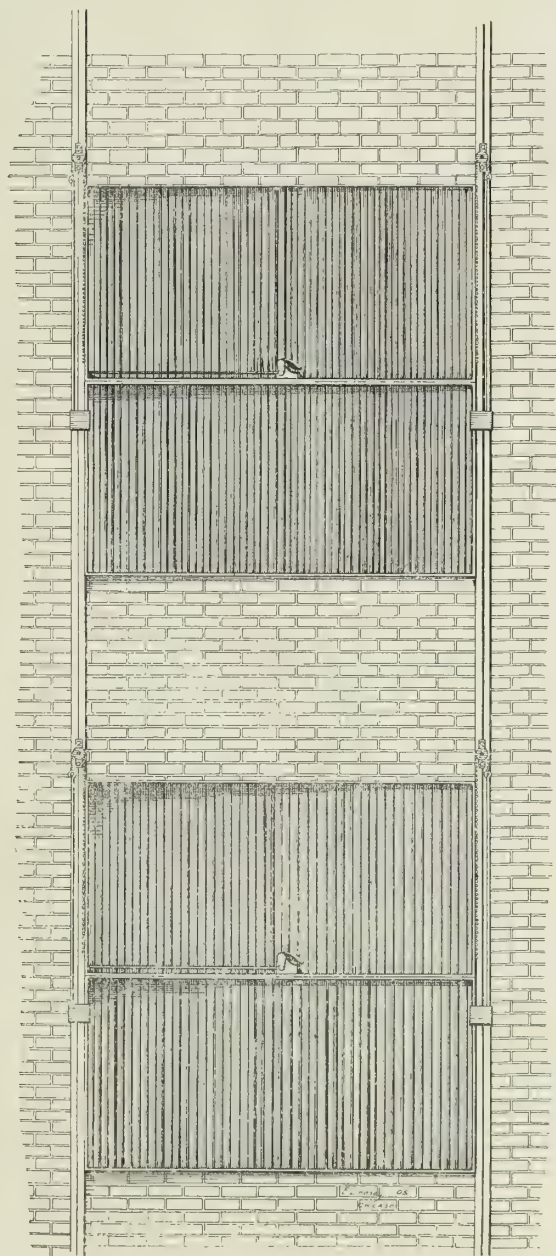


FIG. 11. ELEVATOR DOORS

Showing doors as they would appear in line on inside of shaft

INSTALLATIONS.

This door is in use in hundreds of large buildings, including:

Western Electric Co., Chicago and New York.
 Marshall Field & Co., Chicago.
 Sears, Roebuck & Co., Chicago.
 Montgomery, Ward & Co., Chicago.
 Hibbard, Spencer, Bartlett & Co., Chicago.
 Butler Bros., Chicago and St. Louis.
 Kelley, Maus & Co., Chicago.
 Studebaker Brothers Mfg. Co., Chicago and New York.
 Patrick Bldg., Duluth, Minn.
 Kiloren Construction Co., Duluth, Minn.
 American Can Co., Cleveland, Ohio.
 J. I. Case Plow Works, Racine, Wis.
 Parkersburg Chair Co., Parkersburg, W. Va.
 Weissinger Tobacco Co., Louisville, Ky.
 American Tobacco Co., Louisville, Ky.
 R. J. Reynolds Tobacco Co., Winston-Salem, N. C.
 Vaunegut & VonKake, Indianapolis, Ind.
 Rockwell Tannery, Brooklyn, N. Y.
 Barton Brothers, Kansas City, Mo.
 Bell Telephone Co., Philadelphia, Pa.
 Bell Telephone Co., Montreal, Can.
 Joseph Joseph Bldg., Cincinnati, Ohio.
 Standard Sewing Machine Co., Norwood, Ohio.
 St. Louis Transfer Co., St. Louis, Mo.
 L. S. McCabe & Co., Rock Island, Ill.
 Nock & Garside, Denver, Colo.
 A. S. Fuller, Buffalo, N. Y.
 Peter Keeler, Albany, N. Y.
 Deere & Mansur Co., Moline, Ill.
 Commercial Gazette Bldg., Pittsburg, Pa.

ILLUSTRATIONS.

In Figs. 12 and 13 are shown three shafts in Hibbard, Spencer, Bartlett & Co.'s Warehouse, Chicago, one case showing the doors open, the other case showing them closed.

In this building alone there are over one hundred and fifty doors of this type, where they have been in constant use for years, and the expense per door during their entire lifetime up to the present time has not amounted to one dollar per door.

We refer any one to Hibbard, Spencer, Bartlett & Co. as to the operation and cost of maintenance of the door. We might say further that in this building the doors are given very rough usage on account of the fact that this firm is in the hardware business, and the doors are constantly being trucked over by heavy trucks carrying very heavy loads.

We guarantee every door installed.



FIG. 12. THREE SHAFTS IN THE HIBBARD, SPENCER, BARTLETT & COMPANY'S WAREHOUSE, CHICAGO, ILL.

Doors Open

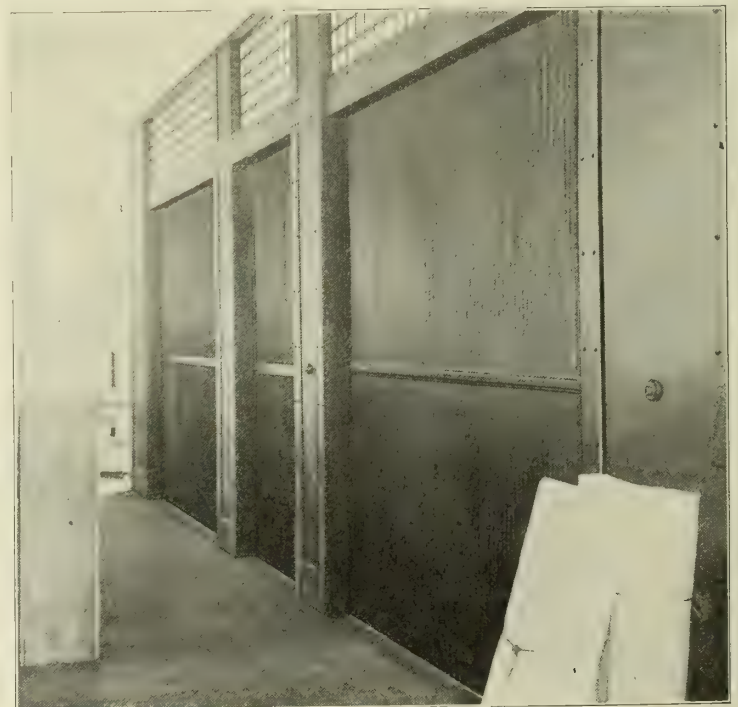


FIG. 13. THE SAME SHAFTS SHOWN IN FIG. 12

Doors Closed

IRON AND
TIN-CLAD
FIRE DOORS.

We are manufacturers of Tin-Clad Sliding Fire Doors, Stairways, Doors, Fire-Escape Doors, etc., as called for by the Underwriters, and the hardware for same.

Fig. 14 shows a sliding tin-clad fire door made in accordance with the rules of the National Board of Fire Underwriters, as well as the Mutuals—meeting the approval of both. Our hardware, as well as the doors, is acceptable to either of these companies. We cheerfully furnish estimates for the doors alone or the hardware alone, f. o. b. Chicago or erected in place, and we guarantee everything that leaves our factory or any work that we erect to be acceptable to the Underwriters having jurisdiction. As we are the largest manufacturers of tin-clad doors in this country, making both our own fixtures and our own doors, we are without question in a position to save you money. We buy our material in large lots, which enables us to buy it very close. We make up our own fixtures in large quantities, which enables us to furnish them to the trade at a very close margin. Send plans by express, collect; we take off the quantities and return them to you with our figures by express, prepaid.

Fig. 15 shows a set of Automatic Closing Iron Fire Wall Doors such as are used throughout Chicago, and approved by the National Board of Fire Underwriters there. We are manufacturers of this class of door, also of Sliding Fire Doors of the same type, made of No. 12 and $\frac{3}{16}$ inch sheet steel. We are also manufacturers of Fireproof Window Shutters to meet the approval of the Fire Underwriters, making them either of iron or of wood covered with tin.

Besides the above, we make a miscellaneous lot of iron work for buildings, such as Fire-Escapes, Vault Doors, Stair Railings, Flagstaffs, and light Structural Steel Work.

We have three men who do nothing else but get up plans for architects and builders, and we solicit an opportunity of taking up with you any questions that you have in the above line.

"VARIETY"
STEEL
ROLLING
DOORS
AND
SHUTTERS.

The following two pages show illustrations of our Steel Rolling Doors and Shutters for use in and on freight houses, warehouses, train sheds, shipping platforms, docks, street car barns, car entrances, dry kilns, etc. Write for detailed drawings.

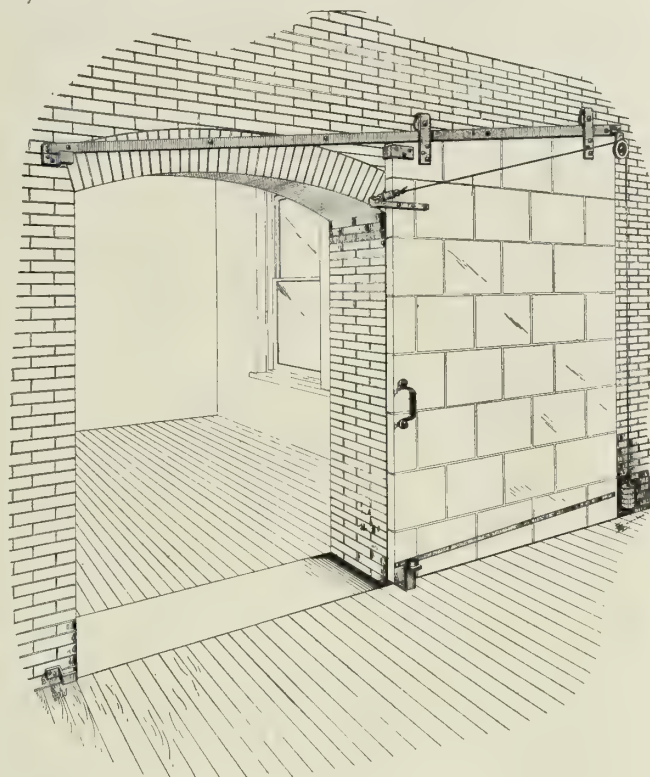


FIG. 14. TIN-CLAD SLIDING FIRE DOOR
With counterweight

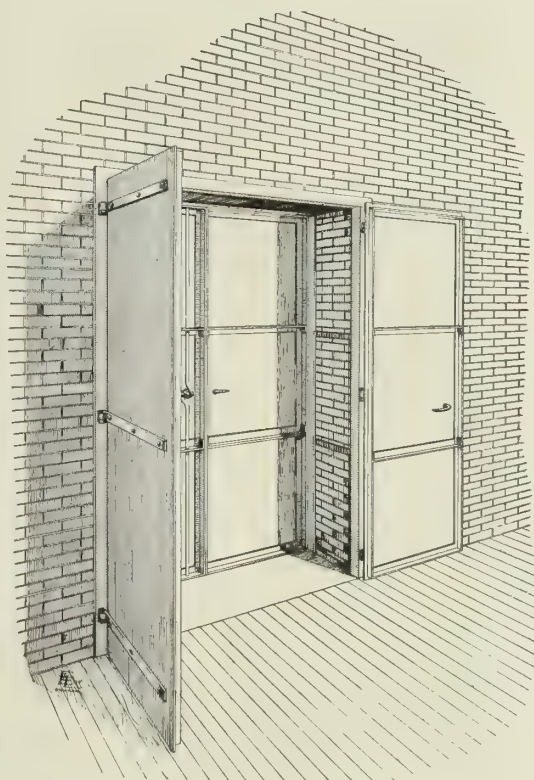


FIG. 15. IRON SWINGING FIRE DOOR

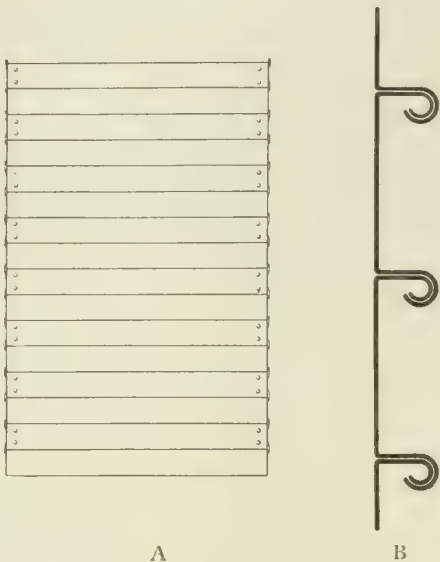


FIG. 16. CURTAIN

A shows the curtain only as it hangs in the guides (not showing guides); also the end-locks, and how they eliminate any possible chance of the slat itself wearing at the ends or sides through friction with guides. B is section of slat, showing hinge point; also, the fact that this shutter is absolutely fire, smoke, and weather-proof to say nothing of the strength it obtains on account of the construction

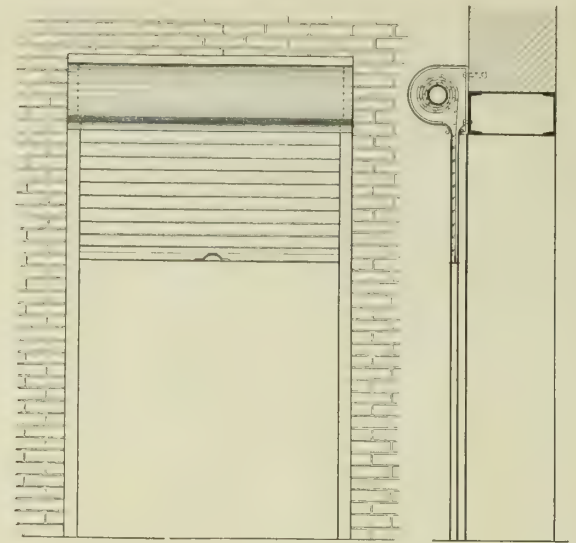


FIG. 17. CONSTRUCTION NO. 25

Operated by hand. Our Standard Construction for openings not over 100 square feet in size. Here it is not necessary to use our endless chain operating hoist

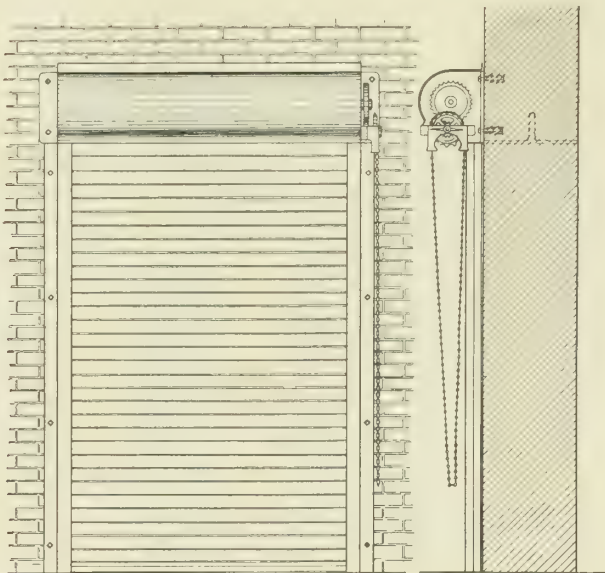


FIG. 18. CONSTRUCTION NO. 20

Operated with hoist and chain. Our Standard Construction for openings up to 20 feet wide by 20 feet high with endless chain operating hoist applied. If the door is for outside use, we recommend the use of galvanized curtain and hood, unless the hood is located on the inside of building

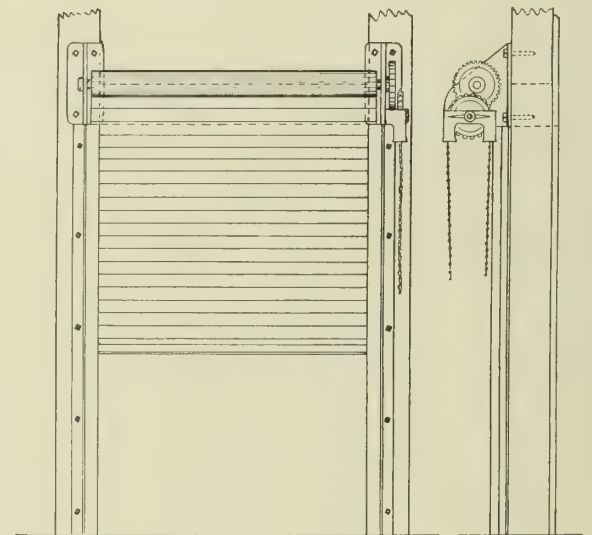


FIG. 19. CONSTRUCTION NO. 70

Operated by hoist and chain. Our Standard Construction for freight sheds, docks, etc. The door is placed on the inside of building; no hood is necessary. We show our chain hoist here, but it is only used on large openings, as this construction is very evenly balanced and can be opened or closed readily by one man. This cut shows the door lagged to timbers. On brick walls, expansion shells and bolts are always used

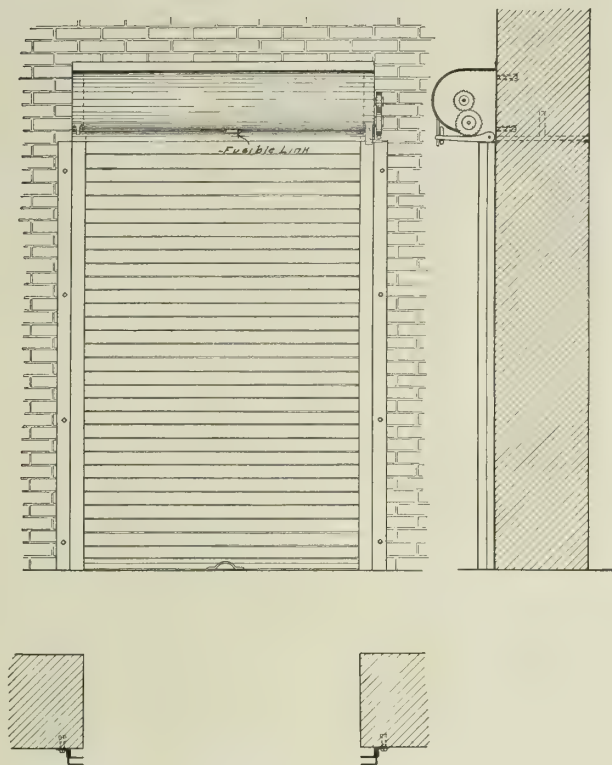


FIG. 20. CONSTRUCTION NO. 33

Our Standard Automatic Closing Construction operates automatically in case of fire; can also be operated by hand. Used extensively on freight elevator openings, fire wall openings, etc., where the regular "Cross" Freight Elevator Door or Standard Fire Door can not be used on account of the conditions. There is no endless chain operating hoist necessary here; the shutter remains open at all times, only closing in case of fire, although it can be opened and closed by hand the same as any other door, without in any way affecting the automatic device

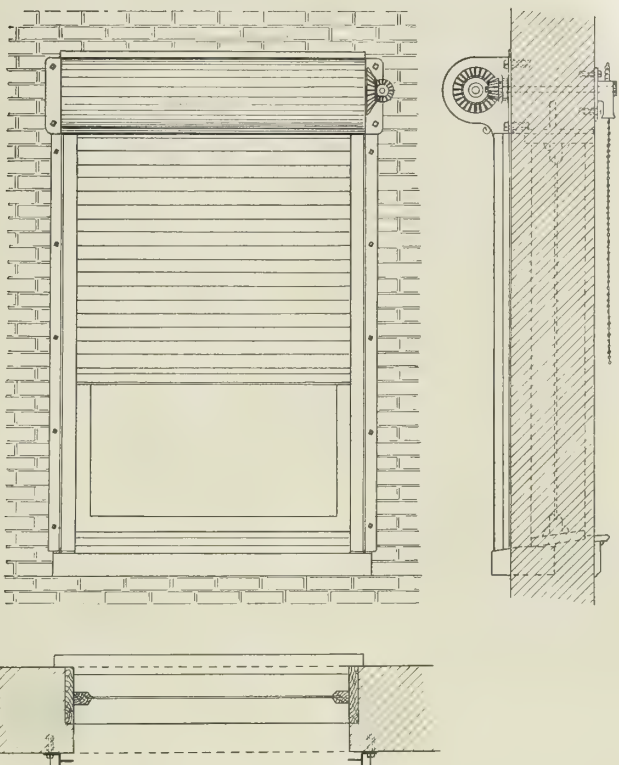


FIG. 21. CONSTRUCTION NO. 38

Operated by hoist and chain. Showing shutter hung on outside of building operated by hoist from inside, using a bevel gear and running shaft through wall. Where it is necessary to put shutter on outside, as in this case, we recommend the use of galvanized steel

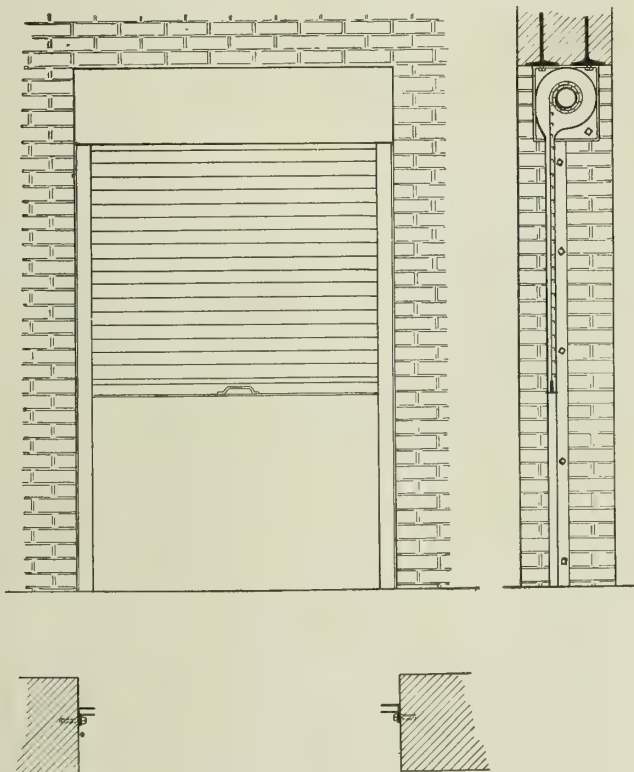


FIG. 22. CONSTRUCTION NO. 41

Operated by hand or chain hoist, depending on size of opening. Standard Construction where conditions are such that the shutter can not be placed on face of wall; showing shutter between jams

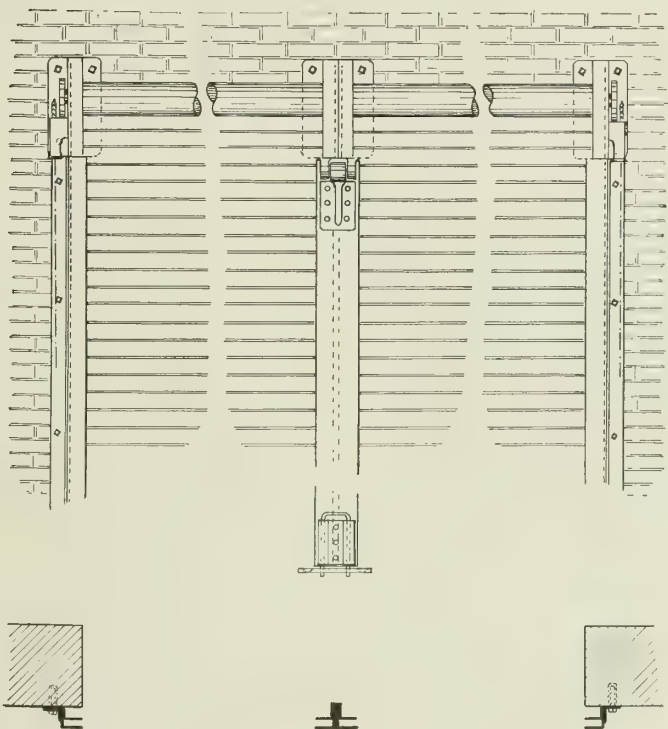


FIG. 23. CONSTRUCTION NO. 90

Operated by hoist and chain. Our Standard Construction for exceedingly large openings, especially where openings are very wide. We use a swing mullion guide for the center guide, hinged at the top, which is swung up out of the way when the shutters are open, and lowered when they are to be closed

THE RIESTER & THESMACHER COMPANY

"R & T" Fireproof Windows and Doors
Specialists in General Sheet-Metal Construction

1512-1526 West Twenty-Fifth Street

CLEVELAND, OHIO

PRODUCTS.

The "R & T" FIREPROOF WINDOWS and DOORS, FIRE SHUTTERS, SHEET-METAL CONSTRUCTION in Tin, Copper, and Iron, for all architectural and building purposes.

UNDER- WRITERS' APPROVED CONSTRUC- TION.

"R & T" Fireproof Windows and Doors are made under the supervision of the Underwriters' Laboratories, and bear their label. This label means not only that the devices to which it is attached have been constructed to comply with the standard requirements of the National Board of Fire Underwriters, but that so constructed it has been submitted to the severest test by the Laboratories and passed as satisfactory.

It also guarantees that every labeled "R & T" window installed, no matter in what part of the country, is in every respect equal to that which withstood the test of the Underwriters' Laboratories.

Each window to which labels are attached is separately inspected and compared with a copy of the original specifications by inspectors of the Underwriters' Laboratories at the factory before shipment. The Underwriters having jurisdiction in the territory in which the window is to be installed are then notified of this inspection.

TYPES OF DOORS AND WINDOWS.

We make all standard types of Fireproof Doors and Windows and will, of course, also make special types to meet special requirements. The types most commonly in demand are listed below. Each of these types can be made to fit any style of opening:

Type W A, Stationary Sash
Type W B, Double-Hung, Non-Reversible Sashes
Type W D, Counterbalanced Sashes
Type W E, Stationary Lower, Pivoted Upper Sash
Type W F, Pivoted Upper and Pivoted Lower Sashes
Type W M, Mullioned Window
Type D A, Single Incline-Slide Door

Type D B, Single Level-Slide Door
Type D C, Double Incline-Slide Door
Type D D, Double Level-Slide Door
Type D E, Single Swing Door
Type D F, Double Swing Door
Type S A, Fire Shutters

GLASS.

We furnish any make and type of wire-glass included in the lists of glass examined under the requirements of the National Board of Fire Underwriters. The most common styles for factories and warehouses are "hammered" and "ribbed." For office doors and windows, where a better finish is desired, "polished" and "maze" are used, the latter being opaque.

INSTALLATION

"R & T" Windows and Doors can be installed by your contractor; but where it is desired we shall be glad to figure on the installation as well as the manufacture, if the contract is large enough to warrant it.

FACILITIES FOR FILLING ORDERS.

We can fill orders of any size, promptly. With a large plant (50,000 square feet of floor and yard space) and a large and efficient force of draughtsmen and metal workers, we can practically guarantee date of delivery. The service, promptness, and quality of work that we have given customers have been the chief cause of our success.

ESTIMATES.

To give estimates of cost we need from you the type of windows or doors wanted, the number of openings, kind of glass wanted, and such blue-prints or drawings as will give us the dimensions and styles of openings. In place of the blue-prints or drawings you can send the following measurements:

DOORS—Height of opening from floor to lintel or arch; height of lintel; width of opening; thickness of wall; headroom above opening.

WINDOWS—Width of opening between walls; height of opening between sill and lintel or arch; rise of arch; thickness of wall.

SPECIFICATIONS.

Specify "R & T" Doors and Windows exclusively or as follows:

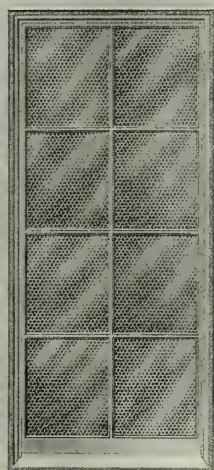
"All fireproof doors and windows shall be of a make which has been examined under the standard requirements of the National Board of Fire Underwriters, and shall bear the authorized label of the Underwriters' Laboratories."

CATALOGUE.

We publish a brief catalogue containing illustrations of many of our types of Windows and Doors, and giving details of construction, measurements, etc. It will be sent on request.

REFERENCES.

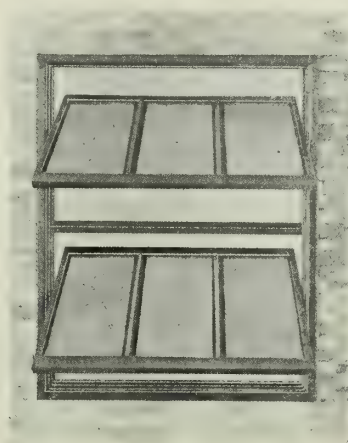
Upon request, we shall be glad to furnish references as to the character of our work and the prompt service we are able to render, together with a list of some of the many buildings in which our work has been installed.



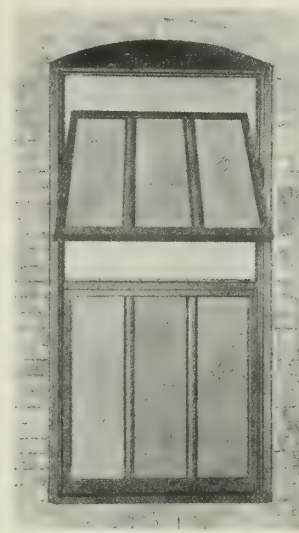
Stationary Sash, Type W A



Self-Balanced Sash,
Type W D

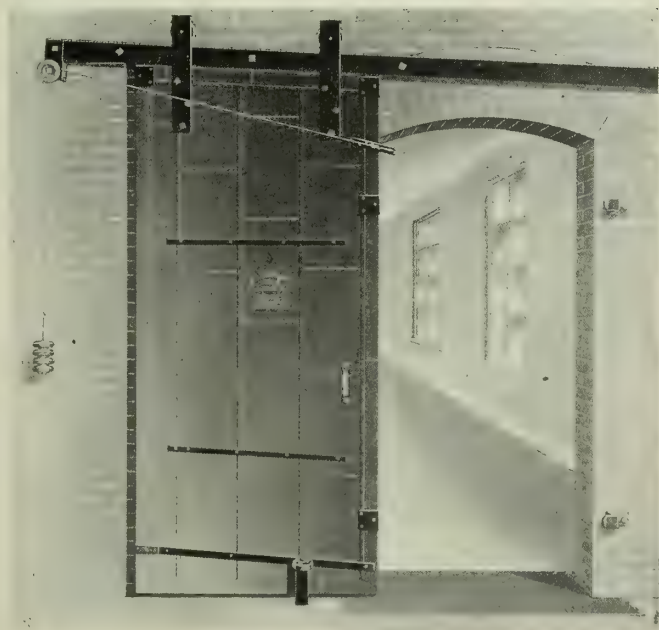


Pivoted Upper and Lower
Sash, Type W F

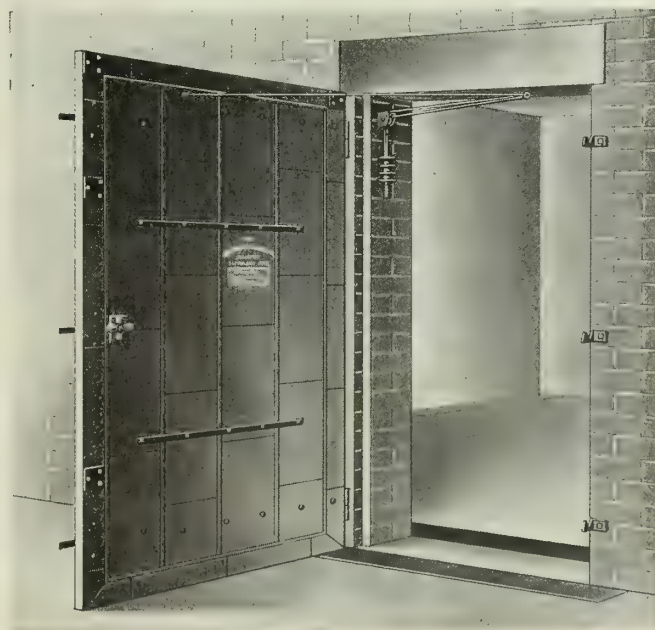


Pivoted Upper, Stationary
Lower Sash, Type W E

"R & T" FIREPROOF WINDOWS



Single Incline-Slide, Type D A



Single Swing, Type D E

"R & T" FIREPROOF DOORS

THE RITTER FOLDING DOOR COMPANY, INC.

CINCINNATI, OHIO

MANUFACTURERS FOR EASTERN DISTRICT OF UNITED STATES (UNDER LICENSE)

J. F. BLANCHARD CO., Fuller Building, New York, N. Y.

PRODUCTS.

The "RITTER" FOLDING DOOR, for Depots, Warehouses, Machine-Shops, Garages and Docks.

DESCRIPTION AND OPERATION.

The "Ritter" Folding Door operates on the "lazy-joint" principle, no springs being used. A sprocket, operated by a chain hanging within easy reach of the floor, turns a small sprocket that simultaneously raises the door, folding it at the top in a horizontal position. The weight of the door is compensated by a counterweight inclosed in a metal box at one side. All the parts are made amply strong and the operation of the door is comparatively noiseless. The operating mechanism occupies very little space, and eighteen inches between openings is ample provision for both that and the counterweight (see Fig. 1).

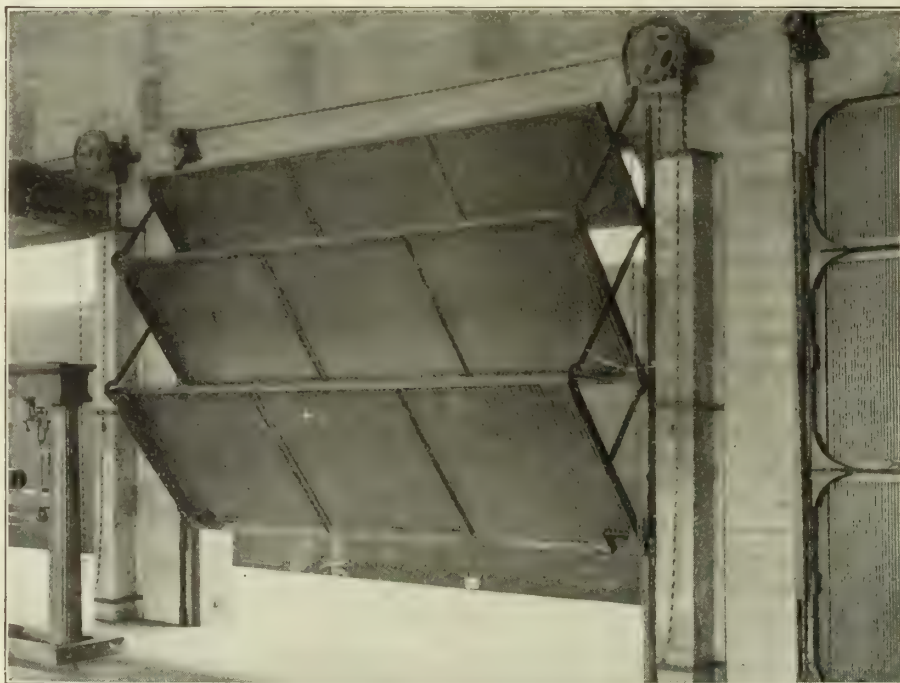


FIG. 1. "RITTER" FOLDING CORRUGATED STEEL DOORS, PARTLY OPEN



FIG. 2. "RITTER" FOLDING DOORS INSTALLED IN ENGINE-HOUSE

MATERIALS.

The "Ritter" Folding Door may be paneled in wood, steel, wire-glass, reinforced concrete, corrugated iron, asbestos, or in fact in any suitable material desired. A good scheme in the case of engine-houses or car-barns is to glaze three upper leaves and use wooden panel in lower leaf.

ADVANTAGES.

These doors are absolutely fireproof, and are quickly and easily shut in case of emergency, the principle upon which they are built making it impossible for them to stick or bind. The door may be locked at any height, and will stay in any position without fastening. It is held snugly at the sides, so that swinging and banging in the wind are eliminated. When used as a fire door, a fusible link for automatic closing may be installed, assuring positive action in case of fire.

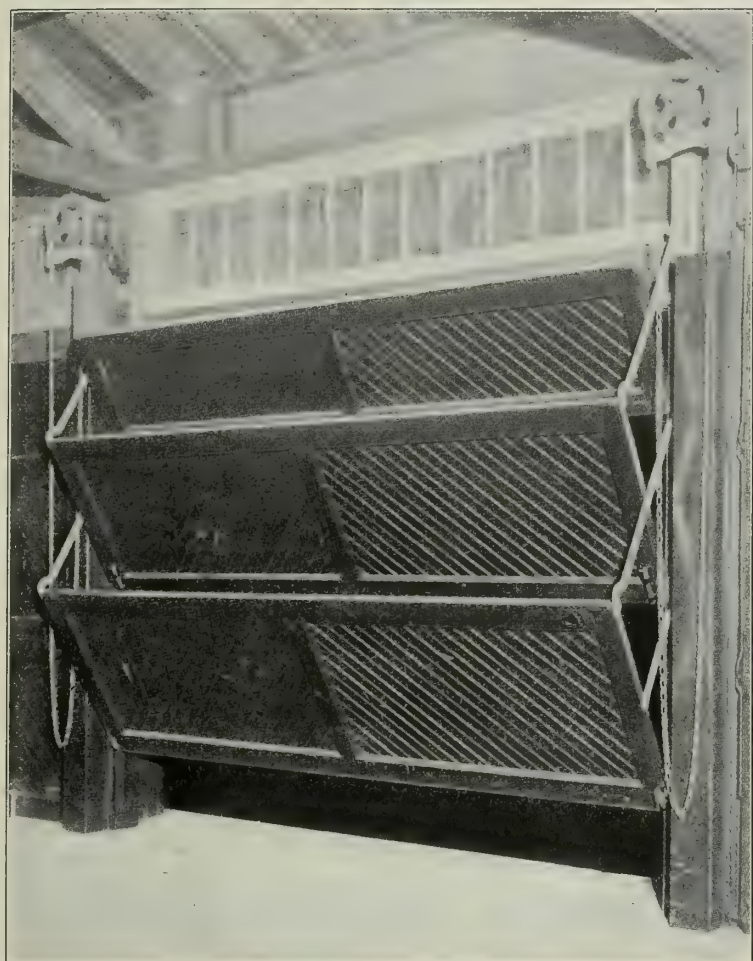


FIG. 3. "RITTER" FOLDING WOODEN DOORS



FIG. 4. "RITTER" HORIZONTAL FOLDING DOORS

Made, in reinforced concrete, for Terminal Warehouse Co., Kansas City, Mo. Size of openings 8 feet by 8 feet; weight of each door 1,600 pounds

The "Ritter" Folding Door requires a minimum of headroom, and at no stage of its operation does it occupy valuable space. When partially raised the leaves serve as louvers, and provide an excellent means of ventilation, with perfect protection against rain.

The "Ritter" Folding Door will outlast any other door, because of the fact that the leaves fold inside the building and so are protected from the weather; when open, the door is out of the way, where it is safe from damage (see Fig. 4).

INSTALLATION.

The "Ritter" Door is easily installed and adjusted, and when once in proper working order is easily kept in repair. No special provisions are necessary for the use of "Ritter" Doors and no special mechanics need be employed to install them.

REFERENCES.

The "Ritter" Door has been used in warehouses, depots, roundhouses, machine-shops, etc., by many railroads, including the Cincinnati, Hamilton & Dayton R. R.; Cincinnati, New Orleans & Texas Pacific Ry.; Pennsylvania R. R.; Baltimore & Ohio R. R.; Delaware, Lackawanna & Western R. R.; Louisville & Nashville R. R.; Illinois Central R. R.; Chesapeake & Ohio R. R.; New York, New Haven & Hartford R. R.; Boston & Maine R. R.; and Boston & Albany R. R.

FOLDING GATES.

The "Ritter" Door principle is specially adapted to the construction of folding gates. This is of special interest to architects, inasmuch as the design of the grille work composing the gate may be varied in keeping with the character of the building, as it is entirely independent of the operating mechanism. Furthermore, the life of the "Ritter" Gate is many times that of the usual type of folding and swinging gates.

THORP FIRE PROOF DOOR CO.

"Thorp Richardson" Fireproof Doors and Finish

1600-1616 Central Avenue
MINNEAPOLIS, MINN.

REPRESENTATIVES IN SIXTY-FIVE PRINCIPAL CITIES OF THE UNITED STATES AND CANADA

PRODUCTS.

Manufacturers of "THORP RICHARDSON" FIREPROOF DOORS and FINISH for Office Buildings, Hotels, Hospitals, Sanitariums, Theaters, Schools, Court Houses, Business Blocks, Stores, and Private Dwellings; TRANSOMS; CORRIDOR WINDOWS; DRAWN MOULDINGS; METAL-COVERED FRAMES and SASH.

ORNAMENTAL ENTRANCE DOORS a specialty.

CONSTRUCTION.

Fig. 1 shows the construction of the standard door, frame, and detail of one of the styles of trim. The panels are sunk by hydraulic pressure with one sheet to each side. The reinforcing band goes clear around the door, locking the sheets on all four edges. We fit and apply the hardware at the factory if same is furnished to us, or we will furnish same at list prices.

DETAIL.

"Thorp Richardson" Doors are made in our standard detail and construction, or in special detail and standard construction, to follow architects' details. This enables them to be used with any scheme for which the buildings call.

FINISH.

"Thorp Richardson" Finish is either duplex plate, old copper, or brass; grained to match any of the natural woods; flat; galvanized; or solid copper.



FIG. 1
"RICHARDSON" STANDARD
SOLID-PANEL DOOR, LIGHT
OAK FINISH

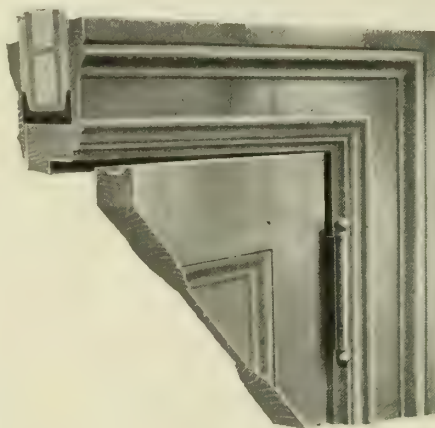


FIG. 2
SECTION THROUGH "RICHARDSON" DOOR AND FRAME

This shows the core of three thicknesses, laid crosswise, covered with asbestos; also, the seamless, hydraulic stamped panel. These single sheets on each side lap in a groove on all four edges, and are bound by a continuous steel band, further stiffening the door. Frames and trim are made, in our standard metal-covered construction, to any detail.



FIG. 3
"RICHARDSON" STANDARD
GLASS-PANEL DOOR, OLD
COPPER FINISH

ILLUSTRATIONS.

Entrances, to architects' details, in "Thorp Richardson" Construction covered with *copper or bronze* meet every requirement and are a striking feature of many prominent public and private buildings.



FIG. 4. NATIONAL BANK OF MERRILL, MERRILL, WIS.
HARRY W. JONES, Architect



FIG. 5. WEST BERKELEY BANK, WEST BERKELEY, CAL.
DICKEY & REID, Architects

ORNAMENTAL ENTRANCE DOORS.

We would call special attention to the increasing use of "Thorp Richardson" Doors covered with *solid copper or bronze*, made to architects' details, for exterior entrances. These have all the advantages and the appearance of cast doors, without the extreme weight or cost.

CO-OPERATIVE SERVICE.

Our estimates are based on the demands in each particular case, and we are always glad to make quotations on any work. Full-sized details and working drawings are furnished when required, and we invariably co-operate with the contractors to the end that everything shall be correct. Innumerable large buildings completely equipped without delay or a single replacement testify to our carefulness.

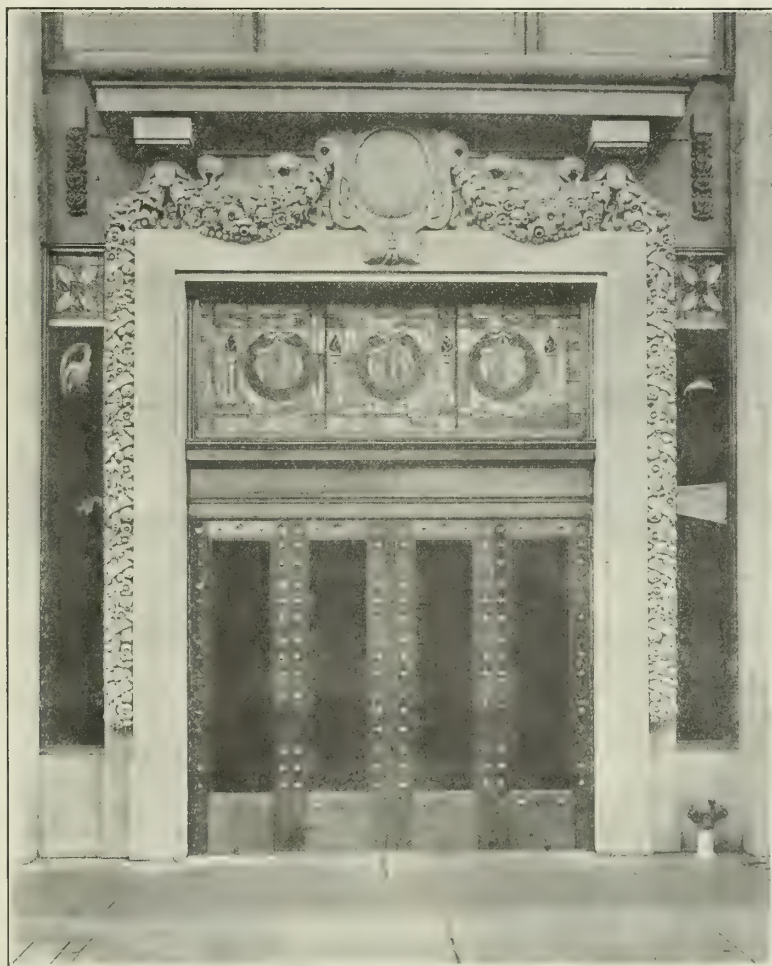


FIG. 6. BRONZE ENTRANCE, I. O. O. F. BUILDING, INDIANAPOLIS, IND.
RUBUSH & HUNTER, Architects

VOIGTMANN & COMPANY

MANUFACTURERS OF

Metal Windows and Doors

427 West 13th Street
NEW YORK, N. Y.

42-54 East Erie Street
CHICAGO, ILL.

TELEPHONE, 771 CHelsea

TELEPHONE, 1305 NORTH

PRODUCTS.

FIREPROOF WINDOWS, VOIGTMANN AUTOMATIC CLOSING and LOCKING WINDOWS, WIRE-GLASS WINDOWS, METAL WINDOW FRAMES, METAL DOORS, METAL SASHES, METAL TRIM, INTERIOR PARTITIONS of Metal; APPROVED FUSIBLE LINKS.

OFFICIAL
APPROVAL.

As a result of tests held at the Laboratory of the National Board of Fire Underwriters at Chicago, the following types of our construction have been approved, and reports covering these approvals have been filed with each State and City Underwriters' Association:

Stationary—Single sash pivoted, not to exceed 5' 0" high; upper sash pivoted, lower sash stationary; upper sash stationary, lower sash pivoted; upper and lower sashes pivoted; three sashes pivoted; upper and lower sashes pivoted, center sash stationary; single sash hinged at the top, not to exceed 5' 0" high; upper sash hinged at the top, lower sash stationary; double-hung. Casement. Twin Stationary—Not to exceed 9' 0" x 5' 0" without reinforced mullions. Twin Pivoted—Not to exceed 9' 0" x 5' 0" without reinforced mullions.

VOIGTMANN
AUTOMATIC
FIRE
WINDOW.

The lower sash is stationary, being built as a part of the frame. The upper sash is pivoted on $\frac{3}{8}$ inch trunnions and is so arranged that it can be revolved for cleaning, but is provided with a stop which in action prevents the sash being tilted too far to prevent its positive closing in case of fire.

Our pivots and plates are made of cold-rolled strip steel; the holes in which the trunnions revolve are heavily bushed with brass to prevent the possibility of rust interfering with their perfect working. Both pivots and plates are attached to the sash rails and frame sides by button-head screws that are screwed into heavy plate iron reinforcements within the sash and frame. The pivots are adjustable, thus allowing a very nice location of the sash in the frame opening.

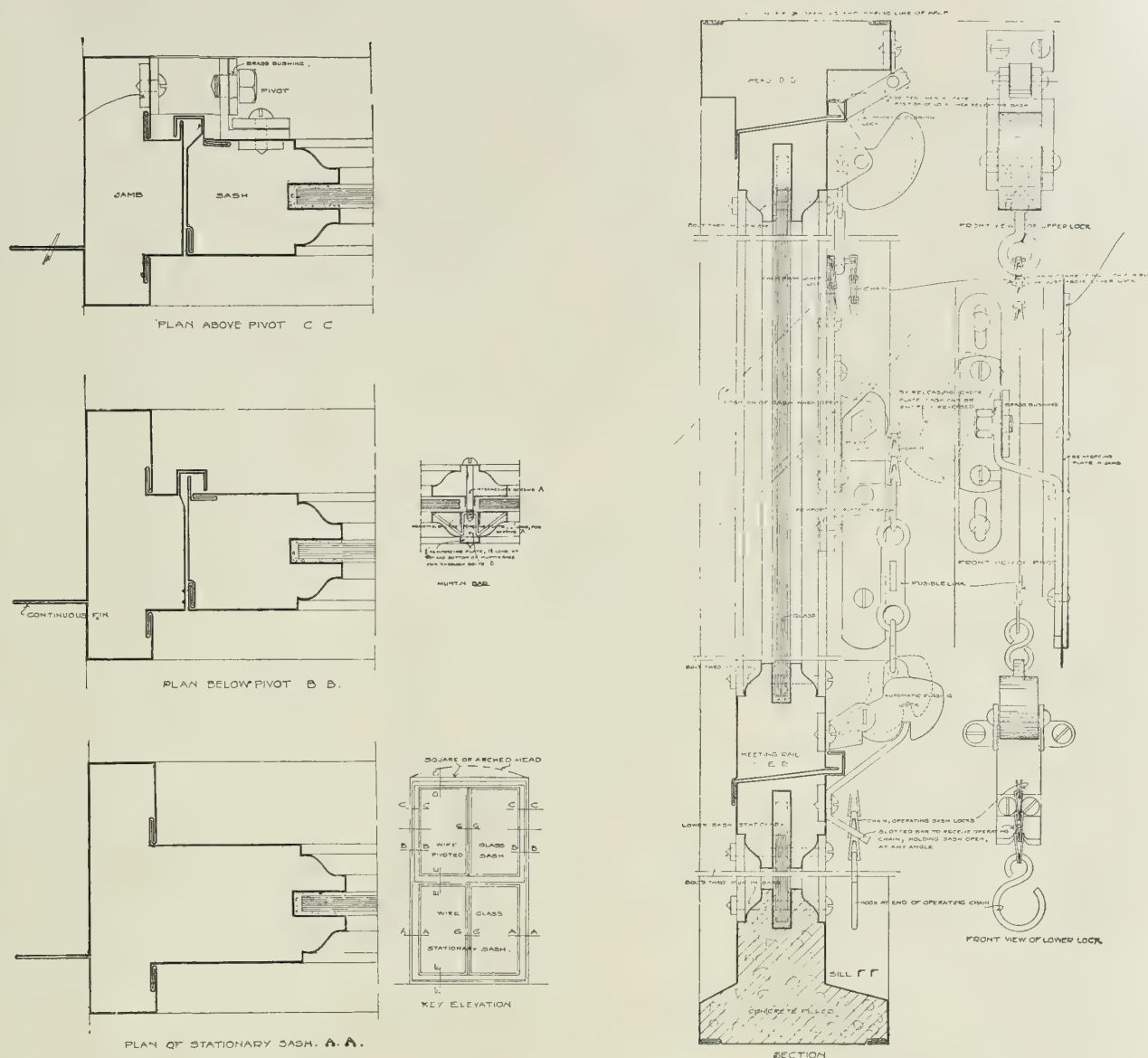
The sash is so hung that about sixty per cent of its weight is below the point of revolution. When open it is held in position by a chain that runs through an eye attached to the upper lock and then passes down to the lower lock to which it is attached by a fusible link that will melt at 135° F., releasing the sash which will swing shut and lock.

Our locks are of our own design and manufacture; the cast portions are malleable and the housings and small parts are stamped metal. They are made entirely without springs; fitted to both top and bottom rails of the sashes, and the latch parts are attached and adjusted so that their operation can not be affected by the impact of the closing sash. They are absolutely positive in action.

Hollow air-chamber construction throughout, made of 24-gauge galvanized sheet iron. Heavier gauges of iron or any acceptable gauge of copper furnished on special order.

Unless otherwise specified we furnish $\frac{1}{4}$ -inch ribbed wire-glass cut to size ready for setting; glass is always shipped separately. We recommend that architects always include the glass in the metal-window specifications to insure its being cut to correct and full size; the lights must have not less than $\frac{5}{8}$ -inch bearing in the grooves.

Before shipment we give each window a priming coat of red paint, and fit all necessary hardware in place.



SECTIONS OF THE VOIGTMANN AUTOMATIC FIRE WINDOW

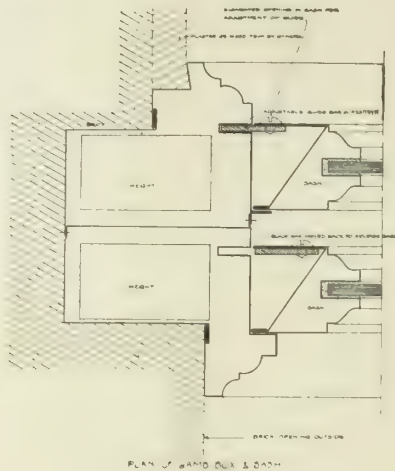
VOIGTMANN DOUBLE- HUNG WINDOW.

The first use of metal windows was for protection against the possible spread of fire, and all such were located in alley elevations where utility was the only consideration. Time and the changes made possible by continued experiment have broadened the field, and such structures are now specified and used in all openings in up-to-date fireproof buildings.

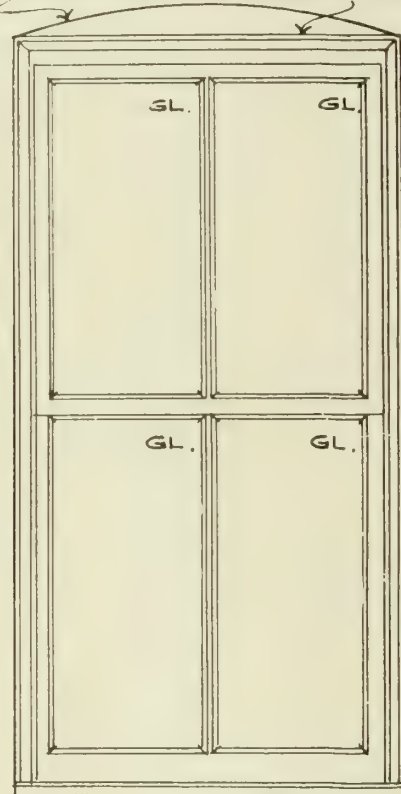
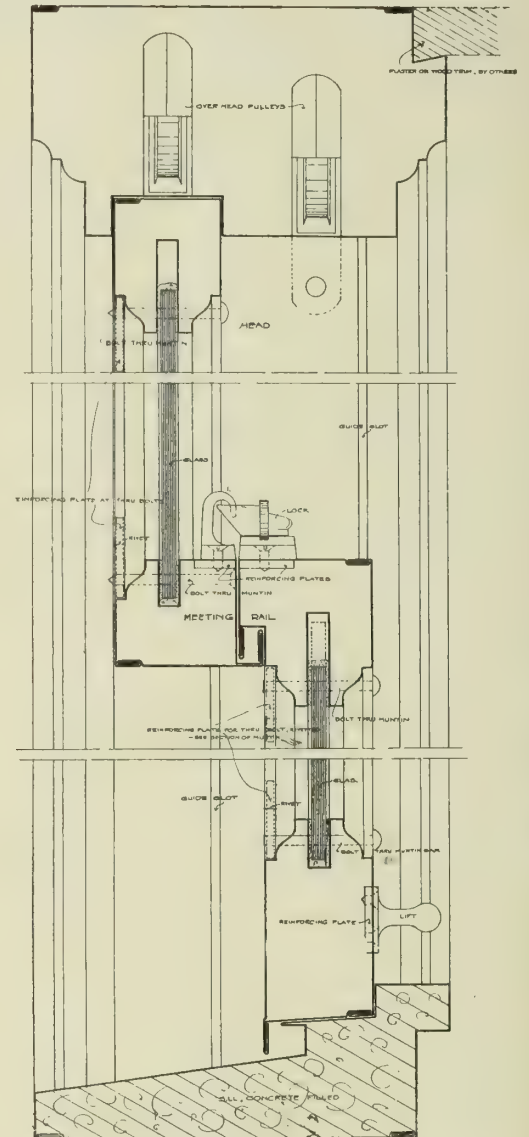
While windows having pivoted sashes—the simplest and least expensive form of construction—are perfectly well adapted for use in industrial buildings, the projecting sashes render them unsuitable for openings in which screens have to be used, or where absolute tightness against the entrance of dust is a necessity. To meet the demand for windows to be used in buildings designed for constant human occupancy, we have designed and perfected the structure shown herewith in detail, and which we offer as the concrete expression of all that is good in sheet-metal construction.

Within the side rails of the sashes we provide movable guides of iron that fit within throats in the frame. This connection between the moving sashes and the frame makes a joint that can not rattle and that is as positively dust and weather tight as the case of a watch.

The inner edges of the meeting-rails are formed to provide an interlocking windbreak that is made more effective by the operation of our lock, the closing of which draws the rails together. This windbreak we repeat at the sill, and at the head of the frame we provide a deep recess in which the upper edge of the top sash fits.



SEGMENTAL OR SQUARE HEAD

VOIGTMANN DOUBLE-HUNG
WINDOW

SECTION

VOIGTMANN DOUBLE-HUNG
WINDOW

Both edges of the sash rails and muntins are curved to lighten their appearance, and that portion of the frame that projects within the reveal is formed to provide a hanging style, and the inside is fashioned to show the trim that heretofore had to be made of wood attached to the window by nailing to blocks placed within the frame before completion. It is possible that an unusually hot fire in an adjoining building might ignite wood interior trim by radiation, therefore the omission of wood at this point can be considered a safety factor. The formation of this mould provides a bond or anchor for the plaster.

The difference in cost between these windows and those that have been more generally used is represented by the difference in the value of the additional materials and labor. We have supplied such windows, many of them made of copper, for a number of very prominent buildings in different parts of the country, and are prepared to quote very close prices to those interested.

Hollow air-chamber construction throughout, made of twenty-four gauge galvanized sheet iron. Heavier gauges of iron or any acceptable gauge of copper furnished on special order.

Unless otherwise specified, we furnish $\frac{1}{4}$ -inch ribbed wire-glass cut to size ready for setting; glass is always shipped separately.

Before shipment we give each window a priming coat of red paint, and fit all necessary hardware in place.

SERVICES
AND
ESTIMATES.

We offer the services of a competent architect and draughtsman, who may be able to aid you with suggestions for incorporating our work in your plans.

In order to furnish an estimate we must know the kind of windows wanted, the size of the openings in the masonry to receive the windows, and whether such openings have flat or arched tops.

From this data we will furnish an estimate which will, unless otherwise requested, include a priming coat of paint, all hardware, sash chain and weights, where the construction requires them, if specifically mentioned, and glass cut ready for setting in cases where deliveries are for points outside of Chicago and New York.

PRICES.

Prices will be quoted upon application.

FIREPROOF
DOORS.

We operate at our Chicago factory a complete plant for the production of high-class hollow metal doors. Our system of manufacture is so elastic that we can furnish doors of any size without limit.

Exterior entrance doors for high-class buildings can be produced in conformity with architects' designs, or supplied in any of our regular patterns. These doors are preferably finished in electroplate, copper, brass or bronze, and when so colored can not be told from solid casting and will wear an indefinite length of time.

Interior doors, partitions and trim supplied in electroplate finish, in imitation of natural woods or in solid colors. Our reproductions of fine woods can not be told from the genuine article. We can match any color scheme for residences, or furnish white enamel for hospitals or other such buildings. Our color finishes are all seven-coat work, hand-rubbed hard enamels, and will stand severe use, or even abuse. The cost of maintenance is practically nothing.

We do not include any hardware in our proposals, but will fit without charge any hardware that is supplied us, or we will buy where maker's name and catalogue number are given us, adding net cost to our price for the door.

ADAPTATION.

Our products are adapted for use in the better class of office buildings, stores, factories and hotels, and are made in accordance with the rules and requirements of the National Board of Fire Underwriters governing the construction of frames and sash for wire-glass windows.

INSTRUC-
TIONS AS
TO ORDERS.

Shipments of orders guaranteed within a reasonable time after receipt. In the case of very large orders, particularly when storage space at the job is limited, we give careful attention to partial shipments as required to keep pace with the general construction.



VOIGTMANN FIREPROOF DOOR

ALLITH MANUFACTURING COMPANY

MANUFACTURERS OF

Door Hangers, Fire-Door Hardware, Merchandise Carriers

GENERAL OFFICE AND FACTORY

Taylor Street and Forty-Third Avenue
CHICAGO, ILL.

BRANCH OFFICES AND WAREHOUSES

NEW YORK, N. Y., 244 Water Street
PHILADELPHIA, PA., 2013 Market Street

LOS ANGELES, CAL., 412-414 South Broadway

DENVER, COLO., 1520 Arapahoe Street
SAN FRANCISCO, CAL., 787-793 Brannan Street

PRODUCTS.

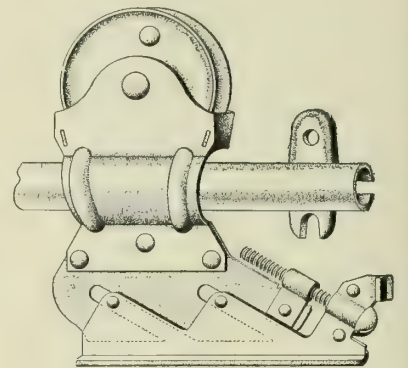
"RELIABLE" ROUND-TRACK DOOR HANGERS for all kinds of sliding doors; ALLITH APPROVED FIRE-DOOR FIXTURES; "RELIABLE" MERCHANDISE CARRIERS for factories and warehouses; "RELIABLE" ROLLING STORE LADDERS of all styles; HARDWARE SPECIALTIES.

ROUND TRACKS.

We are the original Round-Track Hardware manufacturers.

"RELIABLE" PARLOR DOOR HANGERS.

No. 12 M (malleable frame) and No. 12 S (steel frame). Hanger proper and plate for attaching to door are supplied in either thoroughly annealed malleable iron or high-carbon wrought-steel as desired. They are easily regulated by an adjusting screw with extra long bearing in hanger frame. Large brass bushed wheel, steel cased with hard-fiber tread. Track for same is our No. 1 described elsewhere.



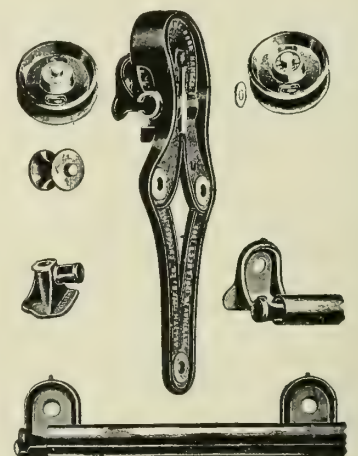
"RELIABLE" PARLOR-DOOR HANGER

"RELIABLE" SWIVEL HANGER.

For accordion doors for store fronts and large openings in churches, schoolhouses and public buildings. The No. 19 Swivel Hanger has two ball-bearing wheels, steel cased with hard-fiber tread, running on our double No. 1 track.

BARN, FIRE AND WAREHOUSE DOOR HANGERS.

Hangers Nos. 1, 2 and 3 are of the same design. (The No. 3 is the Allith Approved Fire-Door Hanger). The hanger frame is made of thoroughly annealed malleable iron of one solid piece, ribbed and reinforced, with no bolts or rivets to break or loosen. The upper wheel, with perfectly grooved tread, has hardened-steel axle, washers and roller-bearings packed in the highest grade graphite lubricant, making the hanger absolutely antifriction and very durable. The lower wheel, by contact with the track should the door be raised, prevents derailing or binding.



DETAILS OF NO. 3 ALLITH APPROVED HANGER AND TRACK

ROUND OR TUBULAR TRACKS.

This track is regularly made in lengths of six, eight and ten feet. It is a high-carbon, heavy, round steel tube, with a slot in the back, allowing the insertion of the track supports. This shape makes it extremely strong and rigid and always allows a perfect bearing for the roller with no side friction. The supports are malleable iron, fitting inside of the track tightly, and may be spaced to suit any requirements. Hangers, track, and track supports are all finished in durable black enamel, baked on.

SIZES.

No. 1 Hanger frame, 4 in. wide, 9½ in. long; upper wheel 2 in. in diameter.
 No. 2 Hanger frame, 6 in. wide, 12 in. long; upper wheel 2½ in. in diameter.
 No. 3 Hanger frame, 8 in. wide, 21 in. long; upper wheel 4½ in. in diameter.
 No. 1 Track, ¾ in. in diameter.
 No. 2 Track, 1 ⅝ in. in diameter.
 No. 3 Track, 1 ⅞ in. in diameter.

No. 1 Hangers and track for 250 lb. doors.

No. 2 Hangers and track for 600 lb. doors.

No. 3 Hangers and track for heavier doors.

No. 4 Hanger is for work requiring outside hanger surface flush with face of door.

No. 6 Hanger, with 2¼ in. vertical and 1½ in. lateral adjustments, is for heavy warehouse doors where such features are desirable.

No. 4 Hanger frame, 8 in. wide, 21 in. long; upper wheel 4½ in. in diameter.

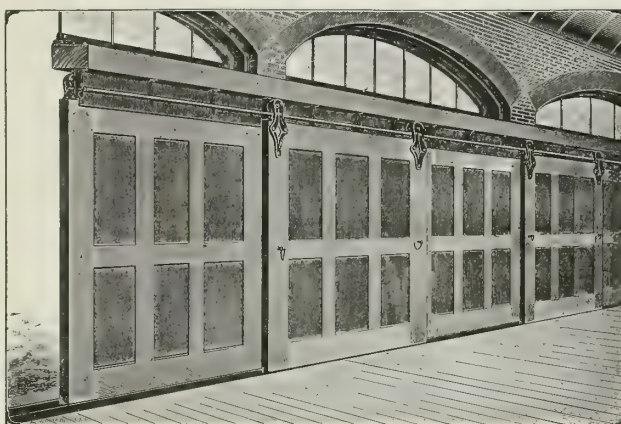
No. 6 Hanger frame, 8 in. wide, 23 in. long; upper wheel 4½ in. in diameter.

Nos. 4 and 6 Hangers run on No. 3 track and carry doors of same weight as our No. 3 hangers.

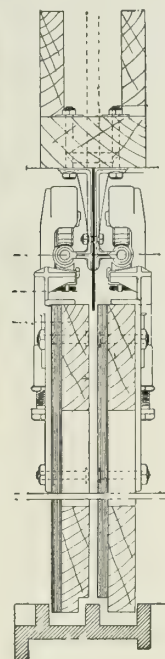
PARALLEL-
DOOR
EQUIPMENT.

This outfit is designed to insure perfect movement of continuous parallel doors, such as are used in freight stations, warehouses, etc., and it permits an opening at any place desired. The Nos. 2, 3, 4, and 6 hangers are used to accommodate doors of different styles, weights and thicknesses. The track, as illustrated, is assembled complete in sections to accommodate different openings, and can be attached to any construction.

The parting-strip fastened between the supports and extending below top of door makes the equipment storm-proof as well as the strongest on the market.



PARALLEL-DOOR EQUIPMENT

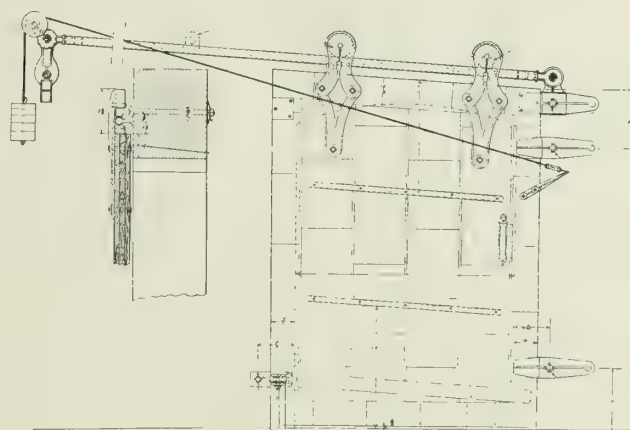
SECTION
THROUGH
PARALLEL-
DOOR
EQUIPMENTALLITH
APPROVED
FIRE-DOOR
FIXTURES.

For inside or outside sliding doors or shutters for fire-wall and other openings. Easiest and simplest to install; strongest, most efficient, most durable and satisfactory hardware made. Regularly inspected and labeled under the supervision of the Underwriters' Laboratories (Inc.), under direction of the National Board of Fire Underwriters.

SPECIAL
FEATURES.

Our introduction of round or tubular-shaped steel and scientifically designed malleable iron into hardware of this class has revolutionized standards, everywhere fast supplanting the use of other styles and makes.

Our automatic closing devices are supplied in various styles to meet any requirements, all permitting the free operation of doors.

ALLITH APPROVED FIRE-DOOR HANGERS, TRACK
AND AUTOMATIC FIXTURESVERTICAL AND
SWING DOOR
HARDWARE.

"Reliable" Vertical Sliding Fire-Door Fixtures, and "Reliable" Single and Double Swing Fire-Door and Shutter Fixtures are made of the best materials and workmanship.

"RELIABLE"
ROLLING
STORE
LADDERS.

Made of carefully selected and kiln-dried oak, equipped with improved fixtures, handsomely and durably finished. Supplied regularly in four styles: straight side, bent side, base shelf, and overhead. Track is our tubular steel.

ESTIMATES.

Catalogues, detail drawings, specific information and estimates gladly furnished on request.

THE AMERICAN PULLEY CO.

MANUFACTURERS OF

Pressed-Metal "American" Sash Pulleys

Twenty-Ninth and Bristol Streets
PHILADELPHIA, PA.

TELEPHONE, 2160 TIOGA

PRODUCTS.

"AMERICAN," "EAGLE," "TOP NOTCH," and "MERIT" PRESSED-METAL SASH PULLEYS; WROUGHT-STEEL BELT PULLEYS; PRESSED-METAL SHEAVES; PRESSED-STEEL SHAPES of various designs.

"AMERICAN" SASH PULLEYS.

These Sash Pulleys are made throughout of pressed metal. The brass and bronze wheels are made on an entirely new principle, by which the two main side pieces are locked together all the way around, just under the groove, so as to make a wheel indissolubly one. In the steel wheels the two main side pieces are electrically welded together.

The Sash Pulley Wheels are made with a combination groove, serving equally well for either chain or rope. "American" Pulleys are manufactured with three styles of bearings. In roller-bearing wheels the rollers travel between hardened steel thimbles and solid steel axles. In ball-bearing wheels the balls run between hardened steel cones and races

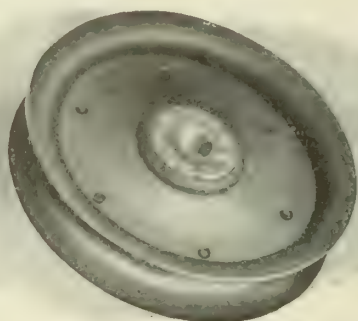


FIG. 1. BALL-BEARING WHEEL

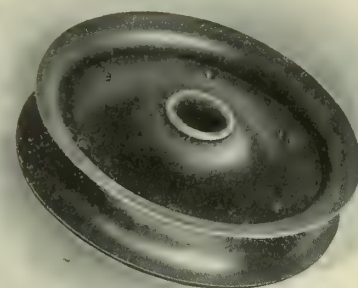


FIG. 2. PLAIN AXLE WHEEL

(Fig. 1). The plain axle wheel (Fig. 2) has a long straight bearing of heavy metal. The ball and roller bearing wheels can be particularly recommended, since the present designs are the result of long experiment and their excellence has been proved by many severe tests. The case is made entirely of pressed metal electrically welded. The housing (Figs. 3 and 4) is shouldered into a collar on the face-plate, making a change of relation between face-plate and housing impossible. Axle pins of ample size are made of cold-drawn steel, and shouldered. The pin is riveted outside of the case, which is held between the rivet head and the axle shoulder. All "American" Sash Pulleys are coated with a compound which prevents rust; and, as listed, are packed in boxes with screws to match the faces of the pulleys. Our pulleys are patented and fully guaranteed.

ADVANTAGES.

The "American" Pressed-Metal Sash Pulleys are indestructible and are cheaper, lighter, and better finished than cast pulleys, and can be delivered promptly. "American" Sash Pulleys weigh only about one half as much as cast pulleys of the same size, and there is therefore a saving in freight. There is no breakage in shipping or handling.



FIG. 3. SASH PULLEY

PRICES.

Discounts from the following list furnished upon application.

No.	2-INCH PLAIN AXLE	Per dozen List	No.	2½-INCH PLAIN AXLE	Per dozen List
112	All steel, lacquered face.....	\$1.50	112½	All steel, lacquered face	\$1.80
212	Brass plated face, steel wheel.....	1.80	212½	Brass plated face, steel wheel.....	2.20
312	Bronze plated face, steel wheel.....	1.90	312½	Bronze plated face, steel wheel.....	2.30
412	Brass face, steel wheel.....	2.20	412½	Brass face, steel wheel	2.70
512	Bronze face, steel wheel.....	2.40	512½	Bronze face, steel wheel	2.80
222	Brass plated face and wheel.....	2.00	222½	Brass plated face and wheel.....	2.50
322	Bronze plated face and wheel.....	2.10	322½	Bronze plated face and wheel.....	2.80
422	Brass face, brass plated wheel.....	2.40	422½	Brass face, brass plated wheel.....	2.90
532	Bronze face, bronze plated wheel.....	2.50	532½	Bronze face, bronze plated wheel.....	3.10
442	Brass face, brass wheel.....	4.00	442½	Brass face, brass wheel.....	5.00
542	Bronze face, brass wheel.....	4.10	542½	Bronze face, brass wheel	5.20
552	Bronze face, bronze wheel.....	4.20	552½	Bronze face, bronze wheel	5.50

Size of face plate, 2-inch pulley, 1¼ x 5 inches.
Packed with screws.

No.	2½-INCH PLAIN AXLE	Per dozen List	No.	2½-INCH ROLLER BEARING	Per dozen List
112½	All steel, lacquered face.....	\$1.64	8112½	All steel, lacquered face.....	\$2.30
212½	Brass plated face, steel wheel.....	2.00	8212½	Brass plated face, steel wheel.....	2.70
312½	Bronze plated face, steel wheel.....	2.10	8312½	Bronze plated face, steel wheel.....	2.80
412½	Brass face, steel wheel.....	2.44	8412½	Brass face, steel wheel	3.20
512½	Bronze face, steel wheel.....	2.60	8512½	Bronze face, steel wheel	3.30
222½	Brass plated face and wheel.....	2.24	8222½	Brass plated face and wheel.....	3.00
332½	Bronze plated face and wheel.....	2.44	8332½	Bronze plated face and wheel.....	3.30
422½	Brass face, brass plated wheel.....	2.64	8422½	Brass face, brass plated wheel.....	3.40
532½	Bronze face, bronze plated wheel.....	2.80	8532½	Bronze face, bronze plated wheel.....	3.60
442½	Brass face, brass wheel	4.50	8442½	Brass face, brass wheel.....	5.50
542½	Bronze face, brass wheel	4.70	8542½	Bronze face, brass wheel	5.70
552½	Bronze face, bronze wheel.....	4.96	8552½	Bronze face, bronze wheel.....	6.00

No.	2½-INCH ROLLER BEARING	Per dozen List	No.	2½-INCH BALL BEARING	Per dozen List
8112½	All steel, lacquered face.....	\$2.14	9112½	All steel, lacquered face	\$2.80
8212½	Brass plated face, steel wheel.....	2.50	9212½	Brass plated face, steel wheel.....	3.20
8312½	Bronze plated face, steel wheel.....	2.60	9312½	Bronze plated face, steel wheel.....	3.40
8412½	Brass face, steel wheel.....	2.94	9412½	Brass face, steel wheel.....	3.70
8512½	Bronze face, steel wheel.....	3.10	9512½	Bronze face, steel wheel	3.80
8222½	Brass plated face and wheel.....	2.74	9222½	Brass plated face and wheel.....	3.50
8332½	Bronze plated face and wheel.....	2.94	9332½	Bronze plated face and wheel.....	3.80
8422½	Brass face, brass plated wheel.....	3.14	9422½	Brass face, brass plated wheel.....	3.90
8532½	Bronze face, bronze plated wheel.....	3.30	9532½	Bronze face, bronze plated wheel.....	4.10
8442½	Brass face, brass wheel	5.00	9442½	Brass face, brass wheel	6.00
8542½	Bronze face, brass wheel	5.20	9542½	Bronze face, brass wheel	6.20
8552½	Bronze face, bronze wheel.....	5.46	9552½	Bronze face, bronze wheel.....	6.50

Size of face plate, 2½-inch pulley, 1¼ x 5½ inches.

No.	2½-INCH BALL BEARING	Per dozen List	No.	3-INCH PLAIN AXLE	Per dozen List
9112½	All steel, lacquered face	\$2.64	113	All steel, lacquered face.....	\$2.26
9212½	Brass plated face, steel wheel.....	3.00	213	Brass plated face, steel wheel.....	2.70
9312½	Bronze plated face, steel wheel.....	3.10	313	Bronze plated face, steel wheel.....	2.84
9412½	Brass face, steel wheel.....	3.44	413	Brass face, steel wheel.....	3.50
9512½	Bronze face, steel wheel.....	3.60	513	Bronze face, steel wheel	3.70
9222½	Brass plated face and wheel.....	3.24	223	Brass plated face and wheel.....	3.50
9332½	Bronze plated face and wheel.....	3.44	323	Bronze plated face and wheel.....	3.70
9422½	Brass face, brass plated wheel.....	3.64	423	Brass face, brass plated wheel.....	4.00
9532½	Bronze face, bronze plated wheel.....	3.80	533	Bronze face, bronze plated wheel.....	4.40
9442½	Brass face, brass wheel	5.50	443	Brass face, brass wheel.....	6.80
9542½	Bronze face, brass wheel	5.70	543	Bronze face, brass wheel.....	7.00
9552½	Bronze face, bronze wheel.....	5.96	553	Bronze face, bronze wheel.....	7.50

Size of face plate, 2½-inch pulley, 1¼ x 5½ inches.
Packed with screws.

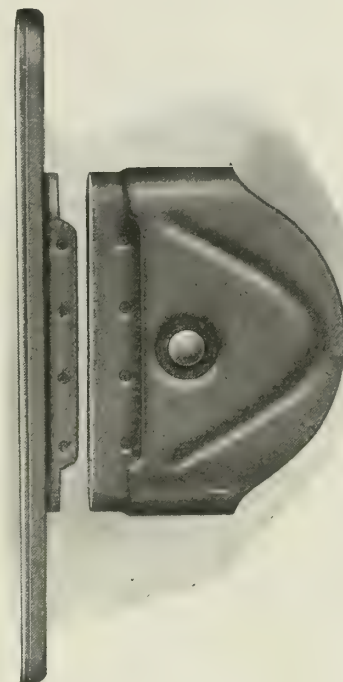


FIG. 4. SASH PULLEY

No.	3-INCH ROLLER BEARING (Continued)	Per dozen List
8413	Brass face, steel wheel.....	\$4.10
8513	Bronze face, steel wheel	4.30
8223	Brass plated face and wheel.....	4.10
8333	Bronze plated face and wheel.....	4.30
8423	Brass face, brass plated wheel.....	4.60
8533	Bronze face, bronze plated wheel.....	5.00
8443	Brass face, brass wheel.....	7.40
8543	Bronze face, brass wheel	7.60
8553	Bronze face, bronze wheel.....	8.10

No.	3-INCH BALL BEARING	Per dozen List
9113	All steel, lacquered face	\$3.36
9213	Brass plated face, steel wheel.....	3.80
9313	Bronze plated face, steel wheel.....	3.94
9413	Brass face, steel wheel	4.60
9513	Bronze face, steel wheel	4.80
9223	Brass plated face and wheel.....	4.60
9333	Bronze plated face and wheel.....	4.80
9423	Brass face, brass plated wheel.....	5.10
9533	Bronze face, bronze plated wheel.....	5.50
9443	Brass face, brass wheel.....	7.90
9543	Bronze face, brass wheel	8.10
9553	Bronze face, bronze wheel.....	8.60

Size of face plate, 3-inch pulley, 1¼ x 6 15/16 inches.

FACILITIES,
SHIPMENTS,
ETC.

We are prepared to fill orders for "American" Sash Pulleys in any quantities; and if special sash pulleys are required in large quantities we will furnish estimates.

Hardware dealers in all parts of the country carry "American" Sash Pulleys in stock, but if it is desired shipments may be made direct from the factory.

REFERENCES.

One of the largest users of "American" Sash Pulleys is the Thompson-Starrett Co. of New York.

Among the many notable buildings where "American" Sash Pulleys have been installed are the following:

BUILDING
Metropolitan Building
Fifth Avenue Office Building
Onondaga Hotel
Loft Building
Hospital Buildings
Newhouse & Boston Buildings
Insane Asylum

LOCATION
New York, N. Y.
New York, N. Y.
Syracuse, N. Y.
New York, N. Y.
Blackwell's Island, N. Y.
Salt Lake City, Utah
Overbrook, N. J.

ARCHITECT
N. LeBrun & Son
Maynicke & Franke
Eisenwein & Johnson
C. F. Hoppe
R. F. Almirall
H. I. Cobb
Hurd & Sutton

AMERICAN MASON SAFETY TREAD COMPANY

702 Old South Building

BOSTON, MASS.

BRANCH OFFICES

NEW YORK, N. Y., 1565 Fulton Building, 50 Church Street

CHICAGO, ILL., 40 Dearborn Street

KANSAS CITY, MO., 309 Junction Building

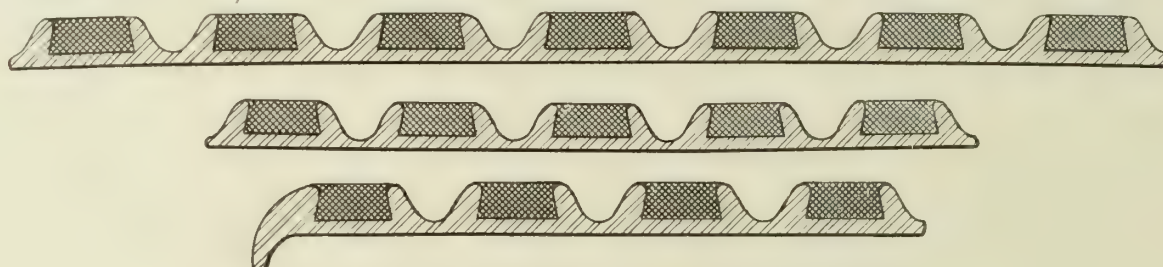
PHILADELPHIA, PA., 1011 Chestnut Street

WASHINGTON, D. C., Bond Building

ST. LOUIS, MO., 517 Chemical Building

PRODUCTS.

"MASON" SAFETY TREAD (lead or carborundum filled), "MASON" SAFETY SIDEWALK or VAULT LIGHTS, "MASON" SAFETY COAL-HOLE COVERS, "MASON" SAFETY TREAD and CORK COMBINATION, KARBOLITH FLOORING.



"MASON" SAFETY TREAD, FULL-SIZED CROSS-SECTIONS

DESCRIPTION OF "MASON" SAFETY TREAD.

"Mason" Safety Tread prevents accidents from slipping. It is unaffected by moisture or frost and is fireproof; it gives an absolutely secure footing. It is recognized by the best architects and engineers as the best, the most reliable and durable safety tread manufactured. It is cleanly, neat in appearance and noiseless in use.

It is made of steel or hard brass unperforated base of substantial thickness ($\frac{1}{4}$ -inch), with dovetail grooves filled with lead or carborundum. Open U Grooves occupy alternate spaces, hence the filling and the continuous supports wear evenly; there is no filling up of open grooves with creeping lead, no opportunity for the retention of filth and germs, and dirt can easily be swept out.

STANDARD SIZES.

It is manufactured in widths 4" and 6" flat and $3\frac{1}{2}$ " with nosing or overhang, and in lengths to suit; combinations of these sizes will give any desired width. All treads made to order in accordance with specifications, with necessary screw holes. Anchors furnished where the tread is for cement work.

USES.

It is adapted for any situation where a Safety Tread is needed, such as stairways, thresholds of doors and elevators, fire doors, inclined passageways, vault-light borders, ship ladders, steps and vestibules of cars, etc.

For repair work it is the best known material, being applicable upon outer or inner stairs of iron, granite, marble, slate, cement, or wood. Used on concrete stairs it saves the edges from chipping.

"MASON" SAFETY SIDEWALK VAULT LIGHTS.

These are made in sections with strands of lead or carborundum between the lenses and Safety Tread in sinkage in the borders. They have a level, non-slippery, durable surface; are absolutely water-tight; expansion and contraction are provided for. Installed in many of the best building properties in the country.

COAL-HOLE COVERS.

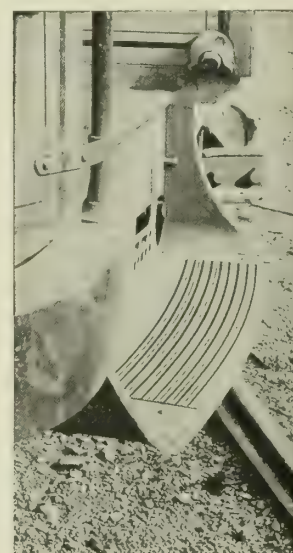
Made in all sizes, 12 to 26 inches in diameter, solid or illuminated. Special shapes and sizes made to order. Safety Tread insets.

COMBINATION CORK AND SAFETY TREAD.

For interior stairways, landings, and passage-ways this combination gives excellent satisfaction and is more economical than a complete installation of Safety Tread. It is in use in nearly all of the large department stores in New York, Boston, Philadelphia, and Chicago, and numerous other cities.

KARBOLITH FLOORING.

Made of a composition of matter that produces a hard, durable surface; it is fireproof, adapted to all interior floors, sanitary base and wainscoting. Prepared in several colors. It is impervious to heat, cold, and dampness; it will not chip, crack, tear loose from its base, or disintegrate. Its surface is smooth, fine grained, but not slippery. It can be laid over cement, granolithic, iron, or wood.



"MASON" SAFETY TREAD ON CAR STEP

AUSTRAL WINDOW BALANCE CO.

505 Hale Building

PHILADELPHIA, PA.

BOTH TELEPHONES

PRODUCTS.

Manufacturers of the "AUSTRAL" WINDOW BALANCE FIXTURES (which include all necessary hardware, except sash fast and pair of draw pulls for lower sash) for the "AUSTRAL" WINDOW (Knox-Abell Patents). A self-balanced window that eliminates sash weights, cords, pulleys, and their attending disadvantages.

DESCRIPTION.

Fig. 1 shows construction and operation, one side of the window and one balance arm only being shown.

The balance arm (A) is attached to the window frame at its center by a pivot block (B), and is free to revolve through half a circle. The window sashes are attached to opposite ends of the balance arm (A) by pivots (D), so the sashes balance each other in any position. The opposite ends of the sashes are provided with pins (C), which travel in grooves (E) in the frame as the sashes are raised and lowered by the balance arms, thus keeping the lower end of the lower sash (F) and the upper end of the upper sash (F') close against the parting strip (GG') at all times; but the meeting rails (H) of the sashes swing apart as the windows are opened, as shown in Fig. 1, and then the sashes swing together against each other as the lower sash is raised still higher.

By opening a switch (J) the lower sash may be swung out into the room for cleaning (Fig. 3), the guide pins coming out through transverse grooves (K) in the casing.

The upper part of the parting strip (G') is made removable, to allow the upper guide pins to slide through grooves (K'), to permit the upper sash to reverse down into the room for cleaning the outside of the sash (Fig. 4).

ADVANTAGES.

The "Austral" Window affords a perfect system of ventilation without draft, giving free circulation of air. Fig. 2 shows circulation. Additional light space is given between wall openings, especially valuable with mullion windows. Window may be opened during rain-storm, excluding rain but allowing the air to come in. Both sashes can be cleaned from the inside. The window makes a perfect awning by partly opening and drawing shade of upper sash. Metal weather strips and fly screens may be attached.

These windows can be made by any millman and any carpenter can hang them.

CATALOGUE.

Illustrated catalogue, giving full information and working details, mailed upon request. Send for list of installations.

ENDORSEMENT.

"Austral" Metal Windows have been approved by the National Board of Fire Underwriters and specified by prominent architects in both wood and metal.

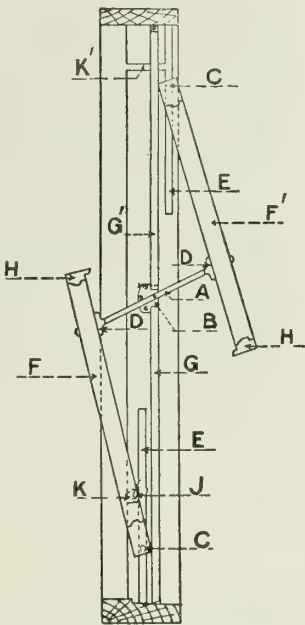


FIG. 1. AUSTRAL WINDOW BALANCE
Diagram view



FIG. 2. WINDOW OPEN AT CENTER ONLY
Ventilation without Draft



FIG. 3. CLEANING LOWER SASH



FIG. 4. UPPER SASH REVERSED INTO ROOM FOR CLEANING

JOSEPH BARDSLEY

MANUFACTURER OF

Builders' Hardware Specialties

147-151 Baxter Street
NEW YORK, N. Y.

TELEPHONE, 952 SPRING

PRODUCTS.

CHECKING SPRING HINGES; DOOR CHECKS and SPRINGS; DOOR HOLDERS; DOOR STOPS, in Metal and Wood; WOOD DOOR KNOBS, etc.

THE "BARDSLEY" DOUBLE- ACTING, CHECKING SPRING HINGES.

These hinges possess the following advantages over the ordinary spring hinges: They do not swing the door violently, but close it gently and without noise, and stop it at once at the center.

There are no unsightly projections on the door or frame.

The springs are not twisted, but compressed, and do not break or set.

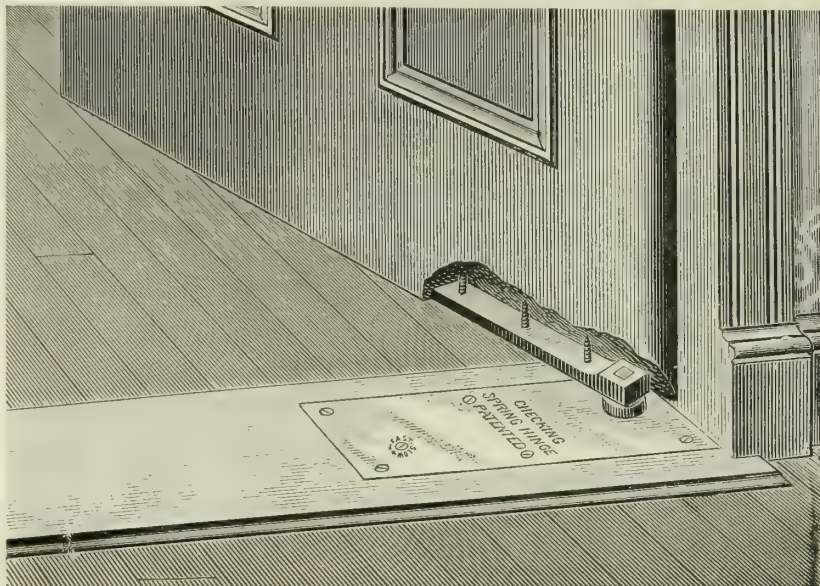
The door can not sag, being hung on pivots.

The greatest pressure of the spring is at the closing point.

These hinges are now provided with facilities for quickly correcting the faulty hanging of doors. If the door does not hang in line it is only necessary to loosen two screws, push the door to its proper closed position and turn down the screws.

These hinges are also made for single-acting doors, shutting in a rabbet.

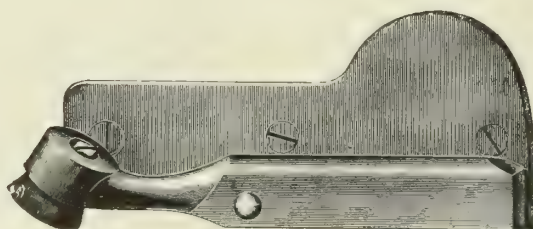
Where these hinges are used in floors other than wood, Cement Boxes (as made by us) should be used, as they greatly facilitate the removal of the hinges from the floor when repairs are necessary.



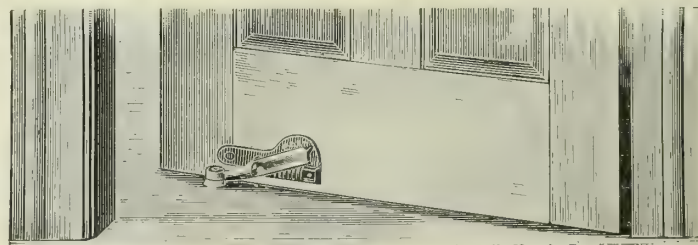
"BARDSLEY" DOUBLE-ACTING, CHECKING SPRING HINGE, APPLIED

THE "BARDSLEY" DOOR HOLDERS.

In this Door Holder the weak features of other makes have been avoided, and the article shows for itself how it is operated. The lever swings on a strong central pin, which is riveted in the plate. Slight pressure with the toe at one end depresses it and at the other end raises it. The cushion or plug is made of a grade of rubber best adapted for the purpose. The spring is of the round wire compression type, the most durable form known. The back-plate protects the door from being scraped by the toe.



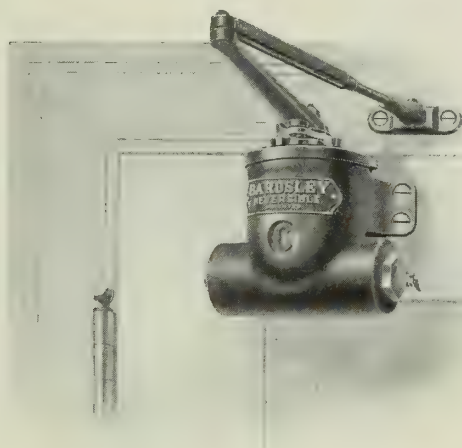
"BARDSLEY" DOOR HOLDER



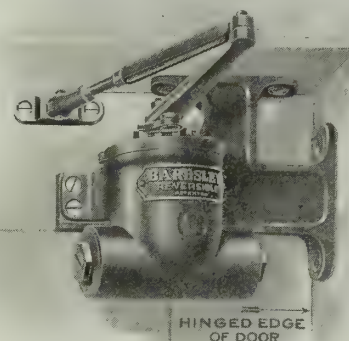
"BARDSLEY" DOOR HOLDER, APPLIED

THE
"BARDSLEY"
LIQUID
DOOR CHECK
AND SPRING,
1909 TYPE.

This Door Check (new this season) is the outcome of many years' experience in the manufacture of Door Checks, and we consider it the most durable and more nearly perfect Door Check ever made. It is applicable to either hand of doors and to either side of doors without any change whatever. It cushions the door to the closing point perfectly. The spring is of ample length to insure elasticity and durability, and the facilities for preventing the liquid from leaking or being forced from the lower cylinder are exceptionally good. We make them in six sizes, suitable for any doors.



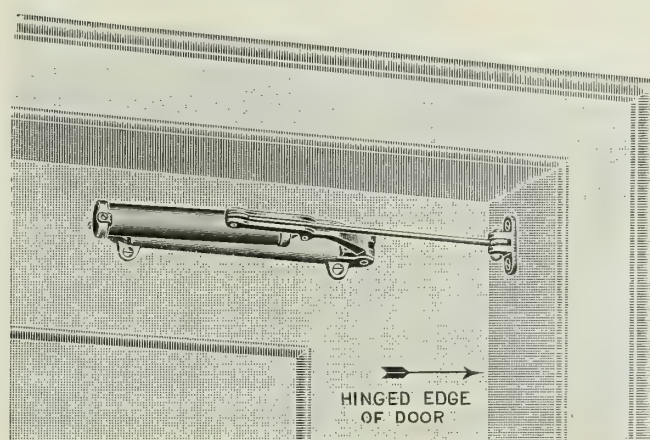
LIQUID CHECK ATTACHED TO DOOR



LIQUID CHECK ATTACHED TO BRACKET

THE
"BARDSLEY"
AIR CHECK
AND SPRING.

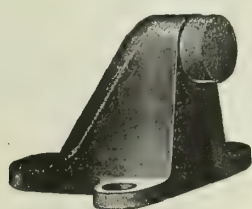
Made in two sizes only: No. 1 A for ordinary screen doors, and No. 2 A for heavy screen doors or light interior doors. It is designed for the jamb side of a door and occupies but little space. It is a low-priced article, neat in appearance, durable, and easily repaired.



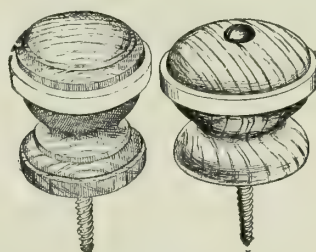
AIR CHECK AND SPRING

THE
"BARDSLEY"
WOOD DOOR
KNOBS.

These are carefully made of selected thoroughly dried material. Their beautiful and durable finish, attractive appearance, and pleasant feeling to the hand make them the most desirable for dwellings. They can be matched with any interior finish as they are made in all the woods used for that purpose.



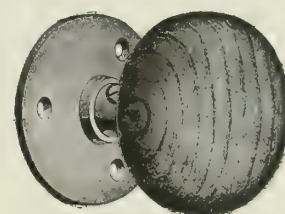
NO. 160 IRON, NO. 260
BRONZE DOOR STOP



WOOD DOOR STOPS



SECTION OF
WOOD DOOR
STOP



WOOD DOOR KNOB

"BARDSLEY"
DOOR STOPS.

These Wood Stops are carefully made and well finished. The rubber tips are moulded on a wood pin and the screws are slotted and keyed as shown in cut.

CATALOGUE.

Catalogue, giving details, will be sent upon application.

ESTABLISHED 1876

BOMMER BROTHERS

Spring Hinges

255-271 Classon Avenue

BROOKLYN, N. Y.



Reg. U. S. Pat. Office

TELEPHONE, 2623 PROSPECT

PRODUCTS.

SPRING BUTT HINGES; FLOOR SPRING HINGES; PIVOT HINGES; SPRING HINGES for Lavatory Doors; BOLTS, STRIKES, LATCHES, etc., used in connection therewith; HOSPITAL DOOR SPRING HINGES.

"BOMMER"
Reg. U. S. Pat. Office

HOW TO ORDER.

BOMMER
SPRING BUTT
HINGES,
DOUBLE
AND SINGLE
ACTION.

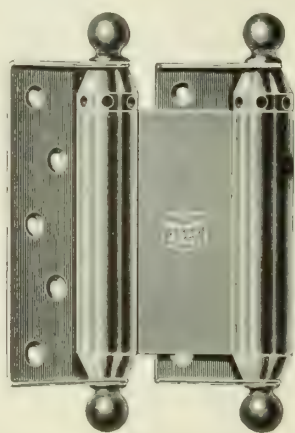
These goods can be furnished and included in contracts by all dealers in builders' hardware and by all lock manufacturers figuring on contracts.

Bommer Spring Butt Hinges are made of steel, bronze and brass, in the strongest and most durable manner, in any finish desired. All bearings are of steel; in bronze and brass hinges the interior construction is of steel. The springs are of best oil-tempered steel wire, are of large diameter and unusual length, have great resilience and power, and never get lame. The flanges are of full length as listed. The ball tips can be unscrewed to take the

hinge apart, but will not work loose of themselves. These hinges will last as long as the door, and will not allow the door to sag if the proper size is selected. They are the original and standard wrought-metal spring hinges.

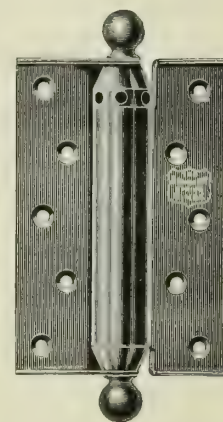
Always use the largest size hinge which the thickness of the door will permit.

REQUIREMENTS.



DOUBLE ACTION

Use 3" hinges for doors	6' x 2' x 3"	to 1 1/8" hanging strip	3/8"
Use 4" hinges for doors	7' x 2' x 1"	to 1 3/8" hanging strip	5/8"
Use 5" hinges for doors	7' x 2 1/4' x 1"	to 1 1/2" hanging strip	5/8"
Use 6" hinges for doors	7' x 2 1/2' x 1 1/8"	to 1 3/4" hanging strip	3/4"
Use 7" hinges for doors	8' x 2 1/2' x 1 1/4"	to 2" hanging strip	7/8"
Use 8" hinges for doors	8' x 2 3/4' x 1 1/2"	to 2 1/4" hanging strip	1"
Use 10" hinges for doors	9' x 3' x 1 3/4"	to 2 1/2" hanging strip	1 1/8"
Use 12" hinges for doors	10' x 3' x 2 1/4"	to 3" hanging strip	1 1/4"



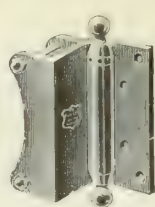
SINGLE ACTION

PRICES.

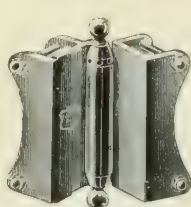
BOMMER
LAVATORY
SPRING
HINGES.

Prices are guaranteed to be no higher than those of corresponding makes.

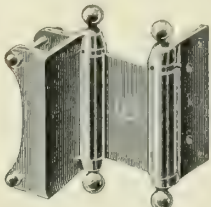
The following illustrations show a complete line of box-flanged spring hinges for clamping lavatory doors onto marble or slate partitions, being also suitable for fireproof doors, public bath-houses, and hospital work. Made of brass nickel-plated or of bronze highly polished, adaptable to all conditions met with in such work. In most styles illustrated the box flanges are adjustable 1/8 inch either way, but the thickness of both marble and door must be stated when specifying. They close the door, but can be furnished with reverse springs to hold it open if so ordered. The flanges are 4 inches in length.



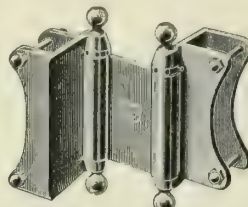
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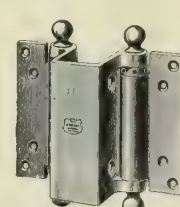
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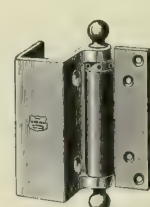
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No. 1006



No. 1015



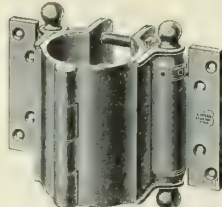
No. 1002



No. 1016



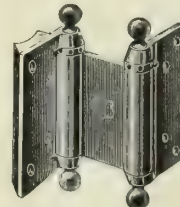
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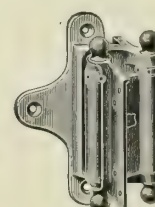
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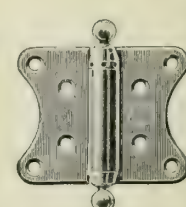
No. 1004



No. 1019



No. 1018



No. 1011

BLANKS FOR
LAVATORY
HINGES.

For extra light and narrow lavatory doors, if close economy is essential, blanks can be furnished for use in connection with above single-acting lavatory spring hinges.

CHECKING
BUMPER AND
HINGE.

By mortising a checking bumper, No. 1021, into back edge of door, in connection with single-action lavatory hinges, or by using one checking hinge No. 1020 and one surface hinge No. 1011, the door can be held partly open while the closet is unoccupied, and indicator bolts dispensed with. The checking bumper No. 1021 can also be furnished integral with the door leaf of single-action box-flanged hinges.

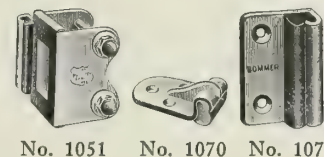


No. 1021

No. 1020

STRIKES FOR
LAVATORY
DOORS.

Adjustable strikes, having rubber bumper (Style 1051) to clamp to the marble, for use with lavatory spring hinges in connection with any style of bolt or latch, can be furnished. Style 1070 is for fastening to face of door; style 1072 for fastening to edge of door.



No. 1051

No. 1070

No. 1072

BOMMER
SURFACE
FLOOR
SPRING
HINGES.

This floor hinge dispenses with the necessity of cutting holes in the floor, as the floor-plate is screwed to the surface or let in flush with the door saddle, and interference with iron beams or girders below the floor is avoided.

Only the best oil-tempered steel springs are used; the tension can be adjusted while the door is in place; the door can be taken down without unscrewing the floor-plate. The ball bearings (of tool steel) are placed near the top of the hinge, protected from dirt and water. The door is set in properly aligned position before screwing down the floor-plate. These hinges can be furnished in all hardware finishes; they are double-acting, but by using a stop bead they work equally well single-acting. No hanging strip is required. The back edge of the door is slightly rounded.



SECTIONAL
VIEW

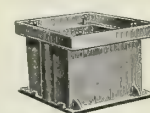
SURFACE
FLOOR SPRING
HINGE

REQUIRE-
MENTS.

Thickness of Door	Use Size	Dimensions of Floor-Plate	Distance from center of Spindle to Door Casing
1½ to 1¾ in.	10	2½ x 3 in.	15/16 in.
1¾ to 2 in.	12	3½ x 3½ in.	1¼ in.
2 to 3 in.	14	4½ x 4½ in.	1½ in.

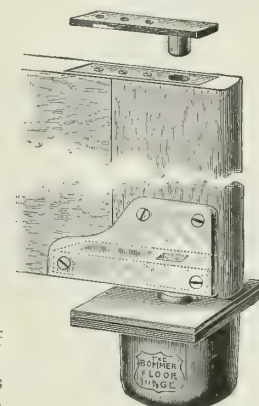
BOMMER
MORTISE
FLOOR
SPRING
HINGES.

This hinge supports the weight of the door on tool steel ball bearings set upon a raised centerpost, giving an easy movement to the door. The ball bearings are protected from water and dirt. Only the best oil-tempered steel springs are used. These hinges can be furnished with an invisible socket bar and adjustable top pivot instead of side plates if preferred. No hanging strip is required. The back edge of the door is slightly rounded. The tension of the spring is adjustable. These floor hinges are double-acting, but by using a stop-bead they work equally well single-acting.



CAST-IRON
BOX

Suitable for set-
ting all sizes of
Mortise Floor
Hinges and Pivots
into Tile or Cem-
ent Floors.



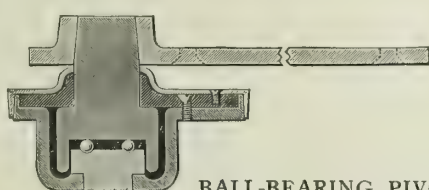
MORTISE FLOOR
SPRING HINGE

REQUIRE-
MENTS.

Thickness of Door	Use Size	Dimensions of Top Plate	Depth of Cup	Distance from center of Spindle to Door Casing
7/8 to 1½ in.	2	3¾ x 5¾ in.	3 in.	1⅝ in.
1⅝ to 2 in.	4	3¾ x 5⅝ in.	3½ in.	1¾ in.
2 to 2½ in.	6	4½ x 6½ in.	3¾ in.	2 in.
2½ to 3½ in.	8	4½ x 6½ in.	3¾ in.	2 in.

PRICES.
BOMMER
BALL-BEARING
PIVOTS WITH-
OUT SPRINGS.

Prices are guaranteed to be no higher than those of corresponding makes. These pivots can be used to hang doors either double or single action. They are durable, noiseless, work smoothly and permit the heaviest doors to be used with but slight exertion.



BALL-BEARING PIVOTS

REQUIRE-
MENTS.

Thickness of Door	Use Size	Dimension of Top Plate	Depth of Cup	Distance from center of Pivot to Door Casing
¾ to 1½ in.	20	1 x 4 in.	1½	⅝ in.
1½ to 2½ in.	24	4 x 3½ in.	1⅝	1½ in.
2 to 4 in.	28	5½ x 5½ in.	3¼	1¾ in.

BOSTON PRESSED METAL CO.

Manufacturers of Osborne Adjusters

171-173 Union Street
WORCESTER, MASS.

AGENCIES

NEW YORK, N. Y., W. K. NORRIS, 157 West Twenty-Ninth Street

LONDON, ENG., MILES A. HOFFMAN & Co., 43, 45 Great Tower Street, E. C.

PRODUCTS.

"OSBORNE" TRANSOM ADJUSTER and LOCK; "OSBORNE" BLIND ADJUSTER and LOCK; "OSBORNE" CASEMENT LOCK and ADJUSTER.

DESCRIPTION.

These Adjusters are constructed on a principle which is mechanically correct, yet so simple that years of constant use can not impair their efficiency. Two ends of a slender, strong chain hang from the adjuster case; a slight pull on one end opens the sash or blind to any desired position; a pull on the other end closes it. The moving chain, running over a sprocket, turns a worm and gear, to the shaft of which is keyed the adjusting arm. As the gear can not move, the worm and arm, and hence the sash, are automatically and rigidly locked the moment the chain ceases to be drawn, affording perfect security.

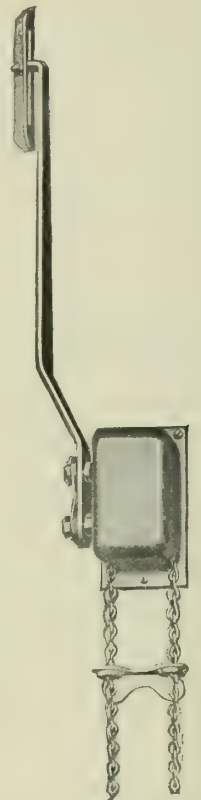
The working parts are enclosed in a steel case, which, together with all exposed parts, may be finished to match any style of interior decoration.

"OSBORNE" TRANSOM ADJUSTER.

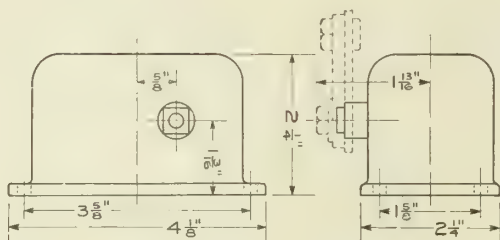
The "Osborne" Transom Adjuster can not slip or slam and break the glass, nor can it bend out of alignment and stick.

The Adjuster may be attached to either side of the casing and is adaptable to top-hinged, bottom-hinged, and pivoted sash.

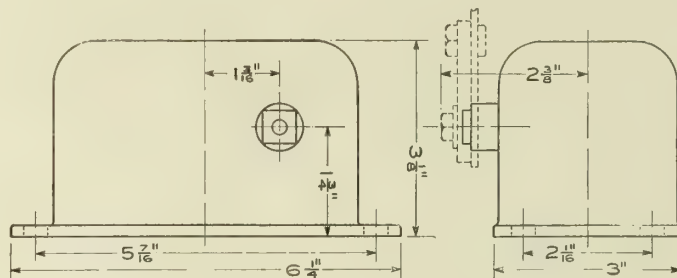
The No. 1 Transom Adjuster should not be specified for transoms requiring more than twenty-five pounds pull; on all transoms requiring from twenty-five to one hundred pounds pull, the No. 2 Adjuster should be used.



DETAIL OF NO. 1 TRANSOM ADJUSTER



NO. 1 TRANSOM ADJUSTER; DIMENSION OUTLINE



NO. 2 TRANSOM ADJUSTER; DIMENSION OUTLINE

"OSBORNE" CASEMENT ADJUSTER.

This is an adaptation of the transom adjuster with the addition of a brass double roll to carry the chains around the right angle, so they will fall along the casing.

It can be applied to either center-pivot or side-pivot casements.

The sash is securely locked in any position the moment the chain is at rest, consequently it is impossible for the sash to slam and break the glass.

"OSBORNE" BLIND ADJUSTER.

The Blind Adjuster is constructed on the same principle as the Transom Adjuster. The case is attached to the heading of the window, and the two chain ends, running through the heading and over two small rolls, are suspended along the casing on the inside. The blinds may be opened to any position by a slight



"OSBORNE" TRANSOM ADJUSTER APPLIED TO SASH

pull on one chain, and closed by pulling the other chain, without the danger or discomfort of opening either window or screen.

The blinds are automatically locked in any position in which they are left and can not be moved from the outside.

The adjusting arm affords a strong support and prevents rattling or slamming and consequent breakage; but the blind may readily be detached if desired.

INSTALLATION.

The Adjusters may be applied by anyone of average intelligence who follows instructions that accompany each adjuster.

FINISHES.

Regular finishes of Transom or Casement Adjuster: A, antique copper; B, bright bronze; C, brushed brass; D, oxidized. Other finishes, for which extra charge will be made, furnished on two weeks' notice.

Of the Blind Adjuster, the parts showing outside are black japanned, while the parts showing inside are nickel-plated. Other finishes, for which extra charge will be made, furnished on two weeks' notice.

PRICES.

No. 1 Transom Adjuster, suitable for sash requiring 25 lbs. pull or less, each, \$2.00 list.

No. 2 Transom Adjuster, suitable for sash requiring more than 25 lbs. pull, each, \$4.00 list.

Regular length of chain furnished with No. 1 Adjuster is 6 feet; with No. 2 Adjuster, 8 feet. Regular length of arm furnished with No. 1 Adjuster is 12 inches; with No. 2 Adjuster, 16 inches.

Special or additional parts charged extra and net. Uniform discounts to all dealers, based solely on quantity, sent on application.

HOW TO ORDER.

In ordering "Osborne" Transom Adjusters please give information requested in catalogue.

SPECIFICATIONS.

To assure the use of "Osborne" Adjusters, specifications should be made after the following form:

"Transom (or Blind) Adjusters are to be operated by chain, worm and gear, and as good in every respect as the 'Osborne' Adjuster made by the BOSTON PRESSED METAL CO., Worcester, Mass."

GUARANTEE.

"Osborne" Adjusters are absolutely guaranteed as to material and workmanship.

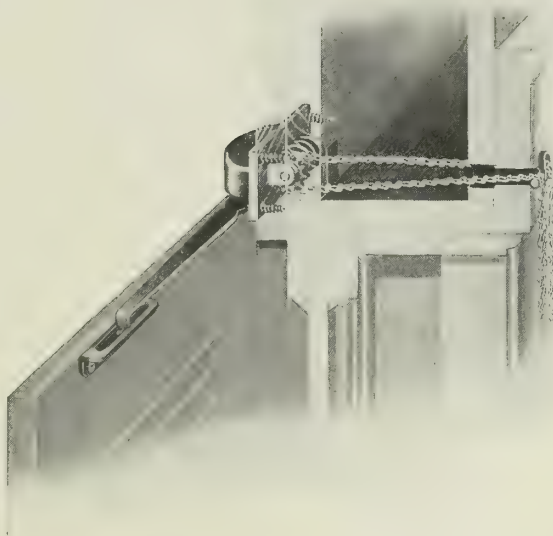
REFERENCES.

Installations have been made in the following buildings:

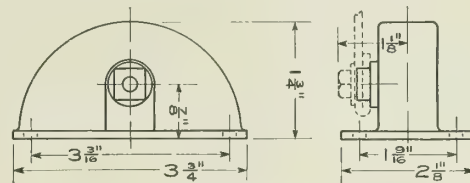
Thompson Starrett Co. Building, 51 Wall Street, New York, N. Y.
Consolidated Stock Exchange, Broad Street, New York, N. Y.
Worthy Hotel, Springfield, Mass.
Belmont Club House, Queens County Track, Long Island, N. Y.
Cooley House, Springfield, Mass.
John Hancock Building, Boston, Mass.



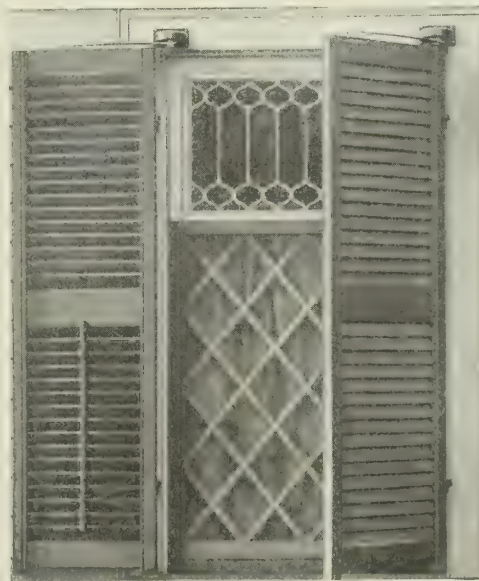
DETAIL OF BLIND ADJUSTER



BLIND ADJUSTER—METHOD OF APPLICATION



BLIND ADJUSTER—DIMENSION OUTLINE



BLIND ADJUSTER

One blind partially opened and locked

CASEMENT HARDWARE CO.

154 Washington Street

CHICAGO, ILL.

TELEPHONE, MAIN 3623

PRODUCTS.

"HOLDFAST" and "BULL DOG" ADJUSTERS, "HOOKFAST" FASTENER, and "OUTSIDE IN" CLEANING DEVICE—all for Casement Windows.

"HOLDFAST"
ADJUSTER.

A strong, simple, direct lever acting Adjuster. To operate, unlock and pull out lever-sleeve with knob handle, swing sash out to desired angle and lock by pushing sleeve back into locking-plate on apron.

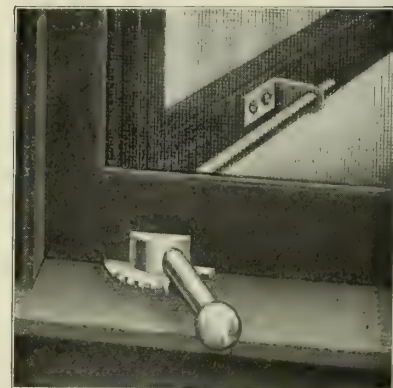
Fits old or new work after trim is on. Screens, storm-sash and curtains never disturbed. Knob closes flush with edge of stool. All exposed parts are of heavy bronze metal. No rights or lefts. Standard finish dull brass and nickel for bathrooms. Top parts may be concealed under false stool.



"HOLDFAST" ADJUSTER

"BULL DOG"
ADJUSTER.

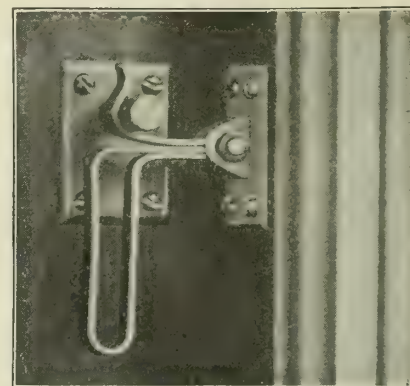
A powerful plated steel Adjuster for inexpensive houses, bungalows, and cottages. Put on almost any window with little labor. No mortising, cutting or countersinking. Pivot centers under the screen, which is never disturbed. Operates similarly to the "Holdfast" Standard finishes, dull brass, dead black, black oxidized, and nickel for bathrooms. Made in special finishes, at a slight advance in cost for fine work with deep reveals. Swing arm may be concealed under false stool.



"BULL DOG" ADJUSTER

"HOOKFAST"
WINDOW
CATCH.

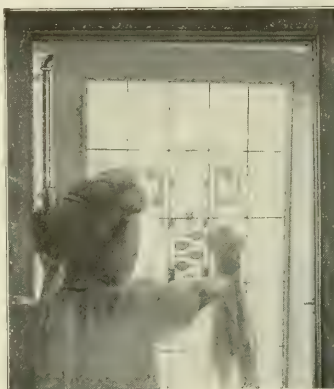
Best and cheapest all-brass fastener made. Draws warped sash tight with easy action. Impossible to mar woodwork. No rights or lefts. Tension adjustable when in place.



"HOOKFAST" FASTENER

"OUTSIDE IN"
WINDOW
CLEANER.

A new device that should revolutionize American window design, making the ordinary simple old-fashioned casement a perfectly reversible, easily washed window. Casements should open out to be tight against weather, and to ventilate in summer. They are always out of the way. Our Portable Cleaner attached to such a window carries it clear of the hinges, loose pins being removed from butts from inside when sash is open. Any girl can use it.

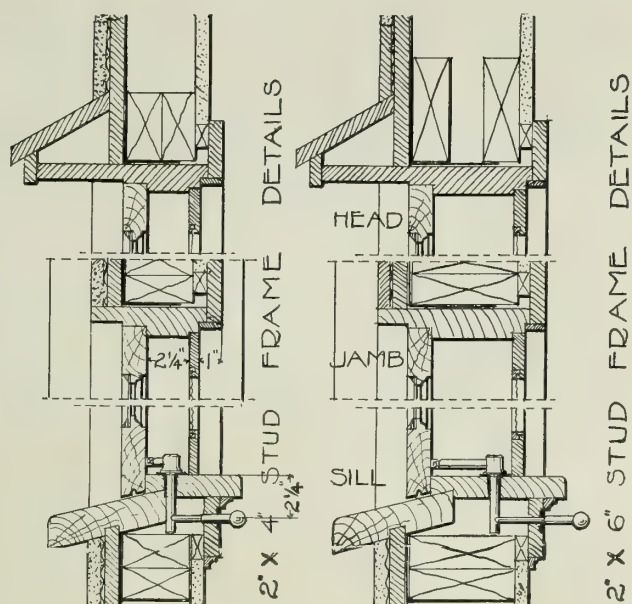
"OUTSIDE IN,"
WINDOW CLEANER

FACILITIES.

Immediate shipment of standard patterns in standard finish (dull brass).

HANDBOOK
FREE.

Our beautiful handbook of Casement Window details fully illustrates our devices and should be in the hands of every architect and builder for ready reference in the drafting-room. Write to-day and mention "SWEET'S."



DETAIL FOR STUD FRAME CONSTRUCTION

Casement Window Details

Head Jamb and Sills, $1\frac{3}{4}$ " stock. Sash $1\frac{3}{4}$ " thick, $3\frac{1}{4}$ " wide over all. Bottom Rails, $4\frac{1}{4}$ " wide over all. Screens $\frac{7}{8}$ " stock hung at top in small, loose, dim brass butts

"HOLDFAST" DETAILS FOR STUD FRAME.

FOR MASONRY OR TILE WALLS.

FOR THE CONCEALED WORK FADDIST.

"BULL DOG" LOCK ADJUST-ER DETAILS.

SCREEN STOPS AND SCREENS FOR "BULL DOGS."

FOR STUD FRAME "BULL DOGS."

FOR MASONRY DEEP INSIDE REVEALS "BULL DOGS."

LIST PRICES.

Allow $2\frac{3}{4}$ " from face of apron to center of adjuster pivot; 2" to 4" from screen to sash; $1\frac{1}{8}$ " from face of apron to screen. Pivot centers 3" from jamb.

For distance of over 6" from face of apron to sash provide a sub-stool as shown in cut. Pivot centers 6" from jamb to allow operating lever to clear when extended.

The "Holdfast" pivot and long arm may be concealed under a false stool, but we do not recommend this, as it necessitates an awkward pocket open to the weather when the sash is open.

The "Bull Dog" is made with three sizes of sash plate: "Short," projecting $1\frac{3}{16}$ " from sash over all; "Standard," projecting $1\frac{5}{8}$ "; and "Long," projecting $2\frac{1}{16}$ ".

Provide rebated stops for all screens which are desired to be hung at top and to swing in. One to a room is enough. Other screens to be neatly cut out in bottom rail to fit over pivot head. Bevel each side of cut.

Specify "Standard" sash plates. Allow about 2" between screen and sash. Center pivot $3\frac{1}{2}$ " from jamb.

Specify "Long" sash plates. Allow about $2\frac{1}{2}$ " between screen and sash. Center pivot $4\frac{1}{2}$ " from jamb.

"Holdfast," dull-brass finish, \$28.00 per doz.

"Bull Dog," dull-brass finish, \$20.00 per doz.

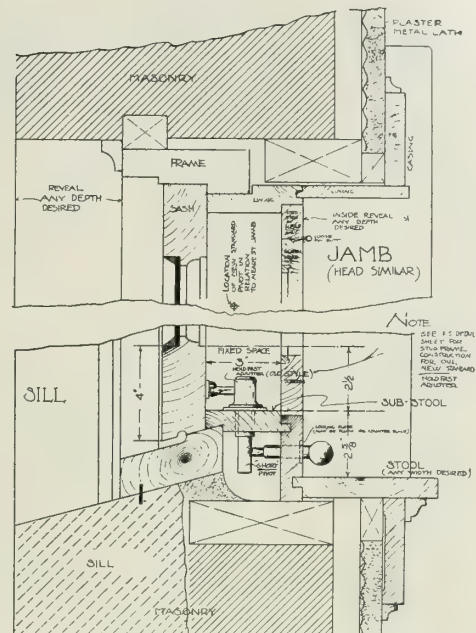
"Hookfast," dull-brass finish, \$5.00 per doz.

NOTE—Except minor concealed parts, the "Holdfast" is solid brass. The standard "Bull Dog" is plated steel. We list a special all-brass "Bull Dog" for high-class buildings.

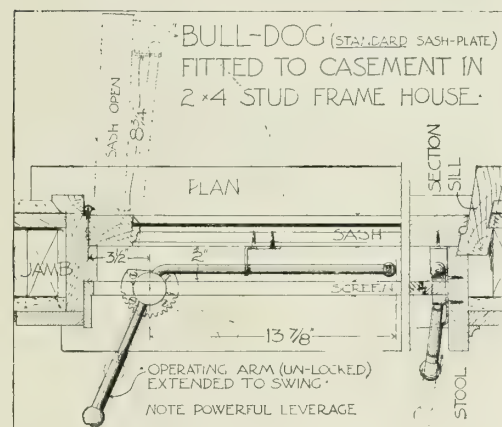
"Outside-In" Cleaner (Iron), \$4.50 each.

For all special finishes add about \$2.00 per doz.

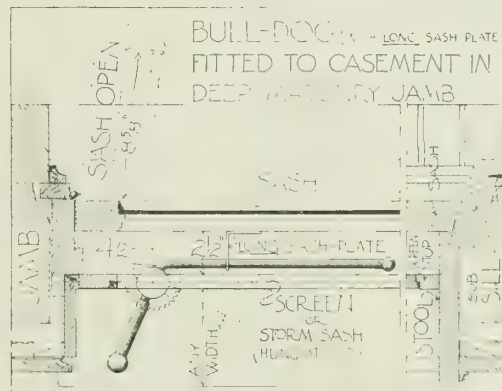
These prices are list, f. o. b. Chicago.



DETAIL FOR MASONRY WALLS, WITH SUB-STOOL AND DEEP INSIDE REVEAL



"BULL DOG," WITH STUD FRAME CONSTRUCTION



"BULL DOG" WITH MASONRY CONSTRUCTION AND DEEP INSIDE REVEALS. ANY DEPTH DESIRED



Registered
U. S.
Pat. Office

CHICAGO SPRING BUTT COMPANY

Builders' Hardware Specialties

MAIN OFFICE AND WORKS
334-340 Union Park Court
CHICAGO, ILL.

EASTERN OFFICE AND WAREHOUSE
126 Chambers Street
NEW YORK, N. Y.



Registered
U. S.
Pat. Office

PRODUCTS. We are manufacturers of a complete line of PATENT SPRING HINGES, including the following: "CHICAGO" SPRING BUTTS and BLANKS; "TRIPLEX" SPRING BUTTS; "CHICAGO" BALL-BEARING FLOOR SPRING HINGES; "TRIPLEX" LAVATORY SPRING HINGES; "CHICAGO" FIRE-ENGINE HOUSE SPRING HINGES and CHECKING LATCHES; LAVATORY DOOR BOLTS, LATCHES and STRIKES; "TRIPLEX" WIDE-SWEEP GATE SPRING BUTTS.

SUPERIOR QUALITY. These various types of Spring Hinges are of recognized superiority with advantageous features distinctly their own and are guaranteed in every respect. We solicit specifications for Spring Hinges of Special Construction, embodying suggestions of architects and others.

ORDERING. This product is standard in size and is supplied in the various standard finishes. Any special finishes can be furnished promptly to match other hardware.

In specifying, designate the article by number, size, and finish; the hardware trade being in possession of lists and complete data pertaining to our products.

PRICES. Prices are comparative with those of standard grades and quality. Quotations on special goods and finishes supplied on request.

"CHICAGO" DOUBLE-ACTING SPRING BUTTS, NO. 1½. The "Chicago" Spring Butt has greater power than any other type of hinge on the market. It is constructed in a most substantial manner and the spring power, effected by both a torsion and leverage principle, produces a positive action as well as an easy movement of the door. The general construction and mechanical action of this hinge produce the best results obtainable in operating doors subject to excessive and violent use.

"CHICAGO" DOUBLE-ACTING BLANK BUTTS, NO. 3½. The "Chicago" Blank Butt is for use in combination with a "Chicago" Spring Butt where doors are light or narrow. Owing to the great power of the Spring Butt this method can be employed to advantage, but is not advisable on outside doors that are subject to draughts, where a pair of Spring Butts should be applied.

"TRIPLEX" SPRING BUTTS, DOUBLE-ACTING, NO. 2001; SINGLE-ACTING, NO. 2002. The Chicago "Triplex" Spring Butt is constructed on scientific and practical principles, with distinctive features embodied in no other Spring Hinge. The body is made of one integral piece, avoiding the necessity of means of fastening separated parts together; producing a maximum of strength and rigidity. The broad steel bearings, hardened lug bushings and disassemblment feature are characteristic of this product. This article as made in bronze or brass metal is in a class by itself, having a specially constructed body of a seamless, intact metal surface and interior steel construction, by which the possibility of breakage is eliminated and the durability and efficiency of steel retained. The springs are made of the best tempered steel wire in ample proportions for the most excessive requirements. Single-Acting Butts can be furnished with reverse springs to throw the door open when released. These butts can be supplied with a wide sweep to clear a hand rail on office gates.

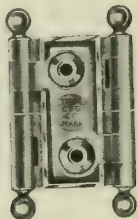
THICKNESS
OF DOORS

7/8	to 1	inch
1 1/8	"	1 1/2 "
1 3/8	"	1 1/2 "
1 1/2	"	2 "
2 1/4	"	2 1/2 "
2 3/4	"	3 1/2 "



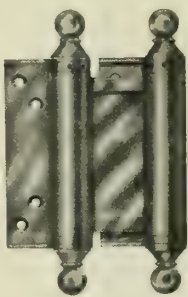
NO. 1½

"CHICAGO"
SPRING
BUTT



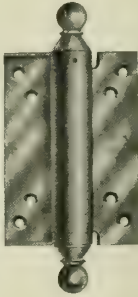
NO. 3½

"CHICAGO"
BLANK
BUTT



NO. 2001

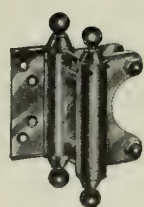
"TRIPLEX"
SPRING BUTT



NO. 2002

"TRIPLEX"
SPRING BUTT

Size of Hinge Length of Flange	DIMENSIONS		Hanging Strip Thickness
	Doors Thickness	to 1 in.	
3 inch	3/4	to 1 in.	1/2 in.
4 "	7/8	" 1 1/4 "	"
5 "	1 1/8	" 1 1/2 "	"
6 "	1 1/4	" 1 3/4 "	"
7 "	1 3/8	" 2 "	"
8 "	1 1/2	" 2 1/4 "	"
10 "	1 3/4	" 2 1/2 "	"
10 "	2 1/4	" 2 3/4 "	1 "
12 "	2 1/2	" 3 "	1 1/8 "



NO. 2241



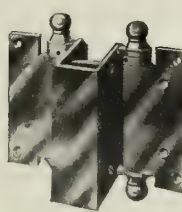
NO. 2242



NO. 2244



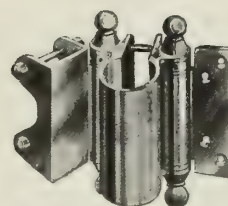
NO. 2246



NO. 2642.



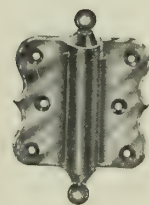
NO. 2842



NO. 2342 A AND
2342



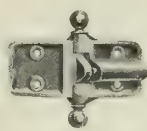
NO. 1247



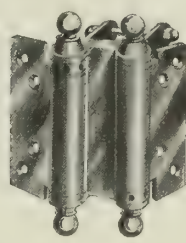
NO. 2442



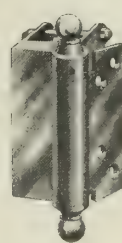
NO. 2444



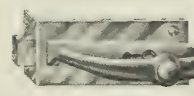
NO. 2446



NO. 2542



NO. 2742



NO. 1248



NO. 1246

"TRIPLEX"
LAVATORY
SPRING
HINGES.

Chicago "Triplex" Lavatory Spring Hinges, as illustrated, are made in bronze or brass metal for marble thickness as specified. The flanges are 4 inches, and Nos. 2242, 2244, 2246, and 1247 have adjustable marble box flanges, adjustable $\frac{1}{8}$ inch over and under the following sizes by which they are specified: 1 inch, $1\frac{1}{4}$ inch, $1\frac{1}{2}$ inch, $1\frac{3}{4}$ inch and 2 inches.

Single-Acting Lavatory Hinges can be used in combination with a blank, where doors are very narrow or light weight, as shown by articles No. 2244 and No. 2444. Where doors swing out and it is desired to avoid the use of an occupancy indicator, a checking blank, Nos. 2246 or 2446 can be used, which holds the door ajar when it is not occupied and bolted shut from the inside. Where doors swing in, hinges can be furnished with reverse springs to hold doors open when released and to accomplish the same purpose.

Where partitions have no hanging style, No. 2642 (swing in) and No. 2542 (swing out) are adaptable; Nos. 2842 and 2742 are for the same purpose as applied to single doors; No. 2342 A (with door box flange) and No. 2342 (without door box flange) are for partitions having an upright pipe standard where it is desired that the box flange incorporate both.

Lavatory Strike No. 1247, with adjustable box flange, can be furnished with mortise bolt-hole to receive bolt No. 1248, or with a keeper for latch No. 1246. Where doors are not of same thickness as partition, thickness of both should be given, so that the strike may be constructed accordingly.

"CHICAGO"
BALL-BEARING
FLOOR HINGE,
NO. 5001.

The "Chicago" Floor Spring Hinge is constructed in a most substantial manner with features of recognized merit, producing an article of maximum durability and efficiency. The broad ball bearing, distributing weight and friction over a large

area, provides an easy action and reduces wear to a minimum. It has a tension adjustment, requiring no special tool; a tension pin locking device, together with features of convenience, general appearance and finish that characterize it as an article of quality.

This hinge can be furnished with an invisible shoe and adjustable top pivot in place of the regular shoe and adjustable side plates. Where floors are tile or concrete, cast-metal boxes are imbedded in the floor into which the hinge is held by machine screws.

The "Chicago" Engine House Spring Hinge No. 9 and No. 19, is constructed especially for fire-department doors where they are held shut and required to be thrown open when released. They are powerful and positive in action, fully adapted to the requirements and made in three sizes: Stall Door, Front Door and Extra Heavy Front Door.

The "Chicago" Engine-House Checking Latch No. 1209, is intended to fasten either in the floor or to a brace from the ceiling. The latch is arranged to slide in a keeper against the action of a spiral spring, checking the force of the door when thrown open and holding it against rebound.

DIMENSIONS

Thickness of Door	Depth of Box	Dimensions of Top Cover	Center of Pintle to Jamb
$\frac{7}{8}$ to $1\frac{1}{2}$ in.	$2\frac{1}{2}$ in.	4 x $4\frac{1}{2}$ in.	$1\frac{1}{2}$
$1\frac{3}{8}$ " 2 "	$3\frac{3}{8}$ "	$4\frac{3}{8}$ x 5 "	$1\frac{7}{8}$
2 " $2\frac{1}{2}$ "	$3\frac{3}{8}$ "	$4\frac{1}{2}$ x 6 "	$2\frac{1}{8}$
$2\frac{1}{2}$ " $3\frac{1}{2}$ "	$3\frac{3}{8}$ "	$4\frac{3}{4}$ x 6 "	$2\frac{1}{2}$



NO. 5001 "CHICAGO"
BALL-BEARING FLOOR
HINGE

"CHICAGO"
FIRE-ENGINE
HOUSE SPRING
HINGE.

"CHICAGO"
ENGINE-HOUSE
CHECKING
LATCH.



NO. 9
"CHICAGO"
SURFACE
HINGE



NO. 19
"CHICAGO"
MORTISE
HINGE



NO. 1209 CHECKING LATCH

CLIMAX LOCK AND VENTILATOR CO.

Builders' Hardware Specialties

FACTORY

654-658 Michigan Street
BUFFALO, N. Y.

PRODUCTS.

We manufacture all kinds of light BUILDERS' HARDWARE, including SASH LIFTS, DOOR PULLS, CUPBOARD TURNS, DRAWER PULLS, VENTILATING SASH LOCKS, DOOR GUARDS and PUSH and KICK PLATES; also, a complete line of HOUSE MAIL-BOXES as well as HALL MAIL-BOXES for Apartment Houses, with Speaking-Tube and Push-Button Attachment.

"CLIMAX" AUTOMATIC VENTILATING SASH LOCK.

The "Climax" Sash Lock (Fig. 1) permits ventilation without sacrificing security. By merely shutting the window without handling the lock, both sashes will lock automatically at the desired point, and can not be again opened any farther until after the window has been shut at top and bottom. The lock can not be pried off with a burglar's jimmy. Even though the pry of a crowbar should break the sash to splinters, the lock will remain in place and be effective. It can not be picked from the outside, as nothing can be inserted between the sashes to remove the bolt from the slide. Nobody can reach over or under the partially opened window to open the lock. Provided it could be reached in this manner it would still be impossible to open it, as the bolt-head is larger than the slot in which it travels and could not be separated. This lock also prevents rattling; as by turning the knob it will draw both sashes together no matter how far they are separated. No cutting or mortising of sash is necessary to attach this lock, which can be fastened on either right or left side of window. One lock per window is sufficient. It is extremely simple in its operation; any child or servant can use it with the greatest ease. A turn of the knob opens it; the mere shutting of the window locks it. The lock does away entirely with center sash locks, as it covers all functions of the same and adds a great many more points of safety and comfort. The window can be opened all the way if desired, by drawing out the bolt-head from the slide and letting it travel over the outside of same. For the "O. G." Sashes, which have a curved extension on each side, we make a bolt with a special angle to fit them.

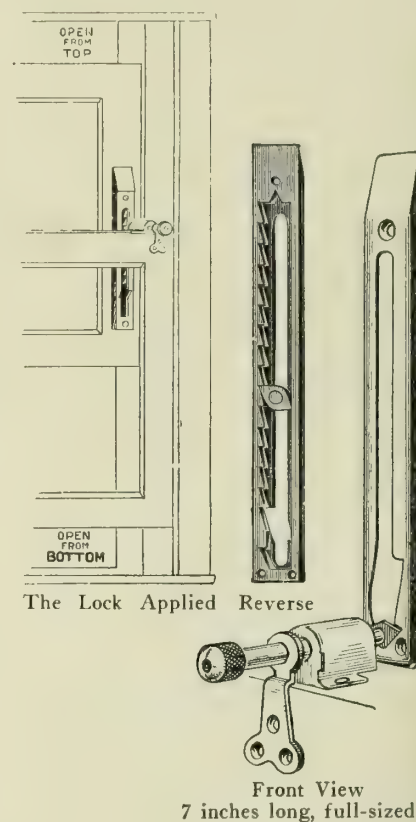


FIG. 1. "CLIMAX" SASH LOCK

PRICE.

Prices in steel, in all hardware finishes, 35 cents each or \$3.50 per dozen. We make this lock in solid brass in all finishes at 50 cents each or \$5.00 per dozen.

"SIMPLEX"
SASH LOCK.

The "Simplex" Sash Lock (Figs. 2 and 3) works on the same lines as the "Climax" Lock. It is impossible to forget to lock the window as it locks itself automatically. It permits the opening of the windows six and one half inches from both top and bottom without sacrificing security. No cutting or mortising of the sash to attach it and it fits easily on all styles of windows including the "O. G." Extension Sashes.

Style B (Fig. 3) can be used on windows that have inside shutters or inside sliding screens.

PRICE.

Price, in steel, in all hardware finishes, 25 cents each or \$2.50 per dozen.

"CLIMAX"
VENTILATING
HINGE.

The "Climax" Safety Hinge (Fig. 4) can only be operated by a person inside the room, and then only after both windows have been shut from top and bottom. It is seven and one half inches in length and permits the opening of the window six and one half inches from top or bottom when the hinge is closed. When the hinge is opened the sash can be raised or lowered all the way. When the window is open this hinge can not be picked like other ventilating devices. Nobody can reach over or under the partially opened window to turn the hinge, nor can anything be inserted between the sashes to accomplish this. The screws are covered and can not be tampered with.

PRICE.

Price in steel, in oxidized copper finish only, 15 cents each or \$1.50 per dozen.

"CLIMAX"
ANTI-
RATTLER.

The "Climax" Anti-Rattler (Fig. 5) prevents rattling of sashes while they are open as well as when they are shut. They are permanently fastened to the sash and can not be mislaid or lost but are always on hand when wanted.

A push with the thumb will drive the same between the sash and frame and absolutely prevent rattling. Made out of tempered steel, antique copper or brass finish. Price 5 cents each or 50 cents per dozen.

DIRECTIONS
FOR
ORDERING.

"Climax" devices may be obtained from local hardware dealers at prices quoted or may be ordered directly from us.

CO-OPERATIVE
SERVICE.

Mounted samples of any of the above described articles, together with our full and minute descriptive illustrated catalogue, will be sent free of cost to architects upon application.

SPECIFICA-
TIONS.

Architects, in specifying our goods, should use the word "Climax" on the four above articles.

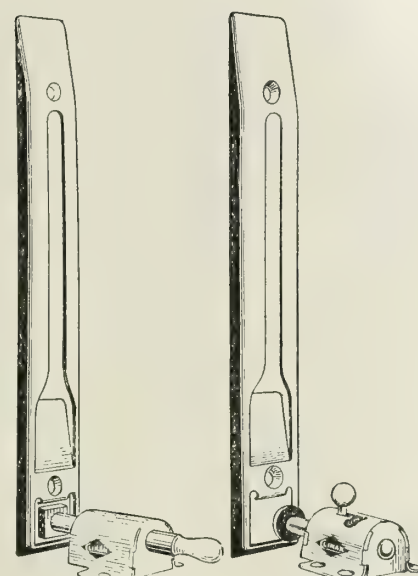


FIG. 2. STYLE A "SIMPLEX" LOCK
FIG. 3. STYLE B "SIMPLEX" LOCK

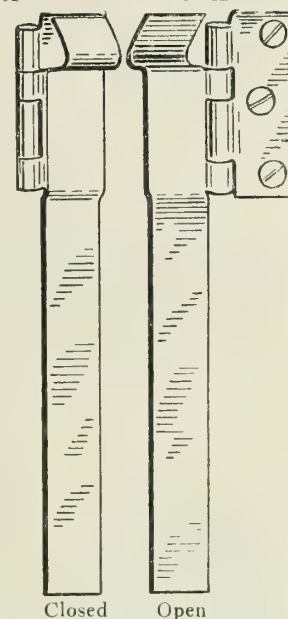


FIG. 4. "CLIMAX" SAFETY VENTILATING HINGE



FIG. 5. "CLIMAX" ANTI-RATTLER

THE COLUMBIAN HARDWARE COMPANY

MANUFACTURERS OF

Spring Hinges, Joist, Wall and Timber Hangers, and Hot-Air and Ventilating Registers
CLEVELAND, OHIO

BRANCH OFFICES

CHICAGO, ILL., 26 East Lake Street

NEW YORK, N. Y., 168 Church Street

PRODUCTS.

We are manufacturers of "COLUMBIAN" WROUGHT-STEEL SPRING HINGES, "COLUMBIAN" BALL-BEARING SPRING HINGES, "COLUMBIAN" FLOOR SPRING HINGES, "GEM" and "AMERICAN" SPRING HINGES, and many other styles of Spring Hinges for LAVATORIES, SCREEN DOORS, etc.; also, "CLEVELAND" and "BUCKEYE" JOIST, WALL and TIMBER HANGERS, and "TU-BO" HOT-AIR and VENTILATING REGISTERS.

"COLUMBIAN"
WROUGHT-STEEL
SPRING
HINGE.

A jamb spring hinge should be, above all things, rigid and substantial, to sustain the heavy weight of the door without sagging, and to swing the door smoothly and steadily.

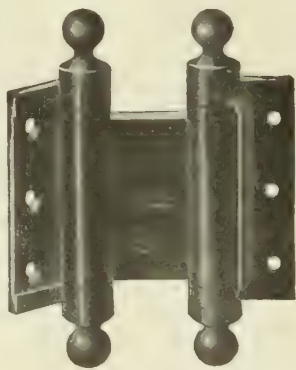
The center flange of the "Columbian" Wrought-Steel Spring Hinge is made of heavy steel and is seamless. This not only lends great strength and solidity to the center flange itself, but, better still, it provides a substantial base on which to build the hinge.

The springs (the working parts of the hinge) are made of heavy, highest-tempered spring-steel wire, are long and coiled closely, so as to give smooth, positive action, and to withstand years of wear and tear.

The "Columbian" is exceedingly simple, is easy to take apart, and works smoothly and noiselessly without rocking or straining. Side flanges are made of heavy steel, reinforced securely at each end to prevent sagging of hinge, making it possible for the hinge to stand up under a heavy strain continuously. The bearing surfaces of the "Columbian" are smooth and perfect. Every hinge is fully guaranteed.



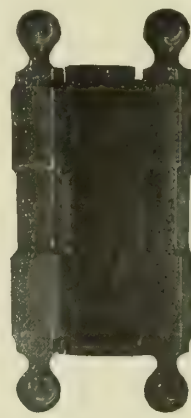
LAVATORY HINGE



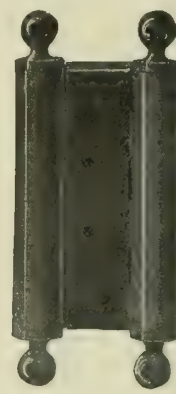
"COLUMBIAN"
WROUGHT-STEEL
SPRING HINGE



"COLUMBIAN" BALL-BEAR-
ING WROUGHT-STEEL
SPRING HINGE



"GEM" CAST-
METAL SPRING
HINGE



"AMERICAN"
CAST-METAL
SPRING HINGE

BALL-BEARING
SPRING
HINGE.

The "Columbian" Ball-Bearing Spring Hinge is almost identical in construction with the hinge described above, but the ball-bearing feature assures an unusually long term of service. Every hinge is fully guaranteed. See following page for description of our "Columbian" Floor Spring Hinge.

"GEM" AND
"AMERICAN"
SPRING
HINGES.

As successors to Van Wagoner & Williams Hardware Co. we have the advantage of fifty years of spring-hinge experience, and we still continue to manufacture the "Gem" and the "American."

For large, heavy doors of banks and other public buildings we recommend our "American" Spring Hinge, especially adapted to such work. The "American" has been on the market for fifty years, and in almost every town in the United States where there are public buildings of that age you will find the original "Americans" still working satisfactorily and as good as new. These are facts which the hardware trade and users will substantiate.

The "Gem" is specially adapted for swinging lighter doors, and has as enviable a reputation as the "American."

FINISH.

All previously mentioned spring hinges are supplied regularly to swing double- or single-acting doors and may be had japanned, plated in any finish, or made of solid bronze or brass metal. In specifying, merely give size of door and dealer will know what size hinge to use.

CATALOGUE.

Catalogue No. 30 describes our complete line of hinges.

"COLUMBIAN"
FLOOR SPRING
HINGE.

In steel construction, I-beams generally come close to the floor, and if the door sets over an I-beam it is necessary to use either a shallow floor spring hinge or dispense with one entirely.

JUST THE
DEPTH OF A
DOUBLE
FLOOR.

The "Columbian" Floor Spring Hinge is only 1 3/4 in. in depth, and is therefore the only floor spring hinge which may be used in such cases, and as it is exactly the depth of a double floor (7/8" rough, 7/8" smooth) it may be set over a joist or I-beam without cutting into same.

EASY TO
REMOVE
DOOR.

The loose top pivot is another unique feature which permits the instantaneous removal of the door without removing any part of the hinge or disturbing the tension. To remove the door, insert a knife blade as shown in Fig. A and raise the pivot, then the door may be released. It may be replaced as easily.

INVISIBLE.

The "Columbian" is practically an invisible floor spring hinge. There are no side plates to disfigure the door and all parts which set in the door are invisible.

TENSION
ADJUSTABLE.

A 1 3/8-in. door may be made of heavy or light wood. To swing a door a little heavier than the ordinary on a "Columbian" the tension may be increased by turning the ratchet. (See Fig. B.) This may be done after the door is in place, in a few seconds, without removing the door. The "Columbian" Floor Spring Hinge, therefore, adapts itself to the individual door in several respects and covers a broad field.

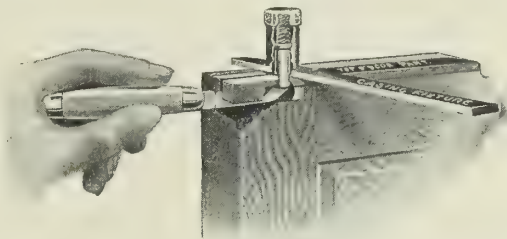


FIG. A. LOOSE TOP PIVOT

EFFICIENCY.

The "Columbian" works smoothly and noiselessly on ball bearings. The strong compression spring is evenly coiled from high-grade oil-tempered spring wire and, being compressed with every movement of the door, each coil does an equal share of work—thus avoiding crystallization.

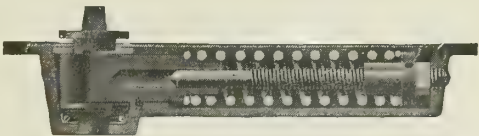


FIG. B. SECTION SHOWING RATCHET SPRING
ADJUSTMENT

HOLD-BACK
AT NINETY
DEGREES.

The "Columbian" is regularly made to "hold-back" when the door is opened ninety degrees, but may be had without this feature if so desired.



FIG. C. ALIGNMENT ADJUSTER

ALIGNMENT
ADJUSTER.

If the carpenter does not "set" the hinge correctly and the door does not come to center, the matter may be remedied quickly by means of the alignment adjuster. (See Fig. C.)

DIMENSIONS.

For doors not larger than	Dimensions of top plates	Depth of Case	Japanned	Antique copper or brass, dull brass, imitation Bower Barff	Bronze or brass- plated	Sand-blast, antique copper or brass
			No.	No.	No.	No.
7 x 2 1/4 ft. x 1 1/2 in.	2 3/10 x 8 15/16 inches	1 3/4 inches	1	611	811	1211
8 x 2 1/2 ft. x 2 in.	2 7/10 x 9 3/16 "	1 3/4 "	2	612	812	1212
9 x 3 ft. x 2 1/2 in.	2 7/10 x 9 1/2 "	1 3/4 "	3	613	813	1213
10 x 3 ft. x 3 1/2 in.	2 7/10 x 9 3/4 "	1 3/4 "	4	614	814	1214

OUR
GUARANTEE.

If you wish to dispense with repair bills specify any of the spring hinges described in these two pages. We guarantee them fully in every respect and they cost no more than inferior makes.

THE CONCEALED TRANSOM LIFT CO.

30-34 West Thirty-Third Street

NEW YORK, N. Y.

PRODUCTS. INTRODUCTION.

The "IDEAL" CONCEALED TRANSOM LIFT.

We herewith present a new invention in the line of hardware appliances that for a long time has been sought on account of its great desirability. Like the mortise lock, the pneumatic door-check, the invisible hinge and the ball-bearing hinge, the Concealed Transom Lift successfully fills a mechanical requirement of universal need in an improved way, and is a contribution to the general progress in building equipment.

COMPARATIVE ADVANTAGES.

The advantages gained by a Concealed Transom Lift over the exposed appliances now in use are almost too obvious to need stating at length. Every one is familiar with the clumsiness and unsatisfactory working of the usual style of transom lifts, their quality of refusing to move, the rods becoming bent, etc., while as to appearance they are a positive defacement of the trim.

To be able to replace such imperfect apparatus by a high-class mechanical contrivance, one that is scientific, powerful, reliable, and in addition is concealed, must indeed be a desideratum long present in the mind of the architect and progressive builder.

ALL CON- CEALED, EXTENT OF SWING.

In the "Ideal" Concealed Transom Lift all parts, as implied by the name, are concealed except only the knob and escutcheon plate; and there is no marring of the trim. The transom is operated by the simple turning of the knob and is held steady at any angle up to 45 degrees, the device serving as both a lock and a stop. No catches, hinges or locks of any kind are required.

CONSTRUC- TION AND OPERATION.

One point we wish to emphasize is that our Lift is not merely some improved form of the push-rod fixture worked by main strength, but an ingenious combination of mechanical movements of which all parts are of highly finished workmanship and of superior materials, so that it is anti-friction in operation and incapable of getting out of order.

The casings enclosing the pinion and through which the cam-rod runs are all made of pressed steel, stamped up on our own dies. The cam is a solid steel casting. All the bearings and the pinion are made of composition bronze or Babbitt metal, thus insuring easy working at all times.

The operation of the lift for opening the transom is as follows: Referring to Figs. 2 and 3 it will be seen that the knob turns the pinion and lifts the rod. This lifts the slotted cam which is solidly welded to the rod and compels the pin-end of the crank to slide downward along the inclined slot of the cam, and in doing so to revolve about its central stem which rests in a bushing and passes through the thickness of the jamb. The revolving pin of the crank projects into the round hole of the plate (Fig. 4) which is let into the face of the jamb on the transom side. The heavy operating plate (Fig. 5) is inserted in the edge of the transom opposite plate 4, and is engaged by the pin-end of the crank, which is shaped to fit into the slot (shown in Fig. 5) and which enters the same for a considerable depth. The turning of the crank transmits a powerful rotary motion upon the plate (Fig. 5) making the sash turn upon its pivot and pivot plate (Figs. 6 and 7), which are let into the opposite edge of the transom and jamb, respectively. The holes marked A on Figs. 2 and 3 are screw-holes; those marked B are guide-pins for the rod. The dotted lines indicate the position of crank when sash is opened to 45 degrees.

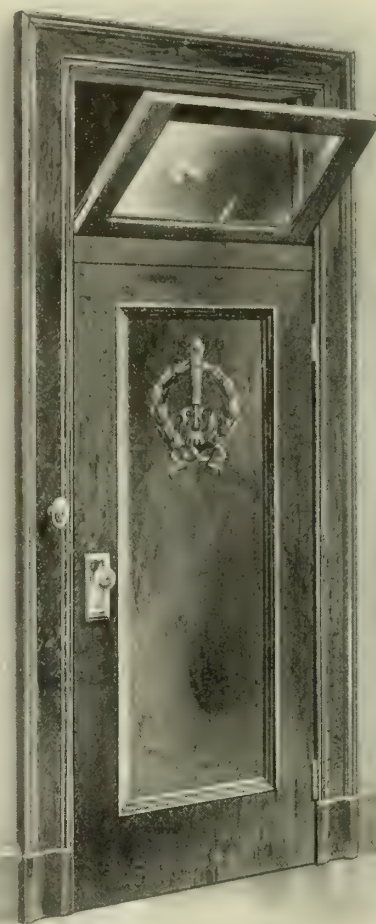


FIG. 1. APPLICATION OF THE "IDEAL" CONCEALED TRANSOM LIFT



FIG. 5. OPERATING PLATE ON SASH



FIG. 6



FIG. 7

PIVOT PLATES

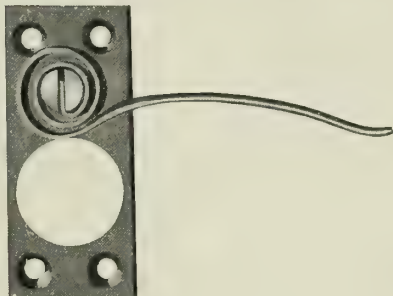


FIG. 4. JAMB PLATE

The spring shown in Fig. 4 works against the curved raised fillet of the operating plate (Fig. 5) to make the motion of the sash easy and steady. The power afforded by the apparatus is such that it will easily turn a heavy plate-glass transom with but slight expenditure of strength.

INSTALLATION.

The installation of the "Ideal" Concealed Transom Lift involves no more work than does the setting of any of the exposed styles of lifts. The principal operations are three in number: first, to bore a $1\frac{1}{4}$ -inch hole through the jamb to receive the crank-bushing; second, to cut the small rebates in the front edge of jamb for the casing-ears; third, to let in the several small plates described into their respective places. A glance at the illustrations explains all this clearly.

Necessarily all the centers of the operating parts of the sash must be in a line. This common center is $1\frac{1}{2}$ -inch back from the front edge of the jamb, to accommodate the fixture. There should be at least $1\frac{1}{4}$ -inch clear space between the back of the jamb and the first stud. The vertical movement of the cam is less than 6 inches and does not interfere with the usual blocking for the jambs.

As the fixture is a completely assembled apparatus all that is necessary to set it is to push the crank-bearing into the $1\frac{1}{4}$ -inch hole from the back of the jamb, then to let the casing-ears drop into their places and screw them fast. With this the transom is ready to hang. It is desirable for finish and easy clearance to set the transom sash between moulded wood jamb-plates. If desired, a small moulded stop can be set on top of this plate on the face opposite the direction of the swing to exclude dust.

The transom bar detail presents no difficulties but depends somewhat on whether the sash is to be swung at the bottom or in the center, for this fixture works equally well in both positions. If hung in the center the usual arrangement of inside and outside cut stops can be used.

In ordering state fully the thickness of jamb, including stop-plates, the distance from transom center to floor, and the distance desired for the operating knob from the floor; also, whether right or left hand fixture is wanted.

Trade circular and prices will be sent promptly upon inquiry.

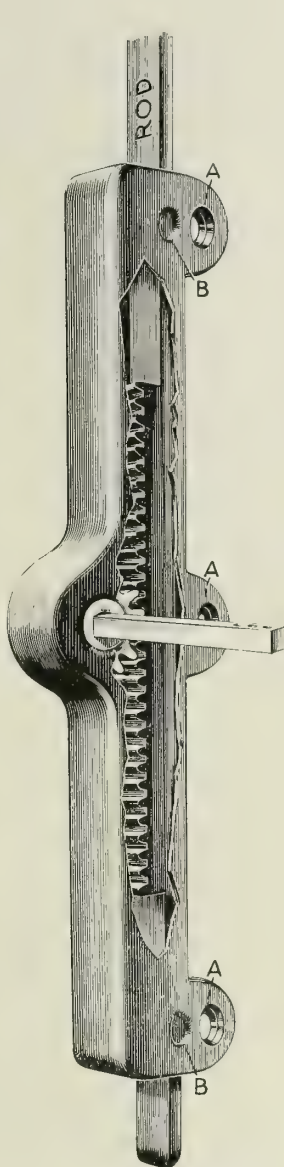


FIG. 2. LOWER PART OF LIFT WITH PINION AND OPERATING KNOB

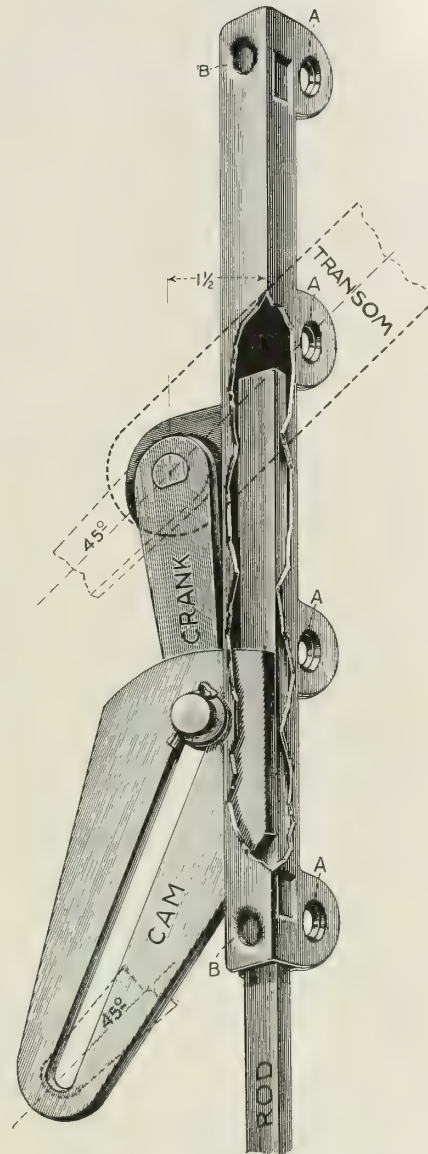


FIG. 3. UPPER PART OF LIFT WITH CAM AND CRANK, SHOWING WORKING

BOTTOM OR CENTER PIVOTED.

ORDERING.

PRICE.

THE COLUMBIAN HARDWARE COMPANY

MANUFACTURERS OF

Joist, Wall and Timber Hangers, Hot-Air and Ventilating Registers,
and Spring Hinges

CLEVELAND, OHIO

BRANCH OFFICES

CHICAGO, ILL., 26 East Lake Street

NEW YORK, N. Y., 168 Church Street

PRODUCTS.

Manufacturers of "CLEVELAND" and "BUCKEYE" JOIST, WALL and TIMBER HANGERS, "TU-BO" REGISTERS, "COLUMBIAN" WROUGHT-STEEL SPRING HINGES, "COLUMBIAN" BALL-BEARING SPRING HINGES, "COLUMBIAN" FLOOR SPRING HINGES, "GEM" and "AMERICAN" SPRING HINGES, and other styles of Spring Hinges for all purposes.

NO LABOR COST.

An item of expense which is seldom considered in figuring on joist and wall hangers is the cost of installation.

"Cleveland" Joist, Wall and Timber Hangers necessitate absolutely no labor cost, as no boring, cutting or fitting is required to install them. The "Cleveland" is regularly supplied with hooked arms having beveled ends which may be driven into the timber with a few blows of the mallet or engage back of the first joist when timbers are built up.

HOT FORGED.

"Cleveland" Hangers are hot forged from a refined superior grade of steel, thus avoiding the possibility of straining or cracking the metal during the process of manufacture.

SCIENTIFICALLY FORMED.

Note the long, even, gradual bends which form a web member in the direct line of strain from seat of joist to point of support, and, with face web against the joist, present a uniform section, thus insuring a constant resistance.

RUST-PROOF.

"Cleveland" Joist Hangers are carefully inspected, then given an asphaltum dip, and are therefore rust-proof.

TIMBERS NOT CRUSHED.

In proportioning the hangers, great care has been taken to provide sufficient bearing for the timbers in order to prevent crushing of the fibers, and in all cases the strength of the hangers themselves greatly exceeds the strength of the beams they are designed to carry.

FACTOR OF SAFETY.

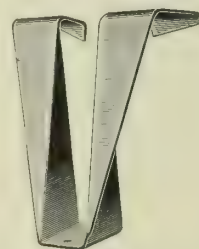
The "Cleveland" Hanger has a factor of safety which is 4 to 10 times greater than the strength of the timber. We absolutely guarantee the factor of safety never to be less than four.

ABSOLUTE SAFETY.

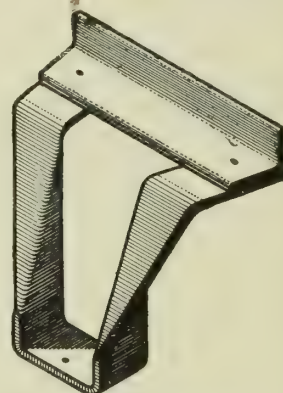
Careful and conscientious architects specify "Cleveland" Joist Hangers because they are assured as to the absolute safety of the hangers, and in no single instance during the entire history of this joist hanger has their confidence in the "Cleveland" been shaken.

"BUCKEYE" HANGERS.

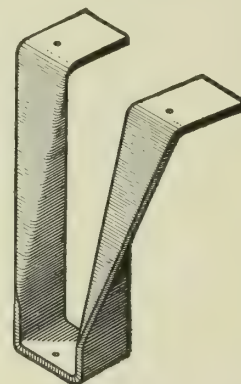
"Cleveland" Hangers are heavier than other makes, but we also manufacture a lighter weight, less expensive hanger called the "Buckeye," which is the same weight as similar makes.



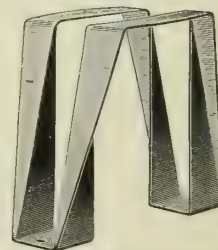
REGULAR SINGLE-HOOK
ARM-STYLE HANGER



WALL HANGER
Shown with Angle Plate



STRAIGHT-ARM JOIST
HANGER



DOUBLE "COLUMBIAN"-
"CLEVELAND" HANGER

DIAMOND EXPANSION BOLT CO.

Expansion Bolts and Specialties

90 West Street

NEW YORK, N. Y.

BRANCH OFFICES

CHICAGO, ILL., 49 Lake Street
BOSTON, MASS., 46 Cornhill
MONTREAL, CANADA, 446 St. Paul Street

ST. LOUIS, MO., 811 Chemical Building
BERKELEY, CAL., 2629 Piedmont Avenue
NEW ORLEANS, LA., 917 Hibernia Building

FACTORY
GARWOOD, N. J.

PRODUCTS.

Manufacturers of "DIAMOND" EXPANSION BOLTS, "DIAMOND" SCREW ANCHORS, "KEYSTONE" EXPANSION BOLTS (Single and Double), "DIAMOND N" DRILLS and DRILL HOLDERS and POINTS, TOGGLE BOLTS, CABLE CLAMPS, "MARLIN" CABLE HANGERS, BRIDLE RINGS, DUCT RODS, INSULATOR PINS, CONCRETE WALL ANCHORS.

TWO-PART EXPANSION SHIELDS.

The Two-part "Diamond" Expansion Shield is made of malleable iron and is used in connection with standard lag screws of any size. This bolt is used in securing fixtures to brick, stone and concrete and does not require pipe sleeves.

LIST PRICES PER 100 SHIELDS
Malleable. Based on Diameter of Screw

$\frac{1}{4}$ "	$\frac{5}{16}$ "	$\frac{3}{8}$ "	$\frac{1}{2}$ "	$\frac{5}{8}$ "	$\frac{3}{4}$ "	$\frac{7}{8}$ "	1"	1 $\frac{1}{4}$ "
\$8.50	\$9.00	\$12.00	\$19.80	\$25.00	\$36.00	\$48.00	\$60.00	\$90.00

ONE-PART EXPANSION SHIELDS.

The One-Part "Diamond" Expansion Shield or Screw Anchor is made of composition metal and is designed to be used where a heavier bolt is not required. Used in connection with wood screws from No. 5 to 24. The correct bolt to use with tile, marble, granite, and by plumbers and the electrical trade.

LIST PRICES PER 100 ANCHORS

NO.	SCREW	LENGTH OF SHIELD	OUTSIDE DIAMETER	PRICE PER 100
$\frac{1}{8}$ x $\frac{1}{2}$ "	No. 5-6-7	$\frac{1}{2}$ "	$\frac{1}{4}$ "	\$2.65
$\frac{1}{8}$ x $\frac{5}{8}$ "	5-6-7	$\frac{5}{8}$ "	$\frac{1}{4}$ "	2.65
$\frac{1}{8}$ x $\frac{3}{4}$ "	5-6-7	$\frac{3}{4}$ "	$\frac{1}{4}$ "	2.65
$\frac{3}{16}$ x $\frac{1}{2}$ "	8-9-10-11	$\frac{1}{2}$ "	$\frac{5}{16}$ "	3.00
$\frac{3}{16}$ x $\frac{3}{4}$ "	8-9-10-11	$\frac{3}{4}$ "	$\frac{5}{16}$ "	3.00
$\frac{3}{16}$ x 1"	8-9-10-11	1"	$\frac{5}{16}$ "	3.00
$\frac{3}{16}$ x 1 $\frac{5}{8}$ "	9-10-11	1 $\frac{5}{8}$ "	$\frac{5}{16}$ "	3.75
$\frac{1}{4}$ x $\frac{1}{2}$ "	12-13-14	$\frac{1}{2}$ "	$\frac{3}{8}$ "	3.35
$\frac{1}{4}$ x $\frac{3}{4}$ "	12-13-14	$\frac{3}{4}$ "	$\frac{3}{8}$ "	3.35
$\frac{1}{4}$ x 1"	12-13-14	1"	$\frac{3}{8}$ "	3.35
$\frac{1}{4}$ x 1 $\frac{1}{2}$ "	12-13-14	1 $\frac{1}{2}$ "	$\frac{3}{8}$ "	4.05
$\frac{1}{4}$ x 2 $\frac{1}{2}$ "	12-13-14	2 $\frac{1}{2}$ "	$\frac{7}{8}$ "	5.36
$\frac{5}{16}$ x $\frac{3}{4}$ "	15-16-17-18	$\frac{3}{4}$ "	$\frac{7}{8}$ "	3.75
$\frac{5}{16}$ x 1"	15-16-17-18	1"	$\frac{7}{8}$ "	3.75
$\frac{5}{16}$ x 1 $\frac{3}{8}$ "	15-16-17-18	1 $\frac{3}{8}$ "	$\frac{9}{8}$ "	4.31
$\frac{5}{16}$ x 1 $\frac{1}{2}$ "	15-16-17-18	1 $\frac{1}{2}$ "	$\frac{9}{8}$ "	4.50
$\frac{3}{8}$ x 1 $\frac{1}{4}$ "	22-23-24	1 $\frac{1}{4}$ "	$\frac{9}{8}$ "	5.65

"KEYSTONE" EXPANSION BOLTS.

The "Keystone" Machine Expansion Bolts (single and double) are used for the same purposes as the above shields, but are specially designed to be used in work where a machine bolt is preferred to lag screws.

DRILLS AND DRILL HOLDERS AND POINTS.

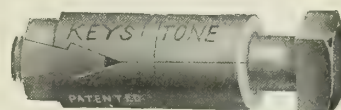
The "Diamond N" Star-Face and Pipe Drills are used for drilling into stone, concrete or brick. The "Diamond N" Drill Holder and Points are used for the same purpose, but at the same time afford an easy method of carrying a number of drills in compact form.



TWO-PART DIAMOND EXPANSION SHIELD



ONE-PART "DIAMOND" EXPANSION SHIELD OR SCREW ANCHOR



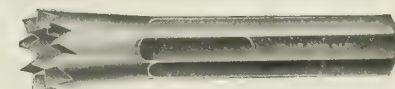
SINGLE EXPANSION BOLT



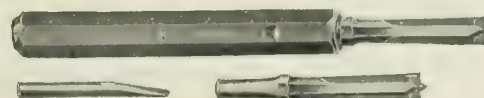
DOUBLE EXPANSION BOLT



"DIAMOND N" STAR-FACE DRILL



"DIAMOND N" PIPE DRILL



"DIAMOND N" DRILL HOLDER AND POINTS

THE DUPLEX HANGER CO.

MANUFACTURERS OF

The Duplex Joist Hangers and Post Caps
CLEVELAND, OHIO

EASTERN REPRESENTATIVE

S. KAHN, 1 Madison Avenue, New York, N. Y.

BELL TELEPHONE, EAST 1873

PRODUCTS.

We are the sole manufacturers of the "DUPLEX" JOIST, WALL and I-BEAM HANGERS, "DUPLEX" POST CAPS made of Steel or Malleable Iron, "DUPLEX" POST BASES. We also manufacture "DUPLEX" PIPE and SHAFT HANGERS, for Concrete Floor Construction; "CLEVELAND" STEEL WALL TIES and CORRUGATED FLAT WALL TIES. All of the above articles are covered by United States Patents.

"DUPLEX" JOIST HANGERS.

The "Duplex" Joist Hangers are the best, strongest, and most reliable Joist Hangers manufactured for use in connection with framing floor beams and girders.

The "Duplex" Wall Hangers are without an equal for carrying timber clear of the wall and permitting the same to be self-releasing, preventing the decay of timber by dry-rot, and by giving increased bearing and distributing the weight over a greater surface on the wall.

TESTS.

"Duplex" Hangers are of the best quality of malleable iron, and every hanger is thoroughly tested. We will gladly forward reports of tests on "Duplex" Joist and Wall Hangers and "Duplex" Post Caps, made under the supervision of the Massachusetts Institute of Technology, at Boston, the University of Columbia, and Building Inspectors and Engineers of many cities in the United States.

"DUPLEX" JOIST AND WALL HANGER FOR MILL CONSTRUCTION.

These Joist Hangers (Fig. 5) are specially designed for use in work where very heavy loads are to be carried. They are made in one or two parts, to be used single or in pairs for framing.

The extra heavy wall hanger (Fig. 4) is made out of open-hearth steel plates and angles. This hanger gives 8 inch bearing on the wall and provides for 8 inch bearing for the timber.



FIG. 3. "DUPLEX" I-BEAM HANGER



FIG. 1. "DUPLEX" JOIST HANGER

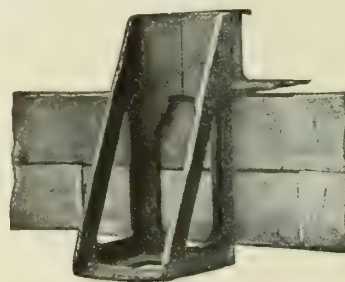


FIG. 2. "DUPLEX" WALL HANGER

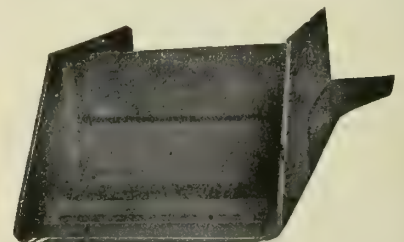


FIG. 4. EXTRA HEAVY "DUPLEX" WALL HANGER

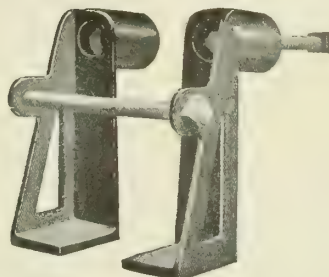


FIG. 5. "DUPLEX" JOIST HANGER FOR HEAVY MILL CONSTRUCTION



6. "DUPLEX" CONCRETE BLOCK HANGER



FIG. 7. "DUPLEX" STEEL POST CAP

INDORSEMENT.

The following indorsement has been given by Mr. Kidder, author of "The Architects and Builders Pocket Book," pages 713-717:

"CONNECTION OF FLOOR BEAMS AND GIRDERS—To render the construction slow-burning, and particularly the girders, it is important that there be no hollow space between the top of the girders and the flooring, or that the tops of the floor beams shall be flush with the top of the girders. This, of course, necessitates framing the floor beams to the girders. For heavy construction the only kind of framing that is permissible is by means of some form of joist hanger. The various forms of joist hangers now on the market have been illustrated and commented on in Chapter XXI. When the floor beams are 6 in. x 12 in., or larger, and the girders are of wood, the author would give the preference to the 'Duplex' Hanger."

"DUPLEX"
WALL
HANGER.

The form and manner in which the "Duplex" Wall Hanger is applied gives an increased bearing for the timber, and permits its release from the masonry in case of fire, and also prevents the decay of the timber from dry-rot.

Mr. Kidder, in his latest work on construction, says:

"For distributing the weight on the wall there is certainly no wall hanger now on the market which approaches the 'Duplex'."

On page 717 he says:

"This illustration shows 'Duplex' Wall Hangers for large timbers. The hanger shown is made extra heavy and is provided with a plate that has eight inches of bearing on the wall and the bearing of the timbers on the hanger is also eight inches. For beams not exceeding ten inches in breadth there is probably little choice between box anchors and wall hangers, except perhaps in price and appearance. When the wall hanger is used no hole is left in the wall and a saving of six inches in the length of the timber is effected, which in some cases would be a consideration. For girders 12" x 14" and upward, the author believes the 'Duplex' Hanger to be preferable to the box anchor. Wall hangers made from stirrups should not be used for heavy beams."

ADVANTAGES.

A reduced rate of insurance is always granted where "Duplex" Hangers are used in buildings. The Inspection Department of the Associated Factory Mutual Fire Insurance Companies of Boston accept the use of "Duplex" Hangers and Post Caps in their risks. A number of tests recently made under the supervision of Underwriters' Laboratories of the National Board of Fire Underwriters at Chicago, has proved that "Duplex" Hangers and Post Caps will withstand the most severe fire. A copy of the reports of these tests will be furnished upon application by the company. Indorsed by the Building Commissioners throughout the United States and Canada.

The "Duplex" I-Beam Hangers (Fig. 3) are the most economical and practical method of framing wood joist to I-Beams.

The "Duplex" Concrete Block Hangers (Fig. 6) are so designed as to give a very large bearing for the hanger on the concrete block to distribute the load and prevent the crushing of the concrete block and will fit between the mortar joints of the block without any cutting of the block.

"DUPLEX"
STEEL
POST CAP.

This cap (Figs. 7 to 10) is made of open-hearth steel plates varying in thickness from $\frac{1}{4}$ to $\frac{1}{2}$ inch, according to the size of post and the girders to be carried. The weight of the girder is carried on the shoulder formed on the post. The heavy bolts underneath the bearing brackets relieve the outer edge of the bracket and transmit the load direct to the post. The outer bolt is directly underneath the bearing bracket, while the inner bolts are close up against the post and with the side plates form a complete cap. The Post Caps are fastened to the posts by lag-screws forming a most rigid construction and virtually making a continuous post. On account of its simple construction the "Duplex" Post Cap lends itself very readily to any desired detail and we illustrate herewith a few of our regular stock sizes. We carry a complete assortment of all shapes in stock and can fill orders promptly.

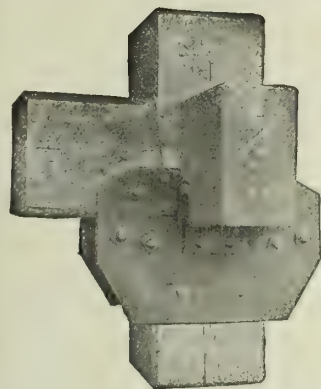


FIG. 8. "DUPLEX" STEEL POST CAP

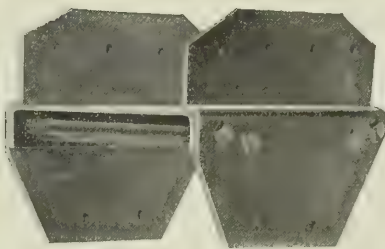


FIG. 9. "DUPLEX" STEEL POST CAP

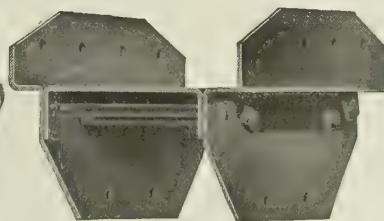


FIG. 10. "DUPLEX" STEEL POST CAP

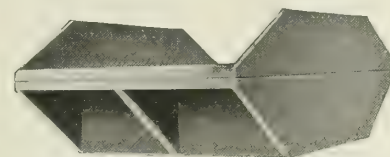


FIG. 11. "DUPLEX" MALLEABLE-IRON POST CAP NO. 1

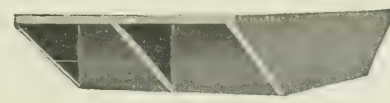


FIG. 12. "DUPLEX" MALLEABLE-IRON POST CAP NO. 2

"DUPLEX"
MALLEABLE-
IRON POST
CAP.

"DUPLEX"
MALLEABLE
IRON POST
CAP NO. 2.

Duplex Malleable-Iron Post Cap (Fig. 11) is made in two pieces, so as to be able to fit any size post and girder, and at the same time provides for double carrying capacity for heavy work. The great superiority of malleable iron over cast-iron is thoroughly appreciated by competent engineers and architects. The malleable-iron cap will not break off in fire when subjected to cold water, which is the great defect of cast-iron.

Fig. 12 shows a cap which is in common use in cast-iron. Made in malleable-iron the cap is stronger and cheaper. At a recent test, a cap for 10 x 10 inch post was tested to 168,000 pounds without showing a sign of failure.

"DUPLEX"
MALLEABLE-
IRON WALL
PLATES.
"CLEVE-
LAND" STEEL
WALL TIES.

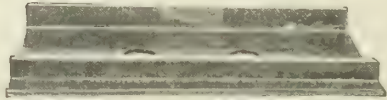


FIG. 13. "DUPLEX" MALLEABLE-IRON WALL PLATE

These Plates (Fig. 13) are made and carried in stock in all sizes for beams from 6 to 18 inches wide. Prices are much lower than cast-iron.

We manufacture the "Cleveland" Galvanized Steel Wall Tie (Fig. 14) and Galvanized Flat Wall Tie (Fig. 15) for bonding terra-cotta and pressed-brick facings to common brick walls.

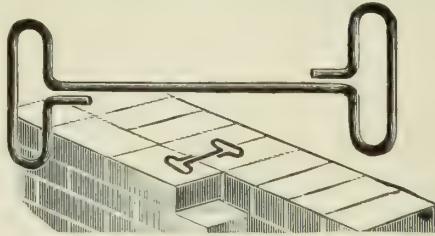


FIG. 14. "CLEVELAND" STEEL WALL TIE

Straight Style, Patented

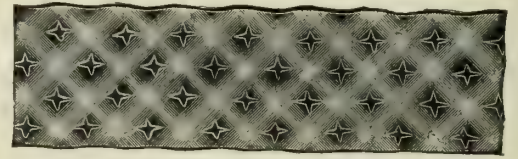


FIG. 15. "CLEVELAND" GALVANIZED CORRUGATED WALL TIE

PRICES.
TESTS BY UN-
DERWRITERS'
LABORATORIES.
FIRE TEST.

Catalogue, price-list, and discount on application.

These tests were made to determine the nature of recommendations to be made covering the introduction and use of the appliance pending the adoption of standard requirements.

Standard testing apparatus for fire and load tests was used.

The cap to be tested and upper and lower struts were enclosed in a small brick furnace which was supported independently of the system by which the load was applied. Gas was applied through four blast-burners so arranged as to cause the flame to impinge upon front and rear faces of cap and also upon the lower surface.

The front of the furnace was pulled down at the end of each test in order to allow the application of a hose stream.

Tests were continued for fourteen minutes, during which time the wood girders burned and crushed considerably. After the fourteen minutes' test a stream $\frac{7}{8}$ inch in diameter, pressure 60 pounds at base of nozzle and tip 20 feet from cap, was applied.

After removal from the furnace the ends of the cap were deflected downward slightly in a uniform curve. Several slight marks were noticeable but of only very slight width.

In these tests the wooden members were so charred and crushed that it was evident that the failure would come from the weakening of the timbers rather than from the failure of the cap.

These tests show that the Hangers, Post Caps, etc., are strong enough to carry safely their rated loads when cold.

COLD TEST.

A Duplex Steel Post Cap made up of two side-plates and one bearing bracket, all being made of $\frac{1}{4}$ -inch open-hearth steel plates bolted together with 4 bolts, $\frac{3}{4}$ inch in diameter, was placed on a wooden post 12 x 12 by 18 inches high. Two wooden blocks 12 x 12 inches were placed on the bearing bracket, leaving a space in the center of the post cap 12 x 12 inches, in order to allow for upper post. Two steel plates were placed upon the two blocks, then a steel I-beam was placed across to distribute the weight of the testing machine uniformly on both sides or ends of the post cap. At 125,000 pounds the blocks crushed very badly and the I-beam buckled. The test was therefore stopped: the wooden blocks were removed and solid steel blocks 5 x 5 x 12 inches wide were placed on each end of the bearing bracket and the weight was applied directly on these blocks. At 175,000 pounds the limit of the Testing Machine was reached. The post cap was thoroughly examined by us, and as shown on photograph attached hereto, showed but a slight deflection in the bearing bracket, amounting to less than $\frac{1}{4}$ inch at the outer edge. All the bolts as well as the side plates were in perfect condition and the post cap showed no sign of failure.

RESULT.

The Duplex Post Caps and Hangers furnished with Underwriters' Label reduce the rate of insurance on all mill constructed buildings.

The Underwriters' Laboratories have also made exhaustive tests on our Wall Hangers, the results showing that they are capable of standing considerably more stress than their rated capacity, resulting in their being approved.



UNDERWRITERS' LABEL

THE DUPLEX SHEAR LOCK CO.

Marquette Street
CLEVELAND, OHIO

PRODUCT. Manufacturers of the "DUPLEX" SHEAR LOCK, for holding rigidly the shear arm to the reinforcing bar in reinforced-concrete construction.

DESCRIPTION. As shown by the accompanying illustrations, the "Duplex" Shear Lock is an exceedingly simple device for attaching the stirrups rigidly to the bar and it places the bar at the proper height above the false work. It also provides means for the suspension of gas pipes, electric conduits, or any other overhead construction. It takes only a few Shear Locks to connect a frame rigidly. Either round, square or twisted bars may be used according to the engineer's design.

"Duplex" Shear Locks are designed for single or for two or three bar connections.

SHEAR LOCK
FOR USE AS
HANGERS.

All the designs are of a uniform height and are furnished tapped for $\frac{3}{8}$, $\frac{1}{2}$ or $\frac{5}{8}$ inch bolts, when required as hangers for gas piping, sprinkler systems, etc.

FACILITIES.

We are prepared to furnish unit frames connected with Duplex Shear Locks in any desired size or design and can ship promptly.

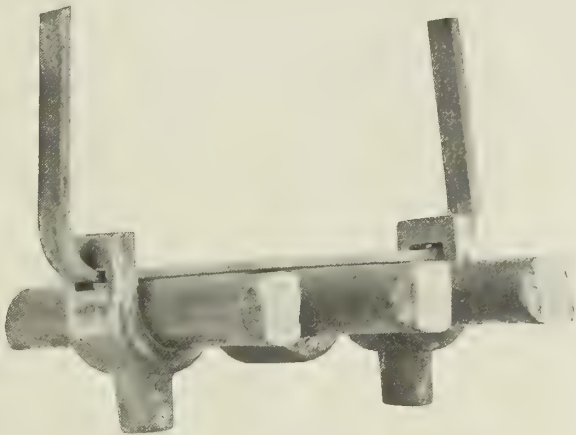
TESTS.

Tests have been made to determine the sliding resistance of plain round bars equipped with the "Duplex" Shear Lock with the following results:

Bars simply locked in device, $\frac{3}{4}$ " round, $\frac{3}{16}$ " x $\frac{5}{8}$ " strap, average of ten specimens carried 329 pounds; 1" round, $\frac{3}{16}$ " x $\frac{5}{8}$ " strap, average of eleven specimens carried 348 pounds.

Bars locked in device sealed with neat cement, two weeks old, specimens moistened twice each day, $\frac{3}{4}$ " round, $\frac{3}{16}$ " x $\frac{5}{8}$ " strap, average of five specimens carried 1160 pounds; 1" round, $\frac{3}{16}$ " x $\frac{5}{8}$ " strap, average of five specimens carried 1647 pounds.

Official report of this test will be furnished on application.



SHEAR LOCK DESIGNED FOR USE IN
ASSEMBLING UNIT FRAMES



SHEAR LOCK
TAPPED FOR BOLT



SHEAR LOCKS APPLIED TO SQUARE, ROUND OR TWISTED BARS

GARDNER SASH PULLEY CO.

CHICAGO, ILL.

PRODUCTS.

Manufacturers of STANDARD "GARDNER" MULLION WINDOW PULLEYS; ANTIFRIC-TION WINDOW PULLEYS; "GARDNER" BALL-BEARING WINDOW PULLEYS; COUNTERBAL-ANCED PULLEYS; SHOW-CASE PULLEYS; BALL-BEARING SHOW-CASE SHEAVES and TRACK; "GARDNER" VENTILATING SASH BOLTS; "GARDNER" STEEL SASH RIBBON; "GARDNER" INDESTRUCTIBLE STEEL SASH LOCKS; "GARDNER" STAIR RAIL BRACKETS, BALL-BEARING ELEVATOR SHEAVES, METAL FRAME WINDOW PULLEYS, etc.

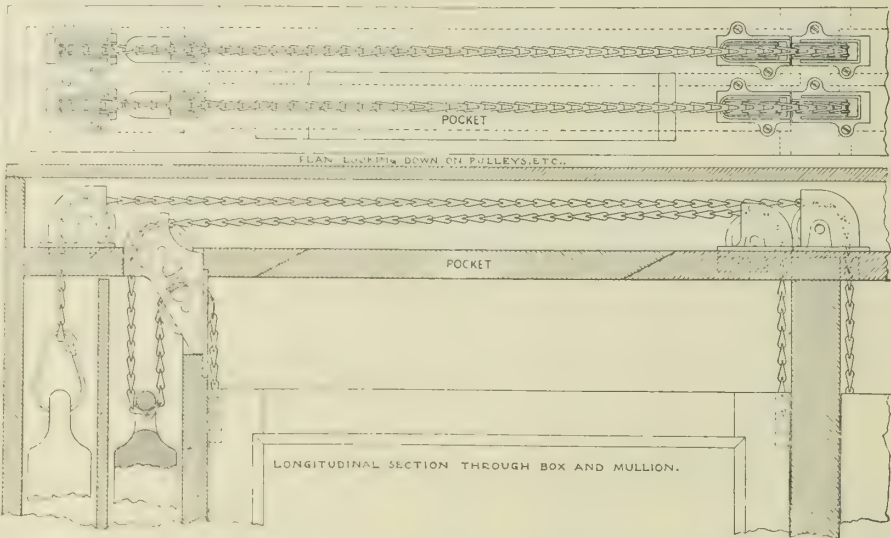
"GARDNER" MULLION WINDOW PULLEYS
FOR TWO WINDOWS AND ONE MULLION

Finish	2 1/4-Inch	2 1/2-Inch
	Chain Wheel	Chain Wheel
Polished lacquered amber bronze	3050	3055
Polished electro bronze	3051	3056
Polished bronze metal-face iron wheel	3052	3057
Polished bronze metal-face bronze wheel	3053	3058

FOR THREE WINDOWS AND TWO MULLIONS

Finish	2 1/4-Inch	2 1/2-Inch
	Chain Wheel	Chain Wheel
Polished lacquered amber bronze	3065	3070
Polished electro bronze	3066	3071
Polished bronze metal-face iron wheel	3067	3072
Polished bronze metal-face bronze wheel	3068	3073

Specify Pulleys by size and number



STANDARD "GARDNER" MULLION WINDOW PULLEYS ARRANGED FOR TWO WINDOWS AND ONE MULLION AND THREE WINDOWS AND TWO MULLIONS

All chains have central alignment with sash and weights. Only one weight is required for each sash, resulting in smooth running windows.

"GARDNER"
STANDARD
TURNED
WHEEL AND
AXLE
PULLEY.

These Pulleys are made especially for first-class work and are guaranteed A No. 1. We recommend our Ball-Bearing Pulleys where specially fine results are required. Wheels are furnished for either Rope, Chain or Ribbon. These pulleys are also furnished with antifric-tion or roller bearings and gun-metal pins when required.
We make a specialty of Metal-Frame Window Pulleys and can meet all particular pulley problems connected with such windows.

SIZES AND CATALOGUE NUMBERS
ROUND END

Finish	2 1/4 ins. x 3/4 in.			2 1/2 ins. x 3/8 in.			2 3/4 ins. x 1/2 in.			3 ins. x 1/2 in.		
	Size of face, 1 1/4 ins. x 5 3/4 ins.			Size of face, 1 1/4 ins. x 6 ins.			Size of face, 1 1/4 ins. x 6 ins.			Size of face, 1 1/8 ins. x 6 1/4 ins.		
	2 1/4-in. Ribbon Wheel	2 1/4-in. Chain Wheel	2 1/4-in. Rope Wheel	2 1/2-in. Ribbon Wheel	2 1/2-in. Chain Wheel	2 1/2-in. Rope Wheel	2 3/4-in. Ribbon Wheel	2 3/4-in. Chain Wheel	2 3/4-in. Rope Wheel	3-inch Ribbon Wheel	3-in. Chain Wheel	3-in. Rope Wheel
Rough finish	1079	1092	1105	1157	1170	1183	1235	1248	1261	1313	1326	1339
Polished lacquered, amber bronze	1080	1093	1106	1158	1171	1184	1236	1249	1262	1314	1327	1340
Polished lacquered, seal brown	1081	1094	1107	1159	1172	1185	1237	1250	1263	1315	1328	1341
Polished bronze, electroplated	1082	1095	1108	1160	1173	1186	1238	1251	1264	1316	1329	1342
Polished old copper, electroplated	1083	1096	1109	1161	1174	1187	1239	1252	1265	1317	1330	1343
Polished imitation bower barff, electroplated	1084	1097	1110	1162	1175	1188	1240	1253	1266	1318	1331	1344
Polished lemon brass, electroplated	1085	1098	1111	1163	1176	1189	1241	1254	1267	1319	1332	1345
Polished bronze face and iron wheel	1088	1101	1114	1166	1179	1192	1244	1257	1270	1322	1335	1348
Polished bronze face and bronze wheel	1089	1102	1115	1167	1180	1193	1245	1258	1271	1323	1336	1349

NOTE.

We manufacture the above pulleys either round or square ends.



"GARDNER"
STANDARD
CHAIN
WHEEL
SASH PULLEY

GRANT PULLEY AND HARDWARE COMPANY

"Grant" Overhead Pulleys and "American" Wrought-Steel Sash Pulleys
"Atlas" Ball-Bearing Door Hanger

3 West Twenty-Ninth Street
NEW YORK, N. Y.

SELLING REPRESENTATIVES

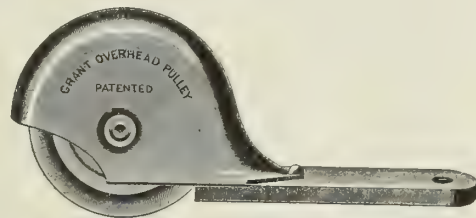
ALBANY, N. Y., ALBANY HARDWARE & IRON CO.
BALTIMORE, MD., F. H. DAVIDSON CO.
BOSTON, MASS., AUSTIN & EDDY, BAY STATE HARDWARE CO.,
BURDITT & WILLIAMS, CHANDLER & BARBER, J. B. HUNTER & CO.
BIRMINGHAM, ALA., H. F. CHENOWETH
BUFFALO, N. Y., MANUFACTURERS' AGENCY
CHICAGO, ILL., JOHN C. BOLD
CINCINNATI, OHIO, LAWRENCE MENDENHALL
CLEVELAND, OHIO, W. BINGHAM CO.
DENVER, COLO., WILLIAM H. CLARK
LOUISVILLE, KY., BELKNAP HARDWARE & MFG. CO.
SYRACUSE, N. Y., ALEXANDER GRANT'S SONS
TROY, N. Y., J. M. WARREN & CO.
TORONTO, CAN., J. L. VOKES & SON

SEATTLE, WASH., INESON J. KOHLER
WORCESTER, MASS., DUNCAN & GOODELL CO.
MILWAUKEE, WIS., THE PHILIP GROSS HARDWARE CO.
NASHVILLE, TENN., J. H. FALL & CO.
PHILADELPHIA, PA., AMERICAN PULLEY CO., MURTA, APPLE-
TON & CO.
PITTSBURG, PA., STEINER & VOEGTLY HARDWARE CO.
PORTLAND, ORE., HONEYMAN HARDWARE CO.
PROVIDENCE, R. I., BELCHER & LOOMIS HARDWARE CO., UNION
HARDWARE & ELECTRIC SUPPLY CO.
ROCHESTER, N. Y., MATHEWS & BOUCHER
ST. LOUIS, MO., SEIDEL MFG. CO.
SAN FRANCISCO, CAL., WATERHOUSE & PRICE CO.
TOKIO, JAPAN, T. ITO & Co.

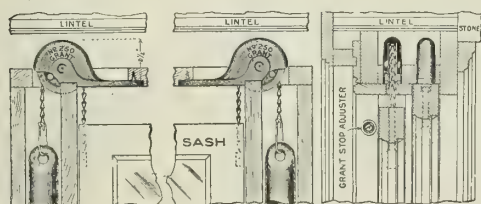
PRODUCTS.

We are manufacturers of ROLLER and BALL-BEARING "GRANT" OVERHEAD PULLEYS for SINGLE, TWIN, TRIPLE, and QUADRUPLE WINDOWS; also, "GRANT" SHOW-CASE PULLEYS, "GRANT" BALL-BEARING NOISELESS DOOR SHEAVES and FLUSH TRACK; "GRANT" No. 10 PRESSED-STEEL PULLEYS for METAL FRAMES; "GRANT" WINDOW-STOP ADJUSTERS; "GRANT" SASH FIXTURES; "GRANT" SASH CHAIN, BRONZE and COPPERED STEEL; "TURNER" PATENT ANTI-FRICTION DRAWER SLIDES and SUPPORTS; "GRANT" ANTI-FRICTION VERTICAL PIVOT LIFTS, "GRANT" ANTI-FRICTION CASEMENT WINDOW DEVICE.

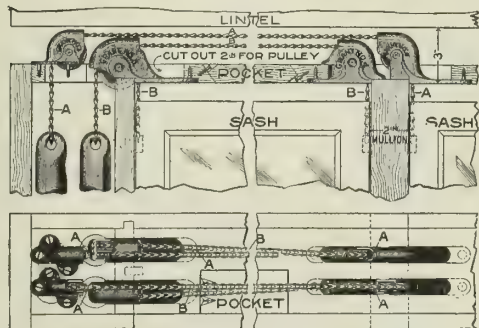
Selling Agents for "AMERICAN" PLAIN AXLE, ROLLER- and BALL-BEARING STEEL (Side) SASH PULLEYS; COMMON SENSE, EAGLE, TOP-NOTCH SASH PULLEY; "VON DUPRIN" SELF-RELEASING SAFETY FIRE EXIT DEVICES; "HOWARTH" REVERSIBLE SASH CENTER and PIVOTS; "GEISEY" VERTICAL PIVOT LIFTS; "GEISEY" CASEMENT WINDOW FIXTURES; "ATLAS" BALL-BEARING DOOR HANGERS; METAL CASEMENT WINDOWS. All our goods are protected by United States Patents.



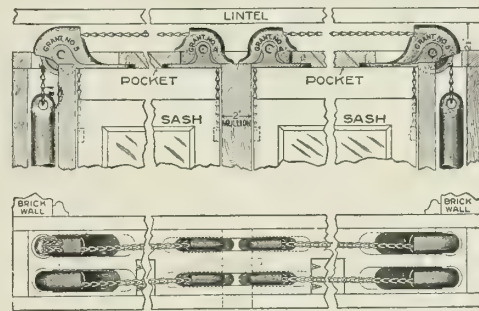
"GRANT" OVERHEAD BALL-BEARING PULLEY (PATENTED)



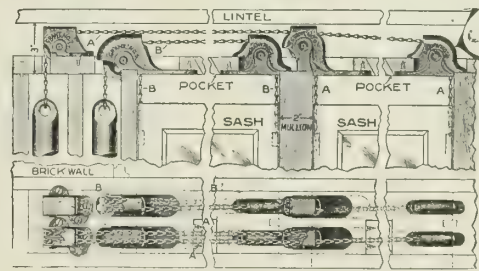
SINGLE-FRAME WINDOW AND SECTION OF FRAME



"GRANT" PULLEYS FOR TRIPLET WINDOWS



"GRANT" PULLEYS FOR TWIN WINDOWS



"GRANT" PULLEYS FOR QUADRUPLE WINDOWS

"GRANT"
OVERHEAD
PULLEYS.

In the "Grant" Overhead Pulleys the housings are made in one piece, so they will resist any load without breaking. The housings connect with the soffit, so the mortar can not clog the wheels. The chain or cord is easily inserted with a mouse, which is furnished with every order.

On account of the additional pocket room gained by the use of "Grant" Pulleys, iron weights can be used, instead of lead, for the heaviest plate-glass windows, thus materially reducing the cost. The frames are cut for these pulleys by a regular pulley machine.

THE
"GRANT"
CASEMENT
WINDOW.

A casement window, opening into the room fitted with a "Grant" Antifriction device, will fill a long-felt want by giving, without changing the natural appearance, an inexpensive and absolutely weatherproof casement window.

This device is made on a well-known mechanical principle, is easy to operate, simple and strong in construction and can not get out of order. It also does away with the use of casement bolts, as the windows are unlocked and opened simultaneously by raising the handle.

"GRANT"
ANTI-
FRICTION
VERTICAL
PIVOT
LIFT.

The "Grant" Antifriction Pivot Lift has been patented and put on the market to meet the demands of architects for a weatherproof window pivoted top and bottom which can be quickly and easily opened for ventilation and cleaning. By using this antifriction device the heaviest and largest plate glass windows can be opened with as little effort as the ordinary double-hung windows with counterbalanced weights.

"TURNER"
PATENT
ANTI-
FRICTION
DRAWER
SLIDES.

The "Turner" Patent Antifriction Drawer Slides and Supports are absolutely noiseless. When fitted with the "Turner" attachment a drawer can not fall from the case when pulled out suddenly, nor can it sag, if heavily loaded, when opened to its utmost limit. This attachment is easily applied to any drawer; it is never out of order, is noiseless, durable, and inexpensive, and enables a heavily loaded drawer to slide as easily as an empty one. We shall be glad to submit details and samples, either direct or through our agents.

REFERENCES.

A partial list of recent buildings equipped with pulleys sold by the GRANT PULLEY AND HARDWARE COMPANY:

BUILDING
New York Stock Exchange
Second National Bank
Hotel St. Regis
Plaza Hotel
Title Guarantee & Trust Co.
German-American Ins. Bldg.
J. D. Rockefeller, Residence
Carnegie Technical Schools
United States Naval Training Station Buildings
United States Military Academy
Singer Building
Whitney Central National Bank

LOCATION
New York, N. Y.
New York, N. Y.
New York, N. Y.
New York, N. Y.
New York, N. Y.
New York, N. Y.
Pocantico Hills, N. Y.
Pittsburg, Pa.
North Chicago, Ill.
West Point, N. Y.
New York, N. Y.
New Orleans, La.

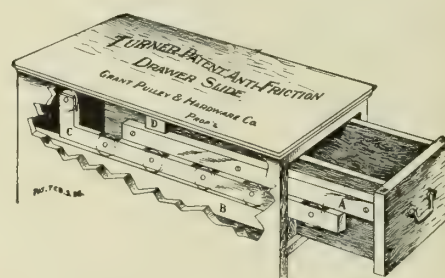
ARCHITECT
Geo. B. Post
McKim, Mead & White
Trowbridge & Livingston
H. J. Hardenbergh
Howells & Stokes
Hill & Stout
Delano & Aldrich
Palmer & Hornbostel
Jarvis Hunt
Cram, Goodhue & Ferguson
Ernest Flagg
Clinton & Russell



"GRANT" CASEMENT WINDOWS



PIVOT WINDOWS, EQUIPPED WITH "GRANT" ANTIFRICTION LIFTS



"TURNER" PATENT ANTIFRICTION DRAWER SLIDES

“ATLAS”
BALL-BEARING
DOOR HANGER.
PATENTED.

DESCRIPTION.

The “Atlas” Ball-Bearing Door Hanger is noiseless, simple, durable, free running, easily applied, quickly adjusted and indestructible.

The patent for this Hanger is No. 794,524 and was issued to Herman Lobel July 25, 1905.

In presenting to your notice the “Atlas” Ball-Bearing Door Hanger, we desire to name a few of its superior points in design and construction. In design it is the acme of mechanical simplicity. In construction it embodies the highest development of modern practice. Illustration shows section of hanger as applied. Its simplicity is obvious.

The grooved bars are cold-drawn stock, making a hard wearing surface unobtainable in a machined groove. The life of the drawn groove is from eight to ten times as long as the one in which the hard outer skin of the metal has been removed by machining. As the grooves are the vital part of the hanger we feel that we can not too strongly emphasize this feature, which is exclusive with us.

OPERATION.

The pull of the load in the “Atlas,” as shown in the sectional cut, is entirely in line with the supporting balls. This obviates any side strain and consequent crowding and wear on the grooves. A careful comparison with any other hanger will convince you of the superiority of the “Atlas.” The “Atlas” has the fewest parts of any hanger, which means greatest durability with a minimum of repairs. In case of application and adjustment the “Atlas” stands alone.

PRICES.

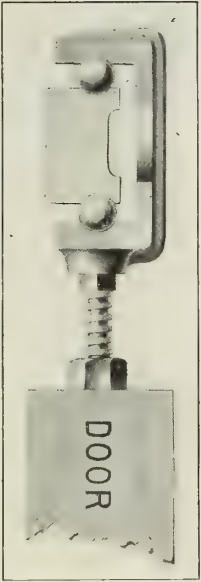
We shall be pleased to send catalogues, price-lists and samples either direct or through our agents and to co-operate in every way with architects and others interested in our products.

SHOW ROOM
AND FACTORY.

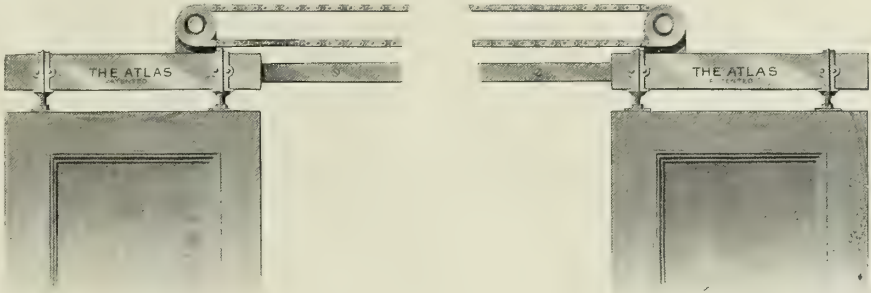
This Hanger may be seen at 3 West 29th St. or at the factory, 531-533 West 55th St. (Telephone 2320 Columbus.)



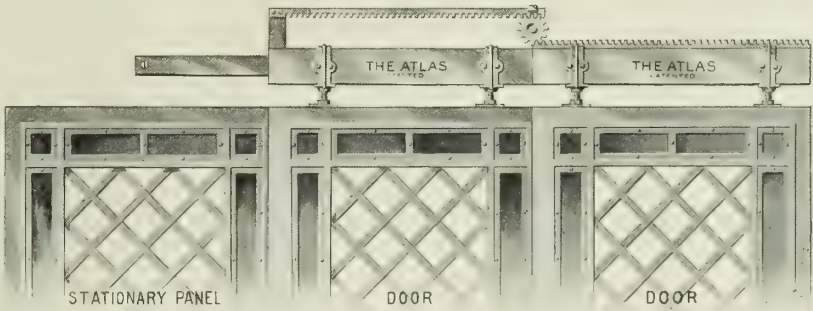
SINGLE DOOR HANGER



SECTION, BALL-BEARING DOOR HANGER



DEVICE FOR MOVING TWO DOORS IN OPPOSITE DIRECTIONS AT THE SAME TIME



DOUBLE-SPEED HANGER, FOR MOVING TWO OR MORE DOORS IN THE SAME DIRECTION, ONE AT DOUBLE THE SPEED OF THE OTHER

C. E. L. HATCH, Agent
 Manufacturer of "Ruppman" Door Holders
 1809 Washington Avenue
 PHILADELPHIA, PA.

PRODUCTS.
 POINTS OF
 SUPERIORITY.

Manufacturer of the "RUPPMAN" PATENTED DOOR HOLDERS.

It does not depend upon a spring to hold the door open.

It requires but one size Holder to hold any door.

Either mortise or rim types can be used on right or left hand doors.

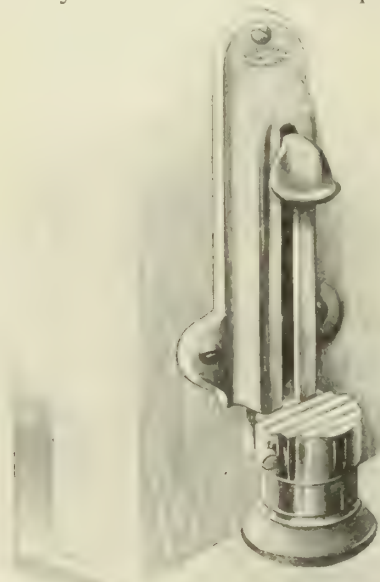
It holds equally well on carpets, loose rugs, stone, wood, or floors of any material.

For protection on a bedroom door when partly open for ventilation it is an absolute safeguard, as it acts practically as a bolt.

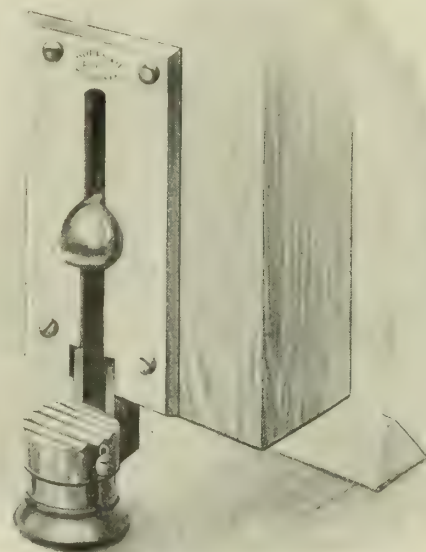
Having vertical plunger and positive holding power, the rubber tip can not mutilate any finished floor. There is no "drag."

It is easily plunged and tripped by the foot which, coming in contact with the face of Holder only, prevents marring of door.

It is neat in appearance, made of stamped steel, stamped brass, cast bronze and cast brass metal of the rim type, and bronze and brass metal in the mortise type, and can be finished to match any hardware finish required.



RIM HOLDER
 Full size 6½ in. long



MORTISE HOLDER
 Full size 4½ in. long
 (Cut shows Holder plunged 1½ inches)

PRICES.

Prices to consumers: Stamped steel rim, 1 to 6, 75 cts. each; 6 to 12, 70 cts. each; Stamped brass rim, 1 to 6, \$1.00 each; 6 to 12, 90 cts. each; Bronze metal rim or mortise, 1 to 6, \$1.50 each; 6 to 12, \$1.40 each. Special quotations for the other finishes and special discounts for larger quantities than specified above. Holders can be secured from your hardware supply house.

REFERENCES.

The following are a few of the buildings in which "Ruppman" Holders are installed. We can also furnish many references from leading architects, which will be sent upon application.

HOSPITALS
 Massachusetts General, Boston
 Pennsylvania, Philadelphia
 Savannah Marine, Savannah, Ga.
THEATERS
 Keith's, Boston
 Metropolitan Opera House, New York
BANKS
 Kidder, Peabody & Co., Boston
 Bank of Montreal, Can.
 New York Stock Exchange, New York
DEPARTMENT STORES
 John Wanamaker, Philadelphia and New York
 Arnold, Constable & Co., New York

CLUBS
 Somerset, Boston, Mass.
 Union League, Philadelphia
 Constitutional, London, Eng.
HOTELS
 Waldorf-Astoria, New York
 Bellevue-Stratford, Philadelphia
 Willard's, Washington, D. C.
 Washington, St. Louis, Mo.
 New Kimball, Atlanta, Ga.
 St. Francis, San Francisco, Cal.
 Carlton, London, Eng.
 Ritz, London, Eng.
LIBRARIES
 Carnegie (various cities)

RAILROADS
 Pennsylvania
 New York Central
 Canadian Pacific
 London & Northwestern, Eng.
OFFICE BUILDINGS
 New York Produce Exchange, New York
 Westinghouse Building, Pittsburg, Pa.
 Cunard S. S. Co., London, Eng.
 Equitable Life, New York
CITY HALLS
 Albany, N. Y.
 Augusta, Ga.
 Bismarck, North Dak.
 Philadelphia, Pa.

HOWARTH REVERSIBLE SASH CENTER CO.

15 to 23 Gilman Street
DETROIT, MICH.

PRODUCTS.

GENERAL
INFORMA-
TION.

Manufacturers of SASH CENTERS, to hang every style of window, in brass and iron.

We manufacture ten distinct styles of Sash Centers to fit any style or thickness of sash. We have half a million set in use in every part of the United States and Canada; they give perfect satisfaction and the cost is very reasonable.

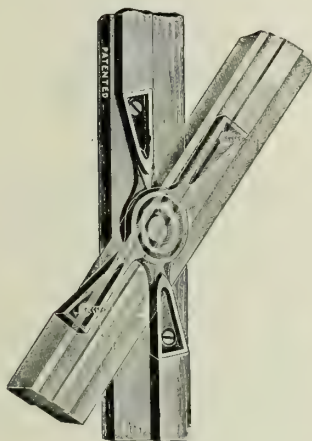
A large stock is kept on hand and shipments are made promptly.

Iron goods are furnished to match any special finish desired.

Write for illustrated catalogue with full working details for each center.

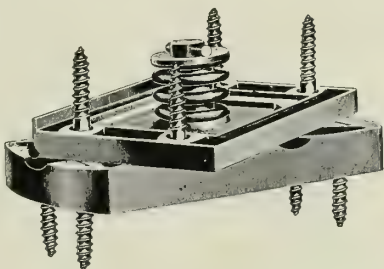
Architects please specify by number to avoid mistakes.

Call up your hardware man for special discount from list prices.



NO. 10 SASH CENTER

For single-sash plank frames for factory purposes, to be used with a sash adjuster. Specify our No. 87 extension hook with this class of center



NOS. 300 TO 306 SASH CENTER

A friction center. Will hold the sash at any angle without the use of a sash adjuster

SIZES AND
PRICES.

IRON

No. 300, for 1 3/8 inch sash, for one sash.....	\$1.00
No. 301, for 1 3/4 inch sash, for one sash.....	1.15
No. 302, for 2 inch sash, for one sash.....	1.40
No. 303, for 2 1/4 inch sash, for one sash.....	1.70
No. 304, for 2 1/2 inch sash, for one sash.....	2.00
No. 305, for 2 3/4 inch sash, for one sash.....	2.30
No. 306, for 3 inch sash, for one sash.....	2.60

BRASS

No. 0300, for 1 3/8 inch sash, for one sash.....	\$4.40
No. 0301, for 1 3/4 inch sash, for one sash.....	4.60
No. 0302, for 2 inch sash, for one sash.....	4.85
No. 0303, for 2 1/4 inch sash, for one sash.....	5.40
No. 0304, for 2 1/2 inch sash, for one sash.....	6.00
No. 0305, for 2 3/4 inch sash, for one sash.....	6.50
No. 0306, for 3 inch sash, for one sash.....	7.00

Add 50 per cent to list price for iron goods plated in brass or bronze.

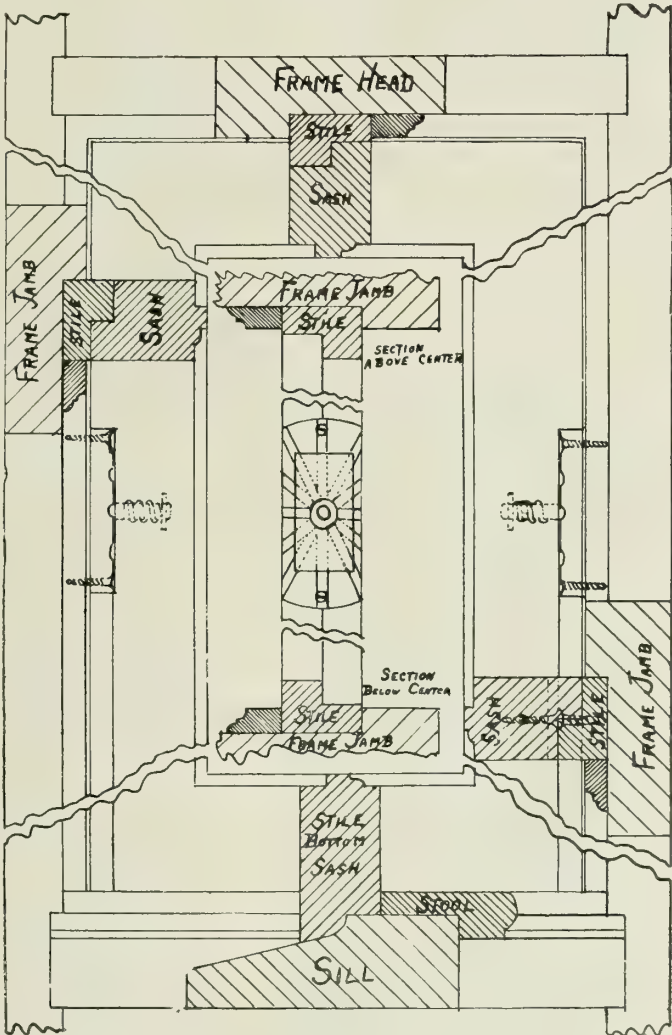
IRON

No. 10 for 1 3/8 to 1 1/2 inch sash, for one sash.....	\$0.40
No. 11 for 1 3/4 to 2 inch sash, for one sash.....	.50
No. 12 for 2 1/4 to 2 1/2 inch sash, for one sash.....	.80

Add 75 per cent to list for iron goods plated in brass or copper.

BRASS

No. 010 for 1 3/8 to 1 1/2 inch sash, for one sash.....	\$1.70
No. 011 for 1 3/4 to 2 inch sash, for one sash.....	2.60
No. 012 for 2 1/4 to 2 1/2 inch sash, for one sash.....	4.40



HALF-SIZE DETAIL OF NO. 301 SASH CENTER INSTALLED
This detail applies to all centers except Nos. 110, 20 and 97 classes

HUNT METAL CORNER CO.

MANUFACTURERS OF

Metal Corner Bead, Grounds, etc.

MAIN SALES OFFICE

561 Atlantic Avenue

BOSTON, MASS.

FACTORY
WESTBORO, MASS.

PRODUCTS.

HUNT METAL CORNER BEAD; PICTURE HANGING or MOULDING BEAD; METAL GROUND BEAD; BASE-BOARD and WAINSCOT BEADS; ANGLE or INTERNAL CORNER BEAD; CONCRETE REINFORCEMENT; METAL STUD-DING; CONTINUOUS SNOW GUARDS, for Slate Roofs; WALL PLUGS; WALL TIES made of HOT GALVANIZED STEEL or the exposed parts of ZINC, BRONZE, or BRASS, as required.

MATERIAL AND UTILITY.

Our products are of cold-rolled or drawn steel, all galvanized by the hot or melted process. We also make any of them in solid zinc, brass or bronze, as is demanded. We make Corner Beads for all projecting plaster corners, either straight, arch, circular or irregular. They require no snipping in order to bend.

SIZES.

Hunt Corner Bead is made for $\frac{3}{8}$, $\frac{5}{8}$, and $\frac{3}{4}$ -inch grounds, and in stock lengths of 6, 7, 8, $8\frac{1}{2}$, 9, $9\frac{1}{2}$, 10, and 12 feet

Special lengths are made to order up to 16 feet. These longer lengths eliminate splicing.

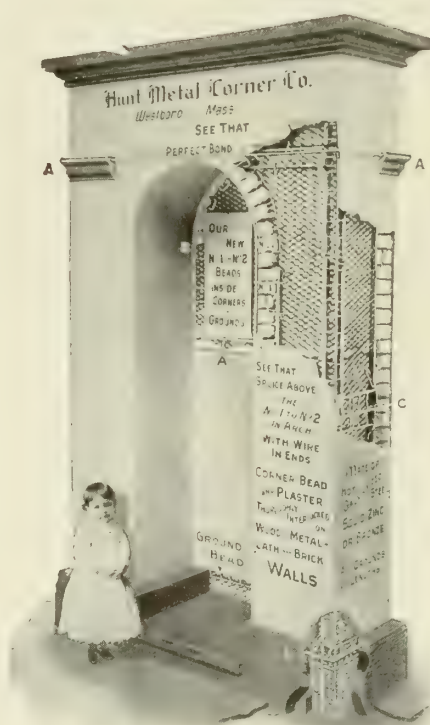
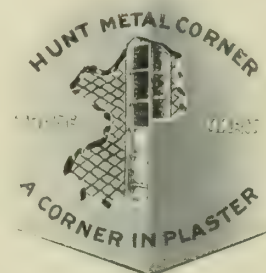


FIG. 1. APPLICATIONS OF HUNT METAL CORNER BEAD

A—Picture-Supporting Bead, used with or without moulding
B—Nos. 1 and 2 Angle or Internal Corner Bead

Nos. 1 and 2 Projecting Corner Bead
C—No. 1 Metal Ground Bead
D—No. 1 Base-Board or Wainscot Bead

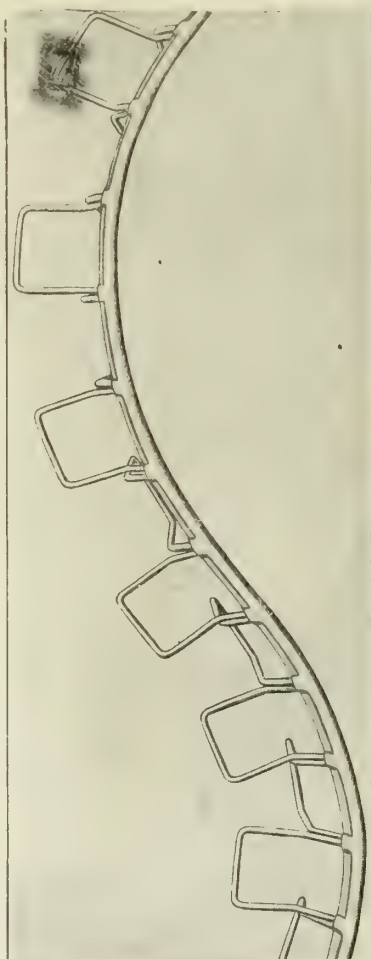


FIG. 2. NO. 2 METAL CORNER BEAD

Can be bent to any desired curve, without weakening

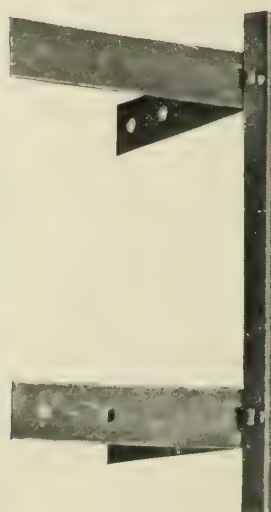


FIG. 3. NO. 6 HUNT CLIP BEAD

Clamps are locked into Bead every 4 in. Very securely and easily put in place. Bead and Clamps thoroughly galvanized

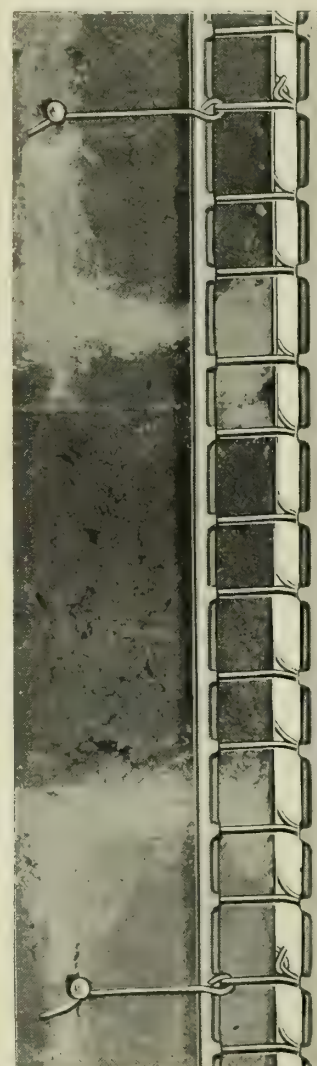


FIG. 4. NO. 1 METAL CORNER BEAD FOR STRAIGHT WORK

ILLUSTRATIONS.

Fig. 1 shows applications of Hunt Metal Corner Bead, Nos. 1 and 2, to both straight and arched corners, internal and projecting.

Hunt Corner Bead No. 1 (Fig. 4) is made for straight work and is specially adapted for use over brick, stone or terracotta. A splendid bond is offered for plaster. No. 1 Reinforced Bead is very rigid, and can be spanned two or three feet as shown in Fig. 3.

Hunt Corner Bead No. 2 (Fig. 2) is designed for arches, bay-windows, etc. It can be bent in any direction without cutting and without weakening and is a perfect protection in concrete blocks, steps, sills, or any place where corners are liable to chip off. (Fig. 11).

Fig. 5 shows the Corner Bead in reinforced-concrete construction. The reinforcing rods are uniformly spaced, and both the beam and floor reinforcing are held up from the false centering to allow concrete to set under, thoroughly protecting all the reinforcing. The columns at the corners also are protected against chipping or breaking away in removing the false centering, leaving clean, straight, even corners and saving many dollars in time and patching when removing the centering.

Hunt Metal Ground (Fig. 6) makes a perfect non-shrinking ground where concrete or hard or soft plaster is used, leaving no cracks or rat holes for microbes, vermin or dirt. Used extensively in hospitals and where sanitary construction is essential.

Angle or Internal Corner Bead No. 2 (Fig. 7) prevents internal corners from breaking away in ragged cracks. Bull-Nose Bead (Fig. 8) is something entirely new. Made to meet requirements for large, rounded corners and is specially adapted to hospitals, schools and public buildings.

Fig. 9 shows Hunt Double-Grip Wall Plug and Combination Wall Tie. The open end of tie springs into end of plug and they never slip; depressions in each side of plug alternating, cause nail to be slightly crooked in driving into place; the plug grips nail on top, bottom and sides in a sure grip. Plug or Tie may be used separately. Endorsed by practical builders. Patent applied for.

Bull-Dog Wall Tie (Fig. 10), made of galvanized wire No. 10, is made in sizes 7, 8, 9, and 12 inches.

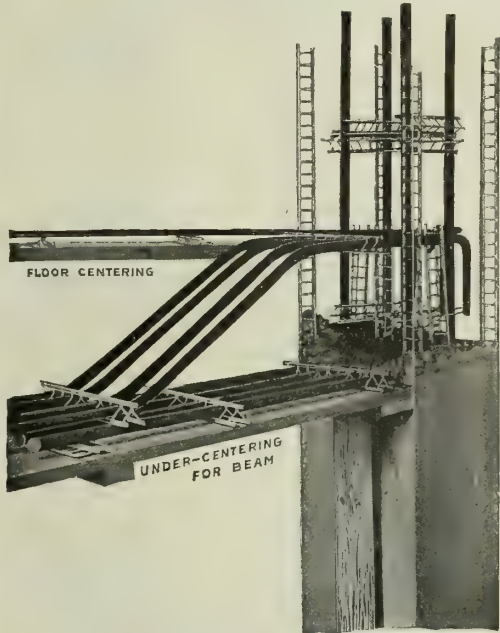


FIG. 5. METAL CORNER BEAD USED IN REINFORCED-CONCRETE CONSTRUCTION

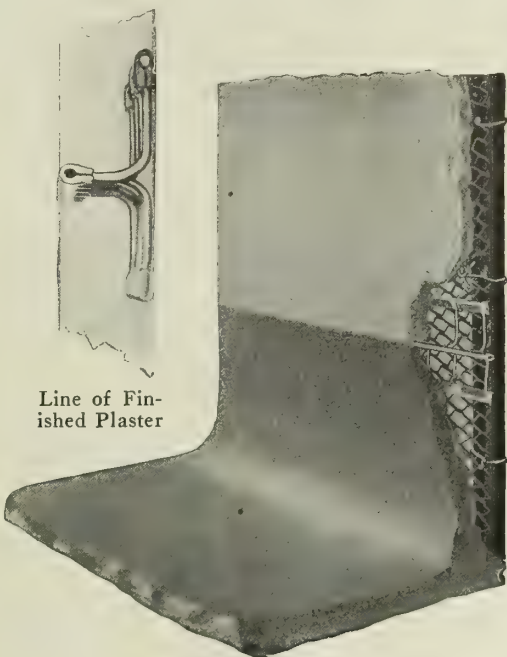


FIG. 6. HUNT METAL GROUND



See the grip on the nail

FIG. 9. DOUBLE-GRIP WALL PLUG OR COMBINATION WALL TIE



Used in combination with Wall Tie or separately



FIG. 10. BULL-DOG WALL TIE

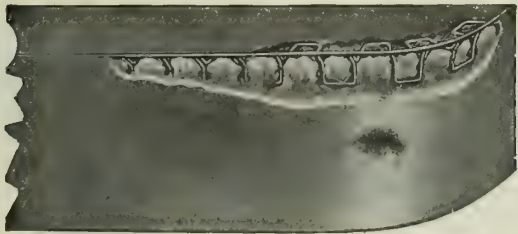


FIG. 11. METAL CORNER BEAD NO. 2

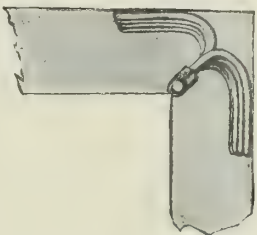


FIG. 7. NO. 2 ANGLE CORNER BEAD

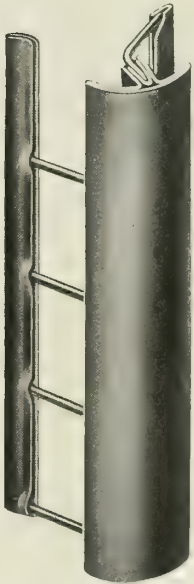
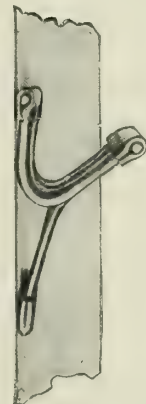
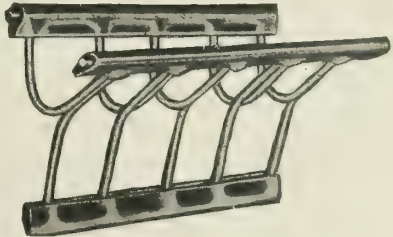


FIG. 8. BULL-NOSE BEAD FOR LARGE ROUNDED CORNERS



Outer Line of Plaster

FIG. 12. PICTURE HANGING OR SUPPORTING BEAD NO. 1



THE IDEAL HANGER COMPANY

CLEVELAND, OHIO

PRODUCTS.

Manufacturers of "IDEAL" STEEL JOIST HANGERS, POST CAPS, and POST BASES.



FIG. 1. "IDEAL" JOIST HANGER, STYLE A
Patented Feb. 28, 1905

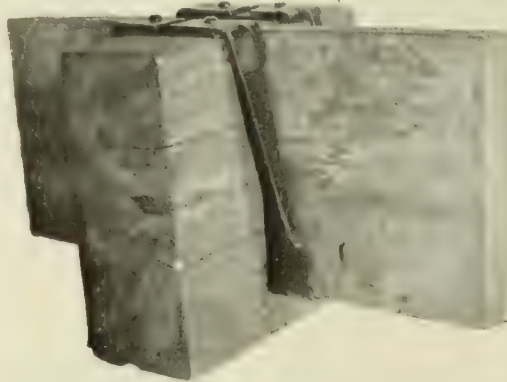


FIG. 2. "IDEAL" JOIST HANGER, STYLE B



FIG. 3. "IDEAL" JOIST HANGER, STYLE C

MATERIAL AND WORKMANSHIP.

The "Ideal" Steel Joist Hangers and Post Caps are made of the best quality of open-hearth steel, and are products of accurate workmanship and exact measurements. Every hanger and post cap are thoroughly inspected before shipment.

"IDEAL" STEEL JOIST HANGERS.

The special feature in the design of the "Ideal" Hanger (Figs. 1, 2, 3) is the deep corrugation made to stiffen the weak point where it goes over the header.

"IDEAL" STEEL POST CAPS.

The "Ideal" Post Cap (Figs. 4, 5, 6, 7) is made in two parts to make it adjustable to every possible size of post and girder. The lower part is built of a steel plate bent, having two angles riveted so as to form a complete cap for top of lower post. The upper channel is bent up to provide an exact bearing for girders. The construction is such that both the channels as well as the angles riveted thereto give the greatest factor of carrying capacity of any steel post cap on the market. This cap lends itself to every possible construction.

The "Ideal" Steel Post Cap No. 3 (Fig. 7) is made in any size, and meets the demand for a cheap steel post cap. This cap permits the use of a wider or smaller girder than the post.

STOCK AND SPECIAL GOODS.

We carry in stock a large assortment of almost every size hanger, post cap and base, and are prepared to fill orders promptly.

We are well equipped to make special designs and sizes on short notice. Write for catalogue and discount.

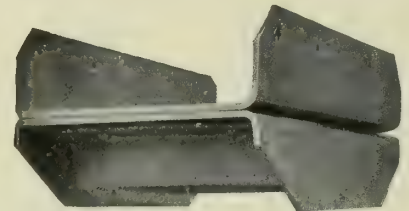


FIG. 4. "IDEAL" STEEL POST CAP NO. 1
Patented March 19, 1907

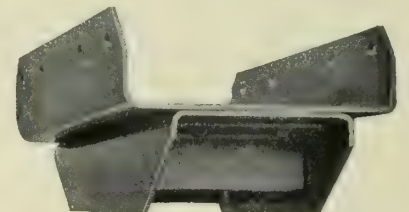


FIG. 5. "IDEAL" STEEL POST CAP NO. 1

10 x 10 Post to carry 14-inch Girder
Patented March 19, 1907

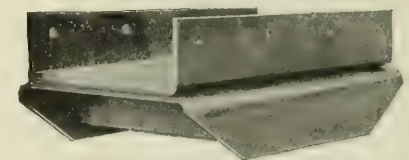


FIG. 6. "IDEAL" STEEL POST CAP NO. 1

12 x 12 Post to carry 10-inch Girder
Patented March 19, 1907

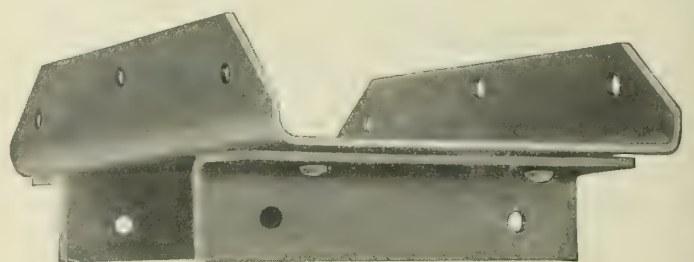


FIG. 7. "IDEAL" STEEL POST CAP NO. 3

KEYSTONE NAIL CO.

MANUFACTURERS OF

“Keystone Brand” Galvanized Cut and Wire Nails

PITTSBURG, PA.

PRODUCTS.

We are the sole manufacturers of the “KEYSTONE BRAND” GALVANIZED CUT and WIRE NAILS.

ADVANTAGES.

“Keystone Brand” Galvanized Nails never rust.

Bright wire nails or plain cut nails if used where they are exposed to the atmosphere will soon rust out. This is, of course, a well-known fact. The rusting is a small matter so far as the nails are concerned, but it is the disastrous results that are important. For instance, the iron-rust from the nail soon rots the wood and the holding power of the nail is destroyed. Where used for roofing, whether it be shingles, slate, tin or prepared roofing, the holding power of the nail having been destroyed the wind soon loosens the roof, and in the case of shingles or slate blows them off, or else the roof leaks and repairs are necessary. Another disadvantage where plain nails are used for sheathing, siding or any outdoor construction in connection with painted wooden surfaces, is that the rust runs down in streaks making repainting necessary. This is particularly noticeable where the atmosphere is damp or salty.



FACSIMILE OF OUR NAIL
KEG

DESCRIPTION.

Our nails are all galvanized with pure zinc by the hot-dipped process, and are cooled by our own patented machines without submerging in water. This cooling method prevents the nails from becoming hardened or made brittle. They are all evenly coated and perfectly separated, so there is no loss from rough nails or nails stuck together.

ORDERS.

“Keystone Brand” Galvanized Nails can be purchased from any first-class hardware dealer or roofing-supply house.

CATALOGUES.

We shall be glad to send samples and catalogue upon request.

MOREWOOD STANDARD SAFETY DEVICES CO.

MANUFACTURERS OF

Standard Safety Window Guards and Safety-Exit Door Devices

253 Broadway

NEW YORK, N. Y.

TELEPHONE, 5887 BARCLAY

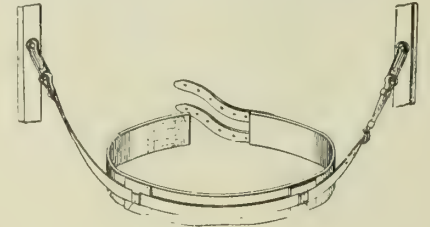
WILLIAM B. MOREWOOD, MANAGER

PRODUCTS.

STANDARD SAFETY WINDOW GUARDS for protection of Window Cleaners, WINDOW CLEANERS' BELTS, and SAFETY-EXIT DOOR DEVICES for double and single doors. (Patented in United States and Canada. Others pending.)

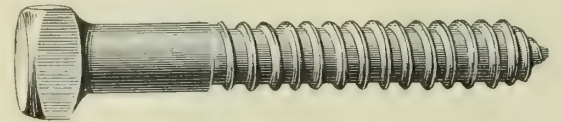
WINDOW CLEANERS' GUARDS.

Devices for the protection of outside window cleaners. They consist of an anchor bolt of improved pattern built by the mason into the stone, brick or terra cotta jambs of reveals. Anchor is very strong, requires no cutting by the mason and can be used for window openings of 4", 8" or deeper reveals. For buildings already erected, or where joints do not occur in stone work, Tobin bronze expansion bolts are supplied—Tobin bronze or well-tinned steel bolts for use in wood frames, or Tobin bronze bar-metal mullion bolts for mullions.



BELT CONNECTED WITH WINDOW-FRAME

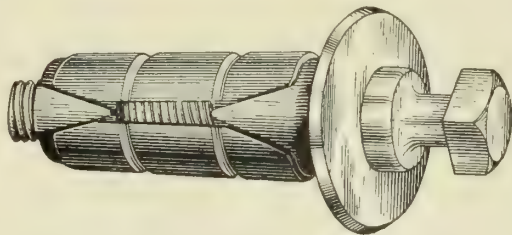
With these bolts a strong adjustable belt with bronze terminals fitting over the bolt head is used. These terminals can not become detached except by the operator.



WROUGHT TOBIN BRONZE CHAMFERED HEAD BOLT

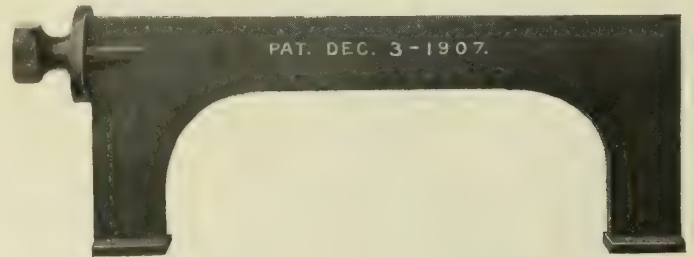
FACILITIES.

Our facilities for equipping buildings are unequalled. Where special bolts are needed we meet architect's requirements.



SPECIAL TOBIN BRONZE EXPANSION BOLT

Cut from Bar Metal



UNIVERSAL BRONZE ANCHOR

Used for all brick or terra cotta openings. Reveals 4", 8" or more. No cutting necessary and no delay to masons laying same

SPECIFICATIONS.

Anchor Bolts—"Supply and place in joints in reveal of each window Anchor Bolts as manufactured by STANDARD SAFETY DEVICES Co. Anchors placed in joints 51 inches as near as possible above the sill, two inches out from trim of window-frame.

Expansion Bolts—"Placed 51 inches above sill, two inches out from trim of frames by Standard Company. Masons to do any necessary cutting of holes.

Iron Mullions—"Bore one half inch hole in center of mullions 51 inches above sill, for bolts supplied by Standard Company.

Wood Frames—Under Hardware Specifications: "Equip all windows with bolts furnished by Standard Company and necessary belts for window cleaners.

"We suggest one belt for every 150 windows."

REFERENCES.

Some buildings equipped with our Safety Window-Guard Devices are as follows:

D. L. & W. Railroad Station, Scranton, Pa.
New Grand Central Station, New York, N. Y.
Hudson & Manhattan Terminal Buildings
West Street Office Building, New York, N. Y.
Marbridge Building, New York, N. Y.
Mutual Life Insurance Company's Building, Mexico City.
Royal Insurance Building, New York, N. Y.
Title Guarantee & Trust Co. Building, New York, N. Y.
National City Bank and others, New York, N. Y.
Traders' Bank Building, Toronto, Canada
Knickerbocker Hotel, Ritz-Carlton Hotel, and Hotel Astor
Addition, New York, N. Y.
Belnord Apartments, largest in the world
Engineers Club and others, New York, N. Y.
New Bellevue Hospital Buildings, New York, N. Y.

Central Union Passenger Station, Ottawa, Canada
Rockefeller Medical Institute, New York, N. Y.
Hall of Records, New York, N. Y.
Fire Headquarters, New York, N. Y.
Public School Buildings in New York City and elsewhere
Columbia College Building, New York, N. Y.
Western University of Pennsylvania, Pittsburg, Pa.
Wanamaker Store Buildings in New York and Philadelphia
New Jersey State House, Trenton, N. J.
New York State Education Building, Albany, N. Y.
Telephone Buildings in many places
International Y. M. C. A. Building, New York, N. Y., and other Y. M. C. A. Buildings

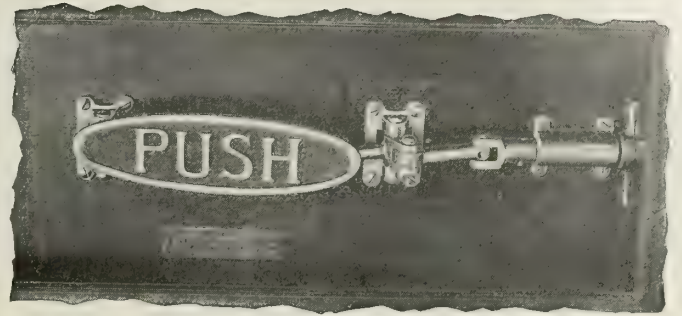
Buildings in Pittsburg, Galveston, San Francisco, Spokane, Seattle, Washington, D. C., Baltimore, Portland, Ore., and other cities.

EXIT DOOR
DEVICE.

The Standard Safety-Exit Door Device and the Safety Self-Releasing Exit Latch, assure a safe exit from theaters, halls, schools, churches or any auditorium or building where installed and where a panic from fire or other cause might occur.

These devices are made wholly of bronze, non-corrosive, are very strong and fool-proof; solving the problem of a safe, sure exit. The devices are mechanically perfect.

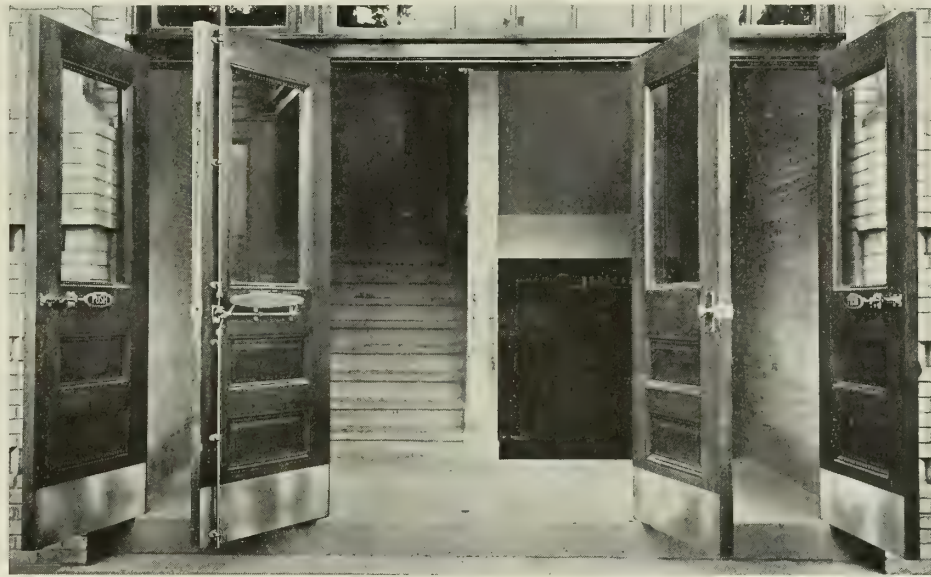
A slight push on plate causes eccentric to revolve, releasing bolts top and bottom, and the door opens.



EXIT DOOR LATCH, FOR SINGLE DOORS

SELF-RELEAS-
ING EXIT DOOR
LATCH FOR
SINGLE DOORS.

Designed for operating on a single door. Closes automatically, and can be closed from the outside but not opened. Adapted for fire-escapes in schools, etc.

SINGLE AND DOUBLE DOORS EQUIPPED WITH EXIT DEVICE FOR USE IN
PUBLIC SCHOOLSENDORSE-
MENT.

These devices are well known and have the unqualified endorsement of architects, theatrical managers, building superintendents, and engineers, the Fire Department, Bureau of Buildings, Board of Underwriters in New York and other cities, and are specified for practically all the new theaters in Greater New York.

SPECIFICA-
TION.

All doors so designated on plans to be equipped with Standard Safety Door Devices as manufactured by STANDARD SAFETY DEVICES CO. of New York, N. Y.

SERVICE.

Our goods are all of the best quality. All communications answered promptly. Price-lists on application.

REFERENCES.

Some of the buildings equipped with our Safety-Exit Devices are as follows:

New Montauk Theater, Brooklyn, N. Y.
New Academy of Music, Brooklyn, N. Y.
Greenpoint Theater, Brooklyn, N. Y.
Fulton Theater, Brooklyn, N. Y.
Casino Theater, Brooklyn, N. Y.
New Brighton Theater, Coney Island, N. Y.
Phillipsberg Assembly Hall, Yonkers, N. Y.
New Casino Theater, New York, N. Y.
Stuyvesant Theater, New York, N. Y.
Gaiety Theater, New York, N. Y.

Fifth Avenue Theater, New York, N. Y.
Columbia Theater, New York, N. Y.
Bronx Theater, New York, N. Y.
New National Theater, New York, N. Y.
Alexandria Theater, Toronto, Can.
Exchange National Bank Building, Colorado Springs, Colo.
Massey Concert Hall, Toronto, Can.
Byers Opera House, Fort Worth, Tex.
Gayety Theater, Washington, D. C.

Public Schools in New York, New Jersey, Connecticut, and other States; also, theaters, churches and auditoriums in the South, East and West.

LORD AND BURNHAM COMPANY

MANUFACTURERS OF

Sash Operating Apparatus for Hinged and Pivoted Sash IRVINGTON-ON-HUDSON, N. Y.

PRODUCTS.

SASH OPERATING and VENTILATING APPARATUS in various styles and sizes for Operating Hinged and Pivoted Sash in Factories, Foundries, Car-Barns, Roundhouses, Power-Houses, Machine-Shops, Steamers, Banks, Churches, Prisons, Greenhouses, etc.

TRANSOM OPERATORS for heavy Transoms in such places as Store Fronts, Hotels, Public Buildings, etc.

DESCRIPTION.

Our Standard Apparatus (see Fig. 1) in various sizes consists of a worm and gear to turn a rocker shaft to which are attached arms, which in turn act directly on the sash through suitable rods. The worm and gear are operated either by a rod brought down to a hand wheel or by a sprocket wheel and hand chain. (See Fig. 3.)

DETAILS.

Universal Stands for supporting Operating Rod, Gear Collars and Shaft Hangers of various types to meet different conditions; Universal Joints (see Fig. 2) and Bevel-Gears for changing direction of Operating Rod and Rocker Shafts; Bevel and Worm Gears in self-oiling, dust-proof cases when desired. (See Fig. 5.)

TRANSOM OPERATORS.

Transom Operators made in two sizes: No. 1 for heavy and No. 2 for extra heavy transoms. This apparatus consists of two enclosed miter gears one of which is threaded. The threaded gear engages with a vertical rod which operates the transom by an intermediate rod. (See Fig. 6.)

For extra heavy transoms, the vertical rod operates a rocker shaft at the bottom of the transom, thus allowing it to be supported by an arm and rod at either end, relieving it of all injurious strains, and holding it rigidly in position against wind pressure.

ADVANTAGES.

Sashes are automatically locked in any position. Apparatus designed on simple and well-known mechanical principles. Castings of best gray cast-iron, smooth and of uniform weight. Gears turn in machine-trued bearings. Worms machine-cut. Arms secured to shaft by combined bolting and set screw cap (see Fig. 4), or by set screw only if desired.

ERECTION.

Full directions for erecting are sent with apparatus so that it can be easily installed by any mechanic.

ESTIMATES AND CO-OPERATIVE SERVICE.

On receipt of data giving description of sash and that part of the building where it is intended to install the apparatus, we will gladly submit sketches, suggestions, and estimates for furnishing our stock apparatus, or for apparatus specially designed to meet unusual conditions; also, estimates for erecting the apparatus when desired.

FACILITIES.

We are equipped to furnish our apparatus in any quantities with promptness.

CATALOGUE.

Catalogue giving full and detailed description of Apparatus sent on request.

REFERENCES.

We should be pleased to furnish nearest references if desired.

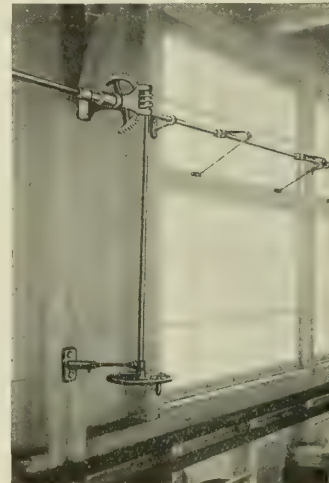


FIG. 1. "STANDARD" APPARATUS



FIG. 2
UNIVERSAL
JOINT

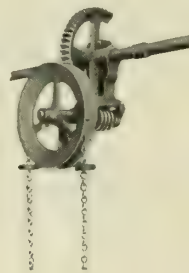


FIG. 3. SPROCKET
WHEEL



FIG. 4
ARM

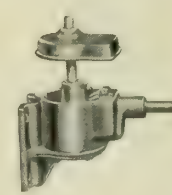


FIG. 5. ENCASED
BEVEL GEAR

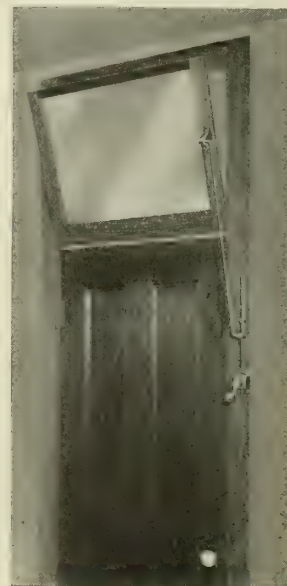


FIG. 6. TRANSOM OPERATOR

NEW JERSEY FOUNDRY & MACHINE CO.

Manufacturers of Trolleys and Hangers

90 West Street
NEW YORK, N. Y.

PRODUCTS.

"NEWHALL" I-BEAM TROLLEYS.

For Overhead Carrying—I-BEAM TROLLEYS, BAR-TRACK TROLLEYS, "COBURN" TROLLEYS, "COBURN" TRACKS, BAR TRACKS, I-BEAM TRACKS; TRAVELING CRANES, JIB CRANES, CHAIN HOISTS, DERRICKS, COAL BUCKETS; BARN-DOOR, HOUSE-DOOR, PIER-DOOR, FIRE-DOOR and ELEVATOR-DOOR HANGERS; IRON FENCES and CASTINGS.

These trolleys are made with steel frames, swiveled yokes and caged roller-bearing wheels. Carried in stock.

"DELTA" I-BEAM TROLLEYS.

These trolleys are made up with steel frames and roller-bearing wheels, and are first-class in every respect, easy running and guaranteed to give satisfaction. Carried in stock.

BAR-TRACK TROLLEYS.

The trolley wheels are fitted with caged roller bearings. Hangers have cast lugs. Price per foot for track includes 10 inch hangers. Carried in stock.

"COBURN" TROLLEYS.

The trolley wheels are made with roller-bearing wheels and from 1000 pounds capacity up. They are made with ball-bearing swing pendants, and are the easiest running trolleys made. Carried in stock.

BARN-DOOR HANGERS.

HOUSE-DOOR HANGERS.

SUNDRY GOODS, PRICES.

PRICE-LIST OF "NEWHALL" I-BEAM TROLLEYS

Capacity in tons	Size of I-Beam	Head Room, inches	Price	Price of Track per foot
$\frac{1}{2}$	5"	3 $\frac{3}{4}$ "	\$13.00	\$0.75
1	6"	3 $\frac{3}{4}$ "	16.00	.90
1 $\frac{1}{2}$	7"	4 $\frac{3}{4}$ "	20.00	1.10
2	8"	6"	26.00	1.30
3	9"	7"	35.00	1.60
4	10"	8"	48.00	2.00

PRICE-LIST OF "DELTA" I-BEAM TROLLEYS

Capacity in tons	Plain	Geared	Size of I-Beam
$\frac{1}{2}$	\$12.00		5-6 or 7"
1	14.00	\$27.00	5-6 or 7"
1 $\frac{1}{2}$	17.00	29.00	6-7 or 8"
2	20.00	32.00	7-8 or 9"
3	24.00	37.00	8-9 or 10"
4	27.00	43.00	9-10 or 12"
5	30.00	48.00	10-12 or 15"
6	36.00	51.00	12-15 or 20"
8	43.00	60.00	15-20 or 24"

PRICE-LIST OF BAR-TRACK TROLLEYS

Capacity in tons	Price	Head Room, inches	Price of Track per foot
$\frac{1}{4}$	\$6.25	6"	\$0.50
$\frac{1}{2}$	7.00	6"	.57
$\frac{3}{4}$	8.75	7"	.81
1	9.50	7"	.88

PRICE-LIST OF "COBURN" TROLLEYS

Capacity in lbs.	Price	Head Room, inches	Price of Track per foot	Brackets
300	\$16.00	6"	\$0.40	\$0.60
500	20.00	7 $\frac{1}{2}$ "	.60	.90
1000	30.00	5"	.80	1.50
2000	60.00	8 $\frac{1}{4}$ "	.80	1.50
4000	120.00	10 $\frac{1}{4}$ "	.80	1.50

PRICE-LIST OF BARN-DOOR HANGERS

Weight of Doors	Track per foot	Hangers per pair	Hanger No.	Track No.	Brackets, each
300 lbs.	\$0.20	\$2.50	120	1	\$0.20
500 lbs.	.30	3.30	122 $\frac{1}{2}$	2 $\frac{1}{2}$	.35
800 lbs.	.40	5.00	124	3	.50
1200 lbs.	.50	5.50	130	4	.80

Trolleys are roller-bearing and very easy running. Carried in stock

PRICE-LIST OF HOUSE-DOOR HANGERS

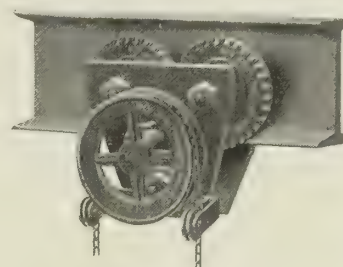
SINGLE DOORS, per Set, with Track	Size of Opening	DOUBLE DOORS, per Set, with Track	SINGLE DOORS, per Set, with Track	Size of Opening	DOUBLE DOORS, per Set, with Track
\$3.00	2' 6"		\$4.25	5' 6"	\$6.00
3.00	3'		4.50	6'	6.00
3.25	3' 6"		4.75	6' 6"	6.25
3.50	4'	\$6.00	5.00	7'	6.50
3.75	4' 6"	6.00	5.25	7' 6"	6.75
4.00	5'	6.00	5.50	8'	7.00
				8' 6"	7.25
				9'	7.50
				10'	8.00

Carried in stock

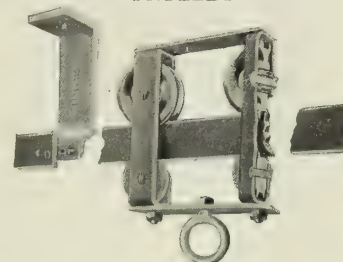
For prices and specific information regarding other products listed in first paragraph, address NEW JERSEY FOUNDRY & MACHINE Co., and both will be gladly sent.



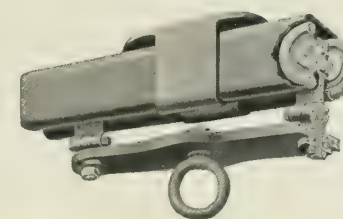
"NEWHALL" I-BEAM TROLLEY



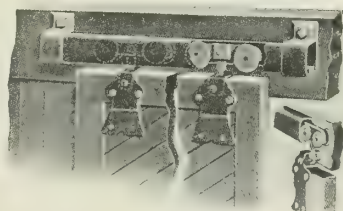
"DELTA" I-BEAM TROLLEY



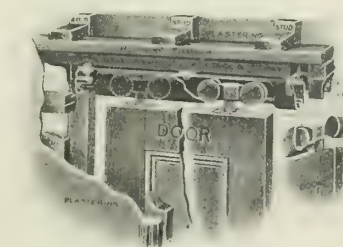
BAR-TRACK TROLLEY



"COBURN" TROLLEY



BARN-DOOR HANGER



HOUSE-DOOR HANGER

ESTABLISHED 1848

ONEIDA COMMUNITY, LTD.

HARDWARE DEPARTMENT

Manufacturers of Weldless Steel Chains for all Purposes and
"Community" Galvanized Sash Chains (Guaranteed)

ONEIDA, N. Y.

BRANCH OFFICE AND FACTORY: NIAGARA FALLS, ONTARIO

CITY OFFICES AND AGENCIES

NEW YORK, N. Y., 395 Broadway
CHICAGO, ILL., 131 Wabash AvenueRICHMOND, VA., 1424 East Main Street
SAN FRANCISCO, CAL., 150 Post Street

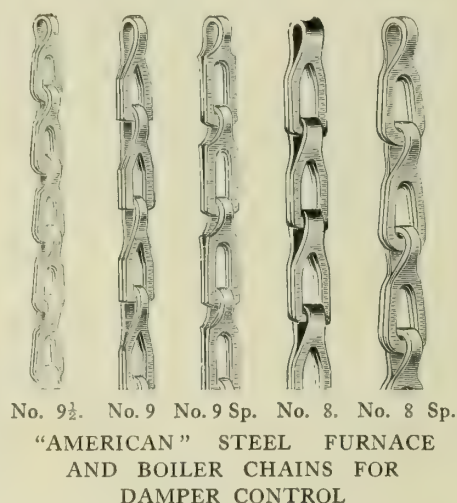
ATLANTA, GA., Century Building

PRODUCTS.

"WELDLESS" STEEL CHAINS in fifty-six different sizes and patterns, including our specialties—"COMMUNITY" GALVANIZED SASH CHAIN, ELECTRIC LIGHT SUSPENSION CHAIN, FURNACE and BOILER CHAIN, DAMPER and VENTILATOR CHAIN, PIPE-HANGING CHAIN, etc., with all the special attachments required to adapt these chains to their respective uses.

"AMERICAN"
FURNACE AND
BOILER
CHAINS.

We furnish any size "American" Chain, made of steel stock, either polished, galvanized, or nickered, cut to length and packed in boxes, or in 500-foot lengths on reels. A large number of furnace, boiler, and ventilator manufacturers are using our chain for damper and valve control. We recommend for such purposes sizes Nos. 9½, 9, 9 Special, 8, and 8 Special, of which full size illustrations are shown.



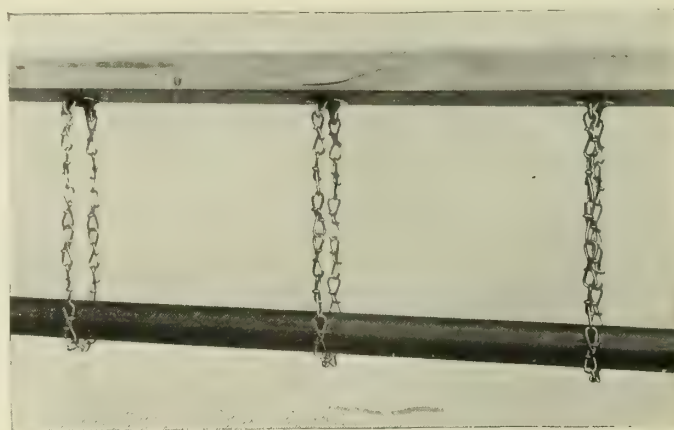
WORKING LOADS

No. 9½, 20 lbs.
Nos. 9 and 9 Sp., 30 lbs.
Nos. 8 and 8 Sp., 40 lbs.

"NIAGARA"
PIPE-
HANGING
CHAINS.

"Niagara" Pipe-Hanging Chain is made from the best steel wire, the links of which are tied with a square knot that can not become unfastened or pull apart, and are both durable and attractive. With our special Ox-Bow Hanger perfect adjustment and security are obtained, and lines of pipe may be supported wherever required with equal facility in either steel, mill, or frame buildings.

When compared with other hanging devices "Niagara" Chain and Ox-Bow will be found economical, as no extra weight or material to make the adjustments is necessary.



"NIAGARA" PIPE-HANGING CHAIN

SIZES.

We recommend the following four sizes to the Plumbing and Steam-Fitting Trades:

No. 4 for pipe up to 1½" diameter
No. 1/0 for pipe up to 3" diameter

No. 2 for pipe up to 2" diameter
No. 3/0 for pipe up to 8" diameter

"COMMUNITY" GALVANIZED SASH CHAIN (GUARANTEED).

"Community" Galvanized Sash Chain is made from the best quality of rolled-steel stock; punched, made and galvanized on special machinery of our own manufacture. "Community" Steel has a higher tensile strength per square inch of cross-section and a higher fusing point than bronze, copper, or any of the alloys used in the manufacture of other sash chains. Our chains will not stretch or melt at temperatures that will melt chains made of other metals, and they will remain in place after the most severe fire tests. "Community" Chain is hard, tough, and elastic, and therefore holds its shape under the stress of continual use.

"Community" Attachments are the simplest and strongest, and save the most time in hanging.

SIZES AND WEIGHTS.

We have standardized the numbers of our Sash Chain to correspond with the weight of double-hung sash that they will safely carry.

No. 80 for sash weighing 80 lbs.

No. 100 for sash weighing 100 lbs.

No. 130 for sash weighing 130 lbs.

Tensile strength more than six times that required.

OFFICIAL INDORSEMENT.

"Community" Sash Chains have been tested and approved by the testing laboratories of the National Board of Fire Underwriters for the service stated above.

DISTRIBUTION.

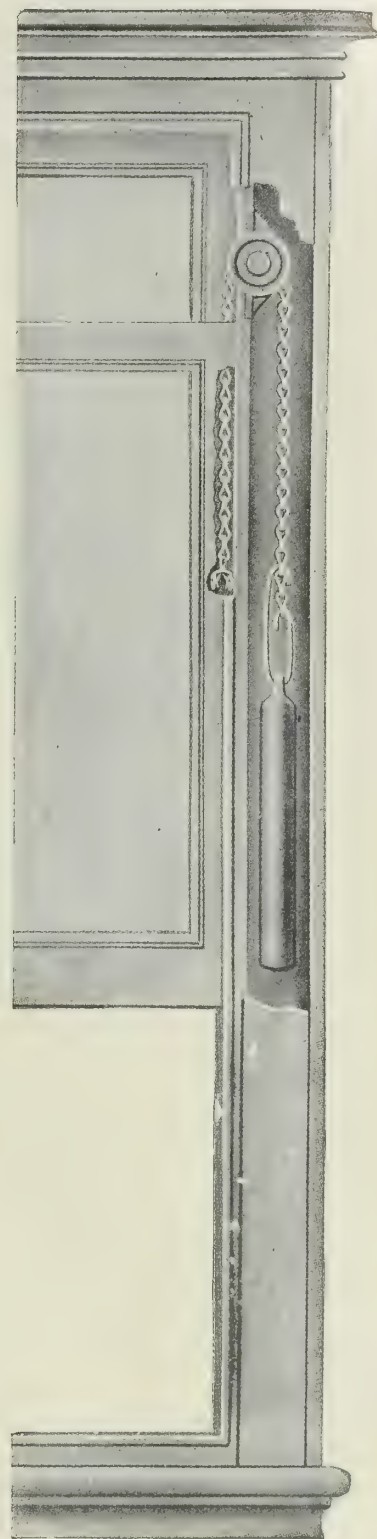
"Community" Chains for all purposes can be bought of hardware jobbers in all large cities. If they are not found when wanted, or the line carried does not suit the special requirements, communicate with the main office of the Community.

General catalogue and price-list will be sent upon receipt of written application.

GUARANTEE.

We will replace any "Community" Galvanized Sash Chain that fails in service when carrying the weight sash specified in list, if it has been properly installed.

We also guarantee that "Community" Galvanized Sash Chain will not rust.



DETAIL SHOWING "COMMUNITY" GALVANIZED SASH CHAIN USED ON A FIRE-PROOF SASH

PATENTED WINDOW ATTACHMENT CO.

443 North State Street (formerly 51-53 North State Street)

CHICAGO, ILL.

TELEPHONE, CENTRAL 7072

NEW YORK OFFICE: Room 12, 1358 Broadway

W. J. BLAKE, MANAGER

PRODUCTS.

PATENTED WINDOW ATTACHMENTS.

INSTALLATION.

Our Patented Window Attachments can be easily attached to any sliding window (old or new) up to the size of 6 feet by 8 feet, without mutilating the present sash or frame.

DESCRIPTION AND FINISH.

The Window Attachments are made of tough, cold-rolled steel stampings and are finished in oxidized copper, lemon brass, dull black, nickel plated, or, in fact, any finish according to the architect's specifications to match the other hardware on the window.

DURABILITY.

There are no exposed parts, and the plating prevents them from rust, all the attachments being on the inside of the building and not exposed to the weather.

ADVANTAGES.

This Window Attachment eliminates all danger of falling from the window-ledge and as the windows are cleansed while both sashes are swung into the building, requiring about one half minute of time, there is no need of a step-ladder, since the operator stands on the floor and can easily reach all parts to be cleansed. Screens covering the entire window can be used, eliminating insects.

Where windows have bars, such as insane asylums, hospitals, banks, residences, etc., and it is exceedingly difficult to wash them because of these bars, this device will be found to be indispensable.

There is no interference with shades or curtains and no special sash or frame is required.

All women have a horror of cleaning windows, and justly so, because without this improvement it could only be done imperfectly and with great danger to life and health, besides being embarrassing and hardly modest.

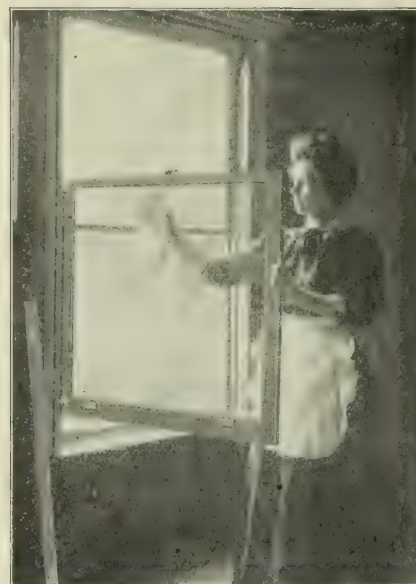
REFERENCES.

The City National Bank Building, at Kankakee, Ill.; every elevated station of the Market Street Passenger Elevated Railroad Co., Philadelphia, Pa.; Illinois Eastern Hospital for the Insane, Kankakee, Ill.; Joseph Duplissis Apartment Building and W. K. Gore Apartment Buildings, Chicago, Ill., and many others who have them in use.

COST.

The cost is only \$1.00 with screws included and in any finish f. o. b. destination.

We assure prompt delivery of orders.



LOWER SASH SWUNG INTO BUILDING



BOTH SASHES SWUNG INTO BUILDING

INSTALLATION.

The accompanying illustration shows the attachments and full instructions are appended for installing them:

- (1) Sockets for lower sash, screws $1\frac{1}{2}$ -inch flat head.
- (2) Sockets for upper sash, $1\frac{3}{4}$ -inch flat head.
- (3) Upper hinge of upper sash, $1\frac{1}{4}$ -inch flat head.
- (4) Lower hinge of upper sash, screws $1\frac{1}{4}$ -inch flat head.
- (5) Clutches attached above pulleys to hold ropes or chains, screws $1\frac{1}{4}$ -inch round head and $\frac{3}{4}$ -inch flat head.
- (6) and (7) Stops to be attached to removable section of moulding and bed-plate to be attached to frame.
- (8) Upper hinge of lower sash, screws $1\frac{1}{4}$ -inch with round head.
- (9) Lower hinge of lower sash, screws $1\frac{1}{4}$ -inch round head and small headless screw.
- (10) Front view of cord or chain.
- (11) Front view of cord or chain, hook closed.

FIRST—Raise lower sash about eight inches above the sill, then fit the No. 9 Hinge in a No. 2 Socket and place the same in position with the socket on the left-hand moulding and hinge on the lower left corner of the window-sash, then attach, using screws as specified.

SECOND—Fit No. 8 Hinge in a No. 2 Socket and place the same in position on the moulding and upper left-hand corner of the window-sash, then attach, using screws as above specified. (Be sure to have sash resting on hinges No. 2 and No. 9 when fitting the above.)

THIRD—While lower sash is still resting on both hinges take a fine saw and cut right-hand moulding on a downward slant about six inches above the sash, and remove the lower piece of moulding.

FOURTH—Attach threaded end of knurl-head screws, Nos. 6 and 7, to removable moulding about six inches from top and six inches from bottom, using small brass screws. Now embed tapped bed-plate to window-frame, using $\frac{1}{2}$ -inch flat-head screws. Care must be taken to attach plates so they will engage the threaded end of knurl head screw on moulding.

FIFTH—Attach clutches No. 5 above sash pulleys so that ropes or chains run freely, using screws as specified.

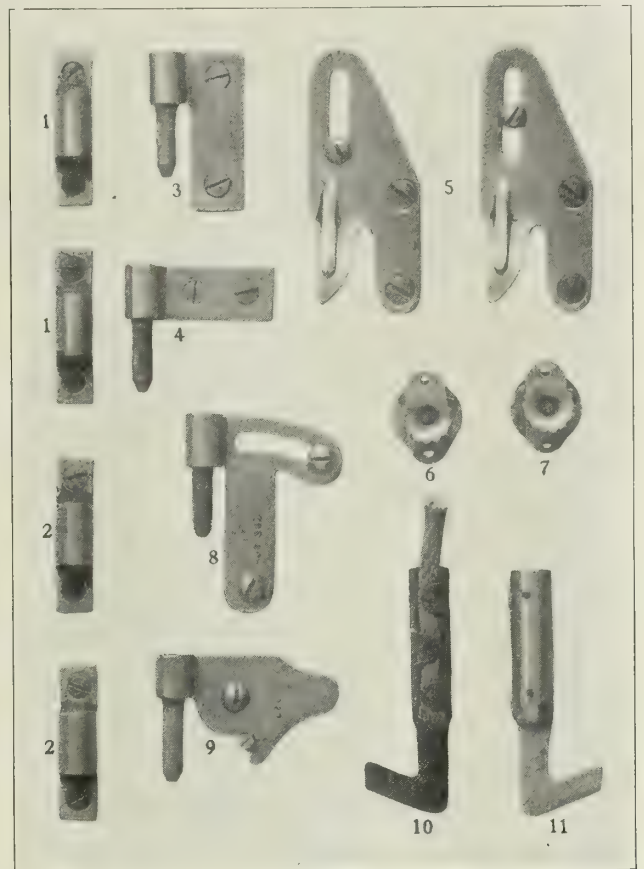
SIXTH—Take a small plane and round off outside corner edge on left side of sashes, just barely enough to allow sashes to swing without binding. Recess upper left corner of lower sash to allow hinge No. 4 on upper sash to pass when sash is raised.

SEVENTH—Bring the upper sash to a level of the bottom sash, when hinged, then place the socket of this complete hinge (Nos. 1 and 4 fitted) opposite socket already attached for bottom sash, and screw or attach the same to middle parting-strip, then screw or attach part of hinge known as No. 4 to lower left-hand corner of sash. If necessary countersink part No. 4 so that pintel will slide in socket freely.

EIGHTH—Have the upper sash resting on hinge already placed in lower left-hand corner, then fit the No. 3 Hinge in No. 1 Socket and place in position to the upper left-hand corner of the upper sash, placing the hinge just low enough to allow the sash to close up at the top as usual.

NINTH—Cut the right-hand middle parting-strip on a downward slant on a line with cut in the moulding, remove the strip and swing sash inward.

TENTH—The hooks Nos. 10 and 11 may be used if so desired, the end of the rope being clasped by the arms turned over the rope or chain.



PATENTED WINDOW ATTACHMENTS

THE PAYSON MANUFACTURING COMPANY

Hardware Specialties

2920 Jackson Boulevard

CHICAGO, ILL.

EASTERN REPRESENTATIVE

FREDERICK PFEIFER

NEW YORK, N. Y., 101 Reade Street

PRODUCTS.

HARDWARE SPECIALTIES; TRANSOM LIFTERS; OPERATORS for sash in Monitors, Lanterns, Skylights, Greenhouses, etc., gear, lever or chain operated; CASEMENT ADJUSTERS; SIGNAL SASH LOCKS; SANITARY COAT and HAT HOOK.

TRANSOM LIFTER.

The "Simplex" is automatic and positive. The lifter is beside the transom and is operated by a straight push or pull. Does not mar the trim below the transom and is applied in about half the time. Meets with instant approval. Patents allowed.

CASEMENT ADJUSTER NUMBER 1.

This Adjuster is adapted to any style of hinged or pivoted sash; direct in action, with positive lock capable of holding securely the heaviest sash. Patent allowed.

SKYLIGHT OPERATOR.

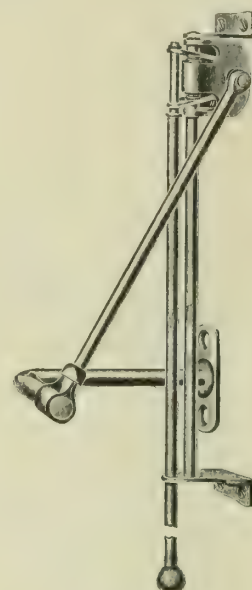
This Operator meets the need for the instant locking, at any point, of horizontal sash or sash on a pitch. Sash is opened or shut by one rope and is always controlled safely and efficiently. Patent allowed.

"SIGNAL" SASH LOCK.

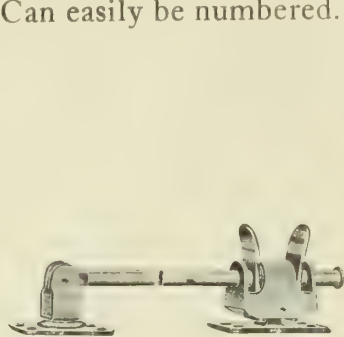
The "Signal" (tells when not locked) is unbreakable and can not be thrown except to lock the window. Best lock for public buildings and offices. Approved by Underwriters' Laboratories for fireproof sash.

SANITARY COAT AND HAT HOOK.

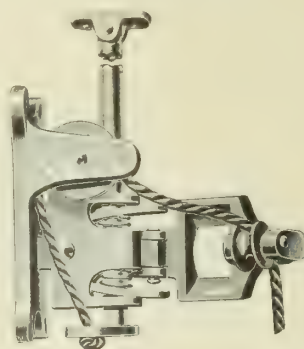
A Coat and Hat Hook applied to pipe or rod makes the cleanest, safest cloakroom rack with the greatest economy of space. It is practical and is adapted for use in all public buildings and clubs. Can easily be numbered.



"SIMPLEX"
TRANSOM LIFTER



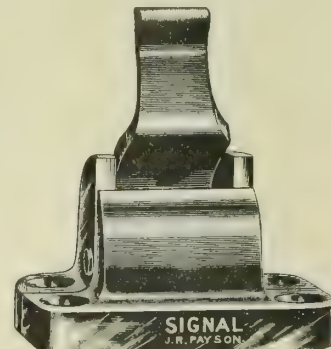
CASEMENT ADJUSTER



SKYLIGHT OPERATOR



SANITARY COAT
AND HAT HOOK



"SIGNAL" SASH LOCK,
500 SERIES

GEARED OPERATORS.

Operators to control and operate all kinds of sash in all kinds of places. Illustrations (see next page) show five of these operators which may be used in different conditions. A large number of operators not shown make the line complete in every detail.

No. 7. (See illustration.) Showing how universal joint may be used.

No. 5. (See illustration.) Operating a line of sash, with worm-gear, gear and vertical hand-wheel.

No. 6. (See illustration.) Operating direct with a horizontal hand-wheel.

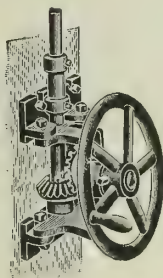
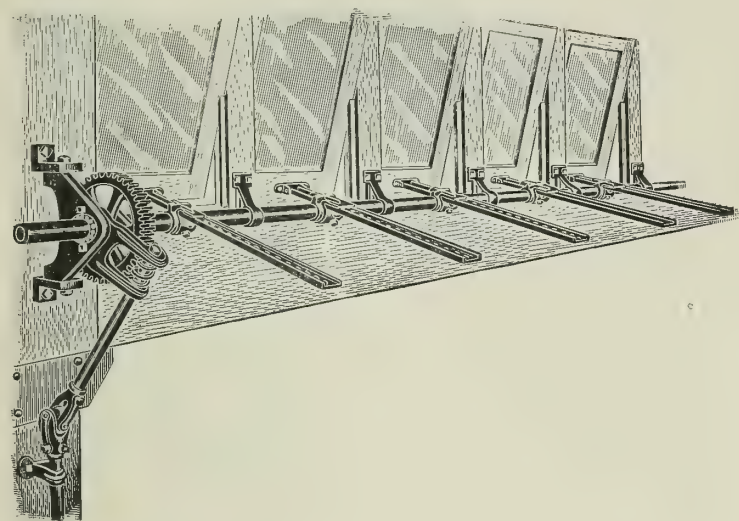
No. 4. (See illustration.) Operating a line of sash by means of chain, worm-gear and worm.

No. 2. (See illustration.) Operating four or five sash by means of rope. Fitting for $\frac{3}{4}$ -inch pipe.

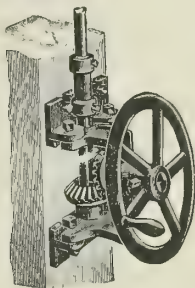
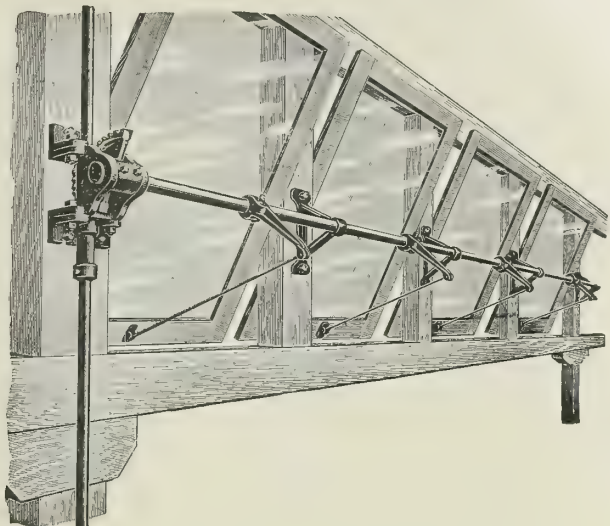
CO-OPERATIVE SERVICE.

We can furnish many other types.

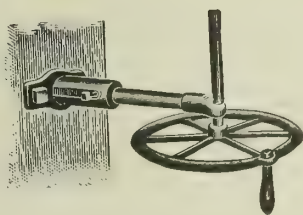
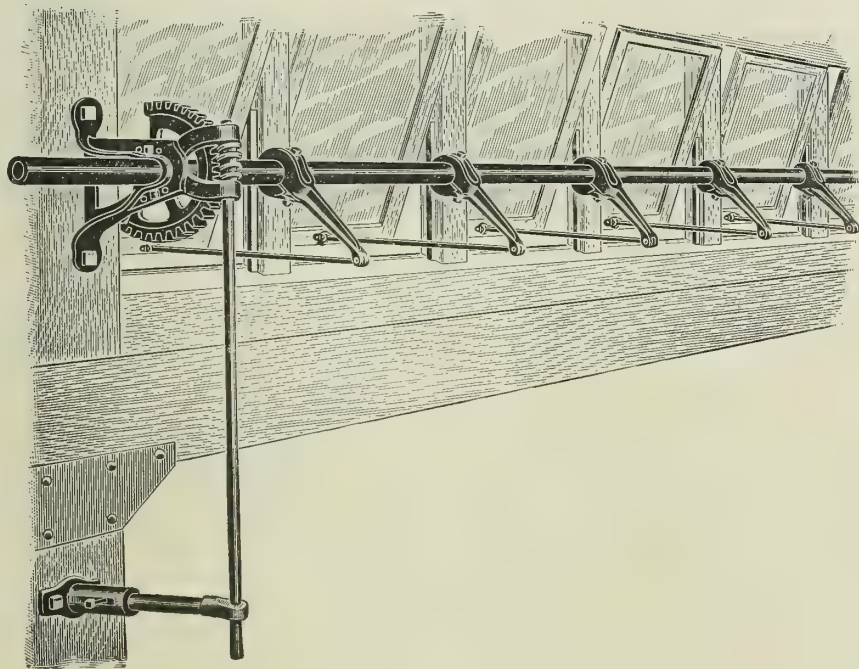
Estimates will gladly be furnished together with suggestions and drawings if desired.



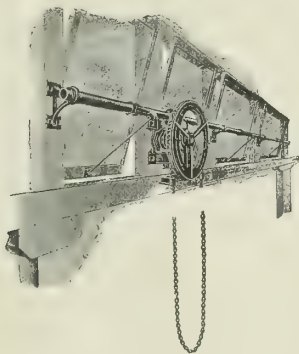
No. 7



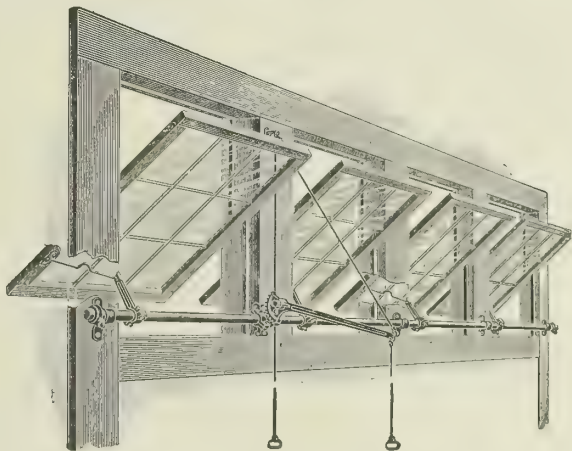
No. 5



No. 6



No. 4



No. 2

SOME OF OUR GEARED SASH OPERATORS

THE PERFECT SAFETY WINDOW GUARD

Fuller Building, Broadway and Twenty-Third Street
NEW YORK, N. Y.

PRODUCT.

We manufacture and market the PERFECT SAFETY WINDOW GUARD, an effective device for the prevention of accidents to window-cleaners while cleaning the outside of windows.

DESCRIPTION.

The Perfect Safety Window Guard, patented January 20, 1903, comprises a leather belt provided with bronze loops, through which passes a strap fitted at each end with a bronze clip that locks automatically with the semiglobular heads of the anchor or bolt, and can not become disengaged until removed by the operator.

ADVANTAGES.

In addition to being a positive insurance against accident, it reduces the cost of cleaning windows one half, as a window-cleaner using the Perfect Safety Window Guard is held securely in place on the outside of the window, and can use both hands while working, being thus enabled to do the work of two men not equipped with this device. (See Fig. 1.)

BOLTS.

Anchor bolts are placed in the stone or brick reveals by the mason, during the construction of the building, 51 inches above the sill and at least 2 inches out from the trim of the window-frame.

In the case of old buildings, screw bolts are installed in the wood frames, or expansion bolts are placed in the brick or stone jambs.

Special bolts are made for iron frames, mullions, or wherever ordinary bolts can not be used.

We make bolts to meet any peculiar construction of window-frames.

FACILITIES.

There is no limitation to our territory or ability to fill orders.

BUILDINGS WE HAVE EQUIPPED.

The Perfect Safety Window Guard is specified by leading architects throughout the United States and Canada.

The following is a partial list of buildings equipped by us:

Pennsylvania R. R. Terminal Buildings, New York, N. Y.
Trust Company of America, New York, N. Y.
City Investing Building, New York, N. Y.
Trinity Building, New York, N. Y.
United States Realty Co. Building, New York, N. Y.
New Plaza Hotel, New York, N. Y.
Hotel Astor, New York, N. Y.
Bourne Building, New York, N. Y.
Consolidated Stock and Petroleum Exchange, New York, N. Y.
Mt. Sinai Hospital, New York, N. Y.
New York Skin & Cancer Hospital, New York, N. Y.
Wells Fargo Express Building, Portland, Ore.
Corbett Estate Building, Portland, Ore.
Bryant Building, Liberty and Nassau Streets, New York, N. Y.
Chateau Frontenac, Quebec, Can.
Business Block, Tampa, Florida

Joseph Lang & Bros., Dallas, Tex.
American Brass Co., Waterbury, Conn.
Provident Building, Tacoma, Wash.
Seelbach Hotel, Louisville, Ky.
Stewart Building, Louisville, Ky.
Telephone Buildings, New York, N. Y., Jersey City and Newark, N. J., Montreal, Can., Washington, D. C., Baltimore, Md., and others.
Baltimore Customs House, Baltimore, Md.
City Hall and City Buildings, Detroit, Mich.
Brown Estate Building, Boston, Mass.
Cleveland Trust Company, Cleveland, Ohio.
Siegel-Cooper Company Stores, New York, N. Y., and Boston, Mass.
Hyde Building, Fourth Avenue and 27th Street, New York, N. Y.
Millbank Building, Fourth Avenue and 25th Street, New York, N. Y.



FIG. 1. BELT IN USE

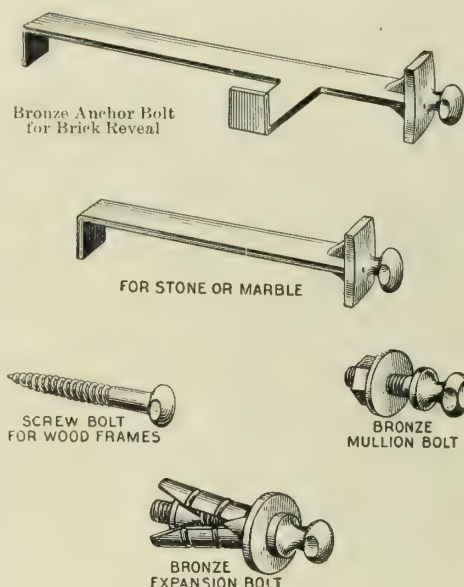


FIG. 2. STYLES OF BOLTS

T. C. PROUTY CO., LTD.

Manufacturers of Door Hangers

ALBION, MICH.

BRANCH OFFICES

NEW YORK, N. Y., 17 Reade Street
BOSTON, MASS., 161 Summer Street

PHILADELPHIA, PA., 50 North Sixth Street
DENVER, COLO., 1735 Arapahoe Street
SAN FRANCISCO, CAL., 693 Mission Street

PRODUCTS.

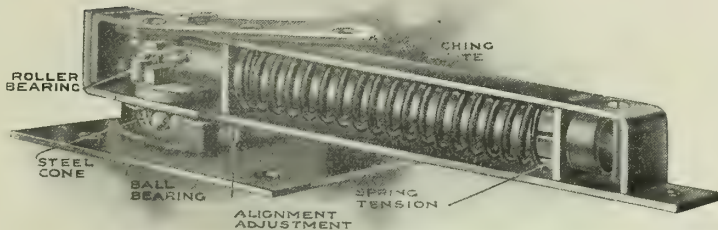
Manufacturers of HOUSE and BARN DOOR HANGERS, FIRE-DOOR FIXTURES, BARN-DOOR RAIL, DOUBLE-ACTING FLOOR HINGES, HASP LOCKS and HARDWARE SPECIALTIES, and "PROUTY" PNEUMATIC RIVETERS.

DISTINCTIVE FEATURES.

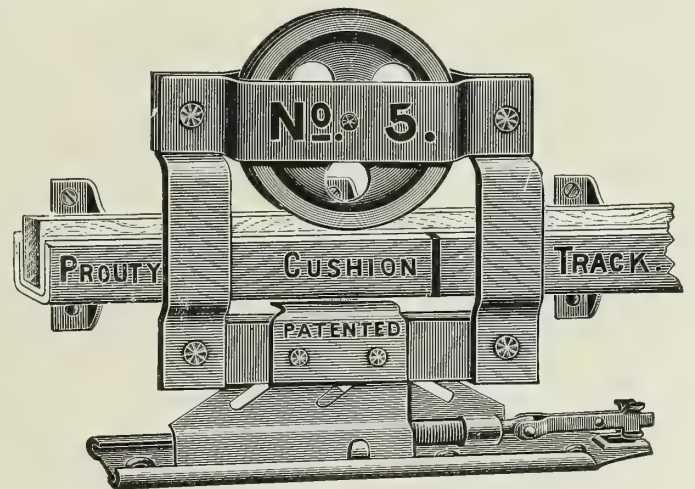
Our Hangers contain an absolute lock adjustment and a detachable door-plate. Being made of pressed steel, they are uniform in size and shape, and strong. By making only parlor and barn door hangers, we are able to make a close study of each feature, thereby securing perfect construction and the most favorable expressions from architects, builders and users.

NO. 5 CUSHION-TRACK DOOR HANGER.

This hanger has its track of hard maple mounted on a felt cushion, supported by a metal case. All sound vibrations are thus entirely checked, making the action of the hanger entirely noiseless. The bearings are also of noiseless construction and felt compression; sound-deadening washers prevent all side-play or rattle of the wheels. These hangers are guaranteed to carry any weight of door, and to operate easily.



DOUBLE-ACTING FLOOR HINGE



NO. 5 "PROUTY" CUSHION TRACK DOOR HANGER

DOUBLE-ACTING FLOOR HINGE.

It is a well-known fact that this type of Double-Acting Floor Hinge is the most convenient to install, gives better service, and is easier to adjust than any other, and in designing the hinge as illustrated it was with the object of overcoming all objectionable features in this form of construction.

All wearing parts are of case-hardened steel. Friction of spring plunger is on roller bearings and weight of door on ball bearings. Spring is made from best of oil-tempered wire and held in position by plunger, so that compression is direct, avoiding all side motion and preventing crystallization.

Finishing plates cover entire hinge and attach to door, fully covering any small defects in notching door for hinge.

In case the carpenter does not "set" hinge properly and door or doors do not center, it can be corrected easily by alignment adjustment.

Hinge will positively hold back at 95 degrees.

PRICES.

Prices of our Hangers will be promptly furnished upon application.

SUBSTITUTIONS.

Worthless substitutions are sometimes offered for "Prouty" Hangers, and architects should, in order to protect both themselves and clients, incorporate the word "Prouty" No. . . in specifying door hangers.

RELIANCE BALL BEARING DOOR HANGER CO.

1 Madison Avenue
NEW YORK, N. Y.

TELEPHONE, 1874 GRAMERCY

AGENCIES

PLANT
BROOKLYN, N. Y., 292 Himrod St.

BOSTON, MASS., THE MORSS & WHYTE CO.
BUFFALO, N. Y., C. W. SMITH
PHILADELPHIA, PA., CHAS. J. FIELDS SONS
BALTIMORE, MD., DUFUR & CO.
DETROIT, MICH., J. E. BOLLES IRON & WIRE WORKS
CHICAGO, ILL., F. P. SMITH WIRE & IRON WORKS
ST. LOUIS, MO., LASAR-LETZIG MFG. CO.
NORFOLK, VA., NORFOLK IRON & WIRE WORKS
CLEVELAND, OHIO, THE W. S. TYLER CO.

MILWAUKEE, WIS., PHILLIP GROSS HARDWARE CO.
DES MOINES, IOWA, CENTRAL INSULATION SUPPLY CO.
ST. PAUL, MINN., K. F. LOTT
OMAHA, NEB., JAS. MORTON & SONS CO.
DENVER, COL., BUILDERS SUPPLY CO.
LOS ANGELES, CAL., LOUIS R. BEDELL
SAN FRANCISCO, CAL., SARTORIUS CO.
PORTLAND, ORE., PORTLAND WIRE & IRON WORKS
SEATTLE, WASH., D. E. FRYER & COMPANY

VANCOUVER, B. C., WM. N. O'NEIL & CO.

PRODUCTS.

Manufacturers of DOOR HANGERS and ELEVATOR-DOOR LOCKS.

FACILITIES.

All goods are made to order at our own Plant. Any ordinary order can be shipped within a week.

CONSTRUCTION.

Our Hanger is made of three solid steel tracks, with steel balls each side of center track which moves with the door.

ILLUSTRATIONS.

Fig. 1. Single Hanger. Width of back plate $3\frac{1}{2}$ " to $6\frac{1}{2}$ " according to weight of door. Note that the length of tracks is the same as width of door.

Fig. 2. Curved Hanger, radius 3 feet. On account of the ball bearings this hanger will run as smooth and easy as a straight one.

Fig. 3. Double Gear. For moving two doors in opposite directions at the same time. Width of back plate 4" to 6" according to weight of doors. Allow 3" above back plate for opening device.

Fig. 4. Double-Speed Hanger. Style No. 1, for moving two doors in same direction, one at double the speed of the other. Width of back plate $4\frac{1}{2}$ " to $5\frac{1}{2}$ ". Allow 1" above back plate for opening device.

N. B.—We also make this style hanger for three doors traveling in the same direction.



FIG. 1. SINGLE DOOR, HALF OPEN

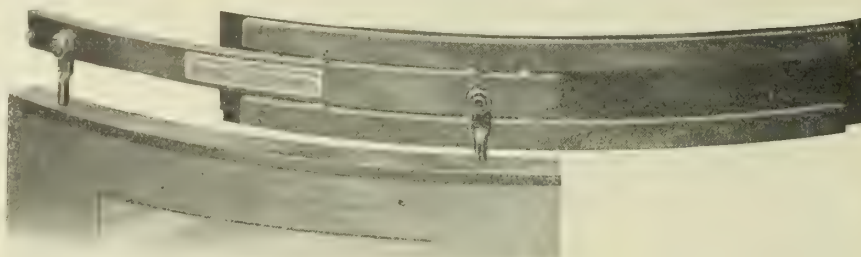


FIG. 2. SINGLE CURVED DOOR, CLOSED

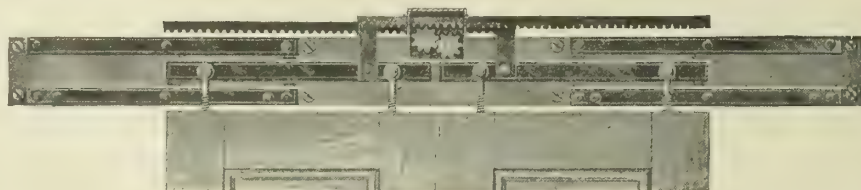


FIG. 3. DOUBLE GEAR

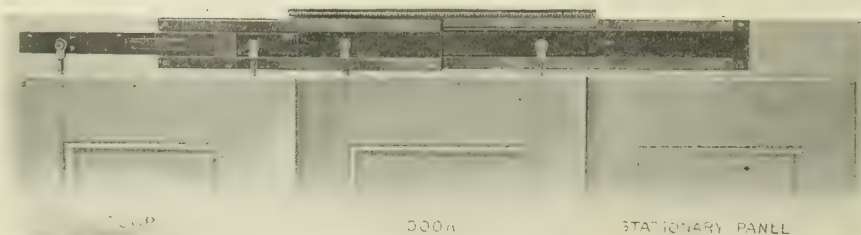
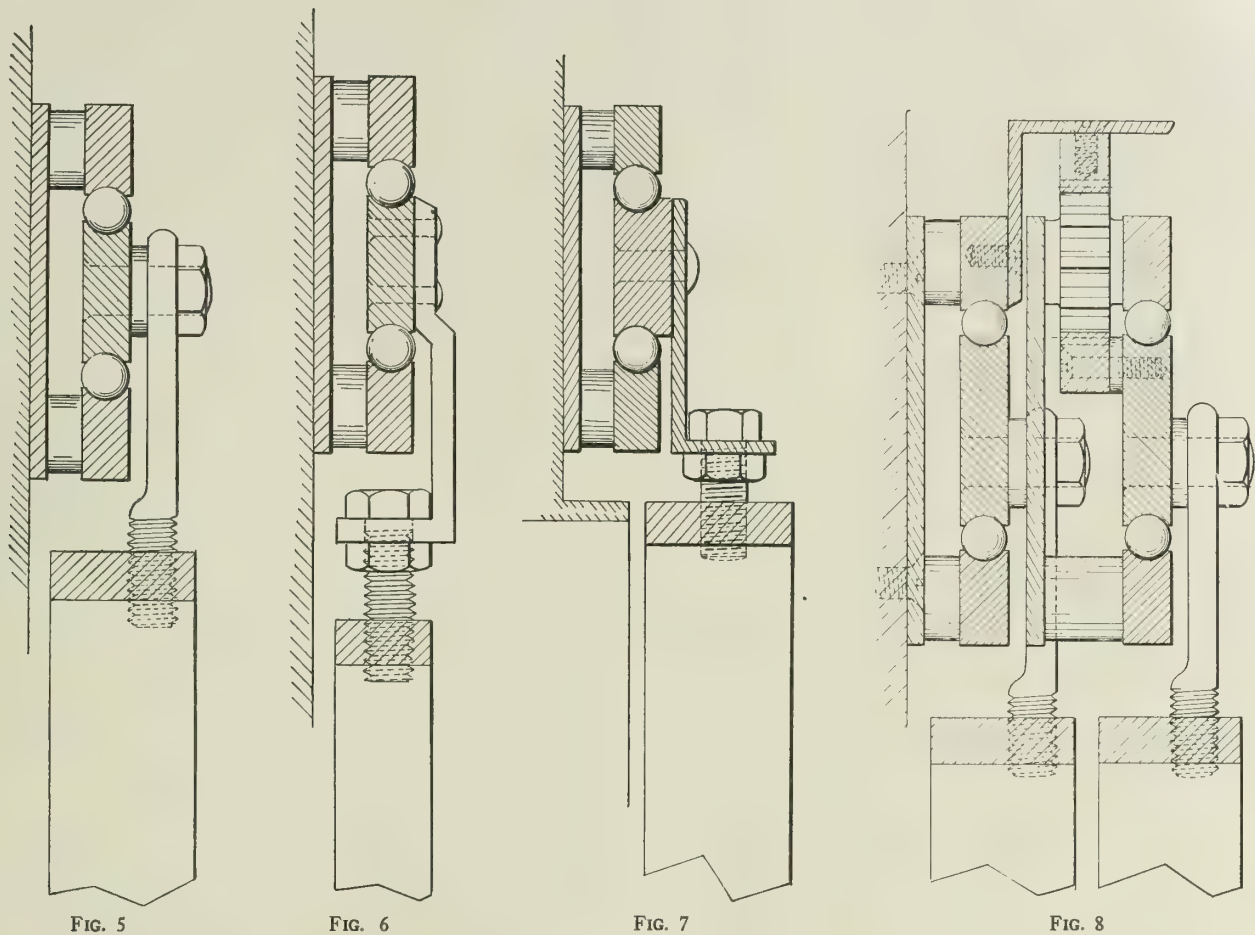


FIG. 4. DOUBLE-SPEED HANGER. DOORS CLOSING TO LEFT. STYLE NO. 1



SECTIONAL VIEWS OF HANGERS

Figs. 5 to 8, showing end sections, are about half size.
Fig. 5 shows hanger bolts for connecting to top of door when door is 1½" or more in thickness.
Fig. 6 shows single hanger, style "B," for thin doors.
Fig. 7 shows single hanger, style "A," for thick doors.
Fig. 8 shows double-speed hanger with hanger bolts, as used for doors 1½" thick.
Where doors are thin we use bent straps for connecting to top of doors, similar to Fig. 6.
Fig. 9 shows right-hand lock. Back plate 4½" x 6½"; thickness of lock ¾".
Fig. 10 shows left-hand lock. Back plate 4½" x 5½"; thickness of lock ¾".
Fig. 11, Bar Lock for locking tracks of hanger, suitable for single or double doors.
Made of polished brass tubing. Total length 5' 8". Requires 1⅜" from face of door.

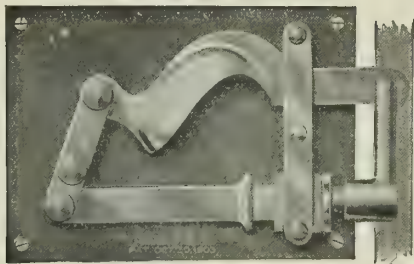


FIG. 9. GRAVITY LOCK NO. 1, DOOR CLOSED

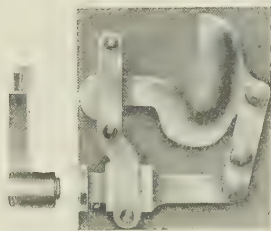


FIG. 10. GRAVITY LOCK NO. 2, DOOR OPEN

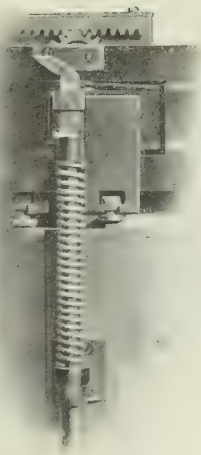


FIG. 11. BAR LOCK

SPECIFICATIONS.
ORDERING.

OTHER
HANGERS.

REFERENCES.

Specify: "Reliance" Hangers, with name of opening device if double doors.

In ordering, please state: Actual width of doors to be moved. Thickness of same. Approximate weight. Whether of wood or iron, and if two or three doors traveling in the same direction, state which way doors close looking from inside elevator car.

We also make light-weight Hangers suitable for bank work, and Ball-Bearing Drawer Slides.

We will furnish list of installations and any special information, upon request.

THE RICHARDS MANUFACTURING COMPANY

INCORPORATED

Manufacturers of Door Hangers and Hardware Specialties

AURORA, ILL.



CABLE ADDRESS, "TROLLEY, AURORA"

BRANCH OFFICES

CHICAGO, ILL., 49 East Lake Street
BOSTON, MASS., 139 Pearl StreetNEW YORK, N. Y., 101 Reade Street
ST. LOUIS, MO., 737 Century Building

MONTREAL, CAN., 446 St. Paul Street

PRODUCTS.

DOOR HANGERS for Sliding Doors of all kinds, sizes and weights, FIRE-DOOR FIXTURES, OVERHEAD TROLLEY CARRYING SYSTEMS, and HARDWARE SPECIALTIES.

"RICHARDS HERO" HANGER.

The No. 19, "Richards Hero" Trolley Ball-Bearing House-Door Hanger (Fig. 1) has noiseless fiber wheels. Wood header is furnished with track, and is easily put up. Adjustment in both hanger and track. If necessary, track can easily be taken down after walls are plastered. Screws, stop and floor guides are included with hangers. A full set of hangers weighs 8 pounds; the trolley track $2\frac{1}{4}$ pounds per foot.

This Door Hanger is largely used because it is simple in form, inexpensive, strong and durable, and meets all the ordinary constructive requirements for sliding doors.

"RICHARDS RAMBLER" HANGER.

The No. 9, "Richards Rambler" Ball-Bearing House-Door Hanger (Fig. 2) is a very popular moderate priced hanger. Machined wheel runs on noiseless wood-filled track. Hanger is adjustable. Has overhead center stop; endless run for doors of any width. Center stop, floor guides and screws packed with hangers. Weight, full set (4 hangers), 10 pounds. Full set track, 10 pounds.

"RICHARDS ROYAL" HANGER.

In No. 122, "Richards Royal" Ball-Bearing Trolley House-Door Hanger (Fig. 3) the wheels have wide bearings and travel on hard maple track. Wood track lining in two parts. Open slot in center acting as guide for the wheels. Pendant hung from exact center of hanger. This form of construction equalizes the strain, distributes the weight of the door, and insures an even, true and noiseless operation. Adjustment in both hangers and track. Track can easily be removed after walls are plastered, if required. Hangers weigh 10 pounds per set; track 3 pounds per foot. The "Richards Royal" House-Door Hanger in all respects meets the peculiar requirements of a perfect parlor-door hanger.

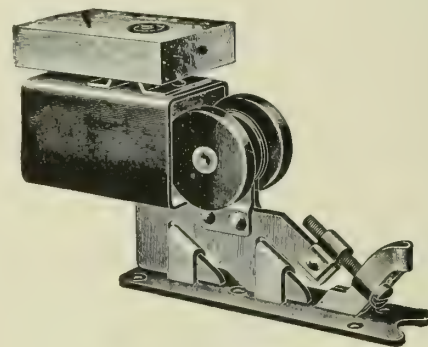


FIG. 1. NO. 19, "RICHARDS HERO" TROLLEY HOUSE-DOOR HANGER

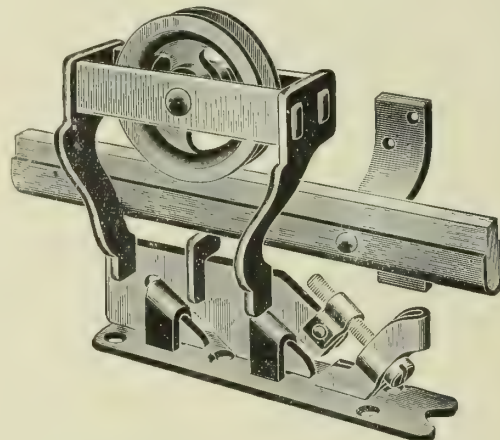


FIG. 2. NO. 9, "RICHARDS RAMBLER" HOUSE-DOOR HANGER

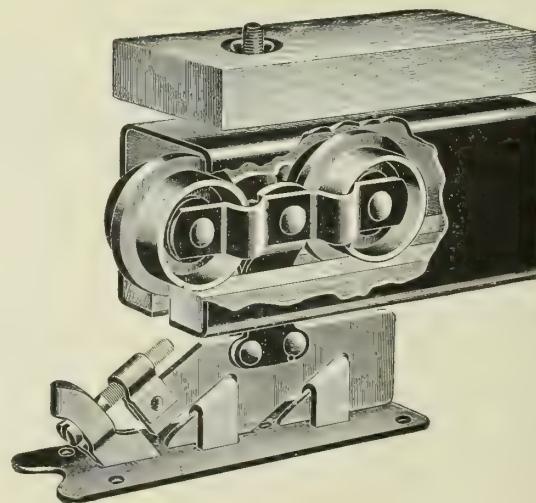


FIG. 3. NO. 122, "RICHARDS ROYAL" TROLLEY HOUSE-DOOR HANGER

"RICHARDS
PALACE"
HANGER.

The No. 132, "Richards Palace" Ball-Bearing House-Door Hanger (Fig. 4) is perfectly noiseless, supplied with adjustable hangers and track. The wheels run on hard maple and the track is covered. The wood in the track is made in two pieces, with an open slot in the center for the wheel-guide. It is impossible for the slot to fill up with plaster or dirt, and the track can easily be taken down after the walls are plastered. There are four sets of balls in each hanger. The wheels have wide bearing on track. Hangers weigh 10 pounds per set; track, 2 pounds per foot.

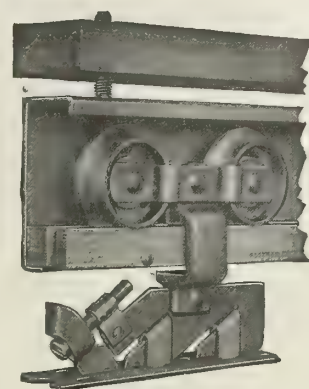


FIG. 4. NO. 132, "RICHARDS PALACE" DOOR HANGER

"RICHARDS
CHAMPION"
STEEL-TRACK
HANGER.

"Richards Champion" No. 13 House-Door Hanger (Fig. 5) runs on standard size steel rail. Wheel has noiseless fiber tread. Endless run for doors of any width. Hangers easily adjusted. Center stop, floor-guides and screws packed with hangers. Full set hangers weighs 10 pounds, full set track 12 pounds.

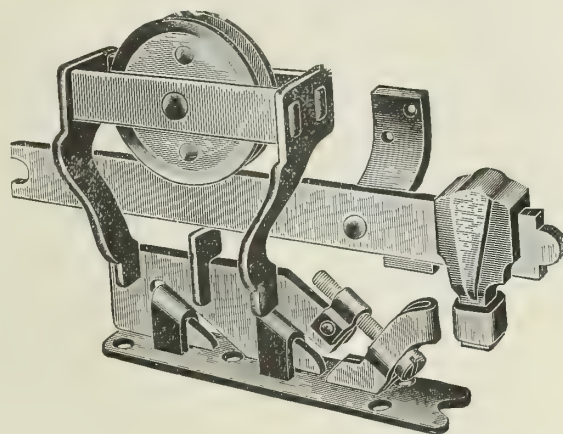


FIG. 5. NO. 13, "RICHARDS CHAMPION" SINGLE TRACK HOUSE-DOOR HANGER

"RICHARDS"
SWIVEL
HANGER.

The No. 135, "Richards" Ball-Bearing Swivel Door Hanger for folding partitions (Fig. 6) is fitted with a ball-bearing swivel and with vertical screw adjustment, and either fiber or metal wheels are supplied. Made in two sizes: No. 1, suitable for doors from $1\frac{3}{4}$ " to $2\frac{1}{4}$ " thick; No. 2, for doors from $2\frac{1}{4}$ " to 3" thick.

Directions for ordering: Track should be as long as opening is wide. Brackets should be placed from 2 to $2\frac{1}{2}$ feet apart. One hanger required for every other door, beginning with door farthest from half-door.

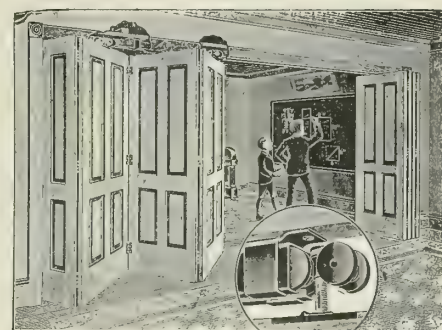


FIG. 6. NO. 135, "RICHARDS" SWIVEL DOOR HANGER

"RICHARDS
STANDARD"
HANGER.

The No. 17, "Richards Standard" Trolley Roller-Bearing Barn-Door Hanger (Fig. 7) is strong, well finished, and runs smoothly. Lateral adjustment to suit thickness of doors. The track can be attached to side or ceiling supports, and is furnished in any length up to ten feet in one piece. Packed with bolts for attaching hangers and track. The pendant is 6" long, 4" wide, and $\frac{3}{16}$ " thick. This hanger is used regularly with No. 31 Track. We make several different sizes in this type of hanger, including:

No. 17, designed for doors from $1\frac{1}{2}$ " to 2" thick, weighing not over 400 pounds.

No. 24, designed for doors from 2" to $2\frac{1}{2}$ " thick, weighing not over 500 pounds.

No. 28, designed for doors from $2\frac{1}{2}$ " to $2\frac{3}{4}$ " thick, weighing not over 600 pounds.

No. 120, designed for doors from $2\frac{1}{4}$ " to $3\frac{1}{2}$ " thick, weighing not over 800 pounds.

No. 150, designed for doors from $2\frac{3}{4}$ " to 4" thick, weighing not over 1,000 pounds.

Nos. 120 and 150 are suitable for very heavy doors, such as are used in factory, warehouse, and wharf work.

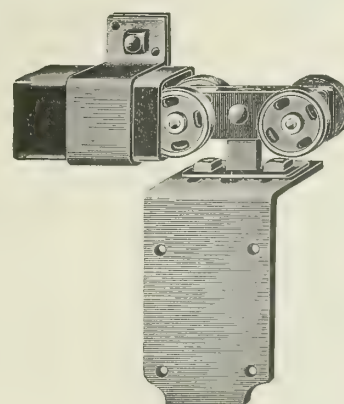


FIG. 7. NO. 17, "RICHARDS STANDARD" TROLLEY BARN-DOOR HANGER

"RICHARDS
MONARCH"
FIRE-DOOR
FIXTURES.

Included in the list of fire-door hardware examined under the standard requirements of the National Board of Fire Underwriters by the National Fire Protection Association, after exhaustive investigation by the Underwriters' Laboratories, and approved for use.

Fig. 8 shows manner of applying hardware and also the arrangement of cord and fusible links. One link is constantly in the opening and exposed to both sides of doorway; the other link is above the opening near the ceiling.

The fusing of either of these links releases the weights and allows the door to close. When doors are used on both sides of wall the cord passes through wall at point where end is attached to screw-eye and continues the arrangement on the other side of wall. With this double arrangement four fusible links are exposed. In case any one of the four links fuses, weights will release and both doors will close.

This hardware is regularly inspected and labeled under supervision of Underwriters' Laboratories, Incorporated.

In ordering, give width of the opening and state whether doors will be used on one or both sides of the wall. The doors must be wider than the opening. Do not say doors when you mean openings. If bolts are desired, the thickness of the wall must be given. An extra charge is made for bolts.

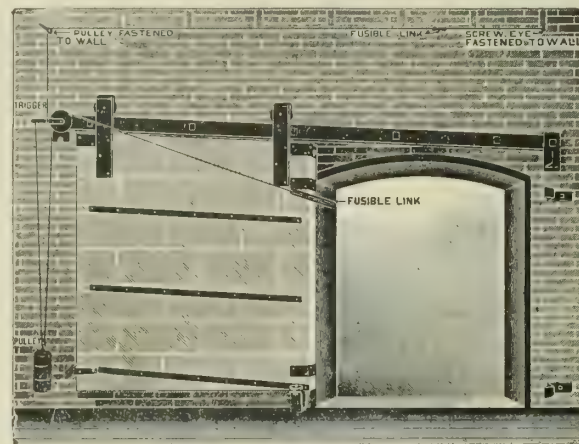


FIG. 8. NO. 102, "RICHARDS MONARCH" APPROVED FIRE-DOOR FIXTURES

"RICHARDS
MUTUAL"
FIRE-DOOR
FIXTURES.

"Richards Mutual" Fire-Door Fixtures for standard three-ply tin-clad doors (Fig. 9) are tested and approved by the "Factory and Mutual Laboratories of Boston." The hardware furnished in this set is practically the same as our No. 102 "Monarch" set. The difference is in the automatic cord arrangement.

INSTALLA-
TION.

All goods shipped by us are accompanied by full directions for installation, with the help of which any experienced mechanic can put them up. We also take full contracts for installing our products.

FACILITIES OF
MANUFACTURE AND
SCOPE OF
MARKET.

Large, modernly equipped factory. Mechanics specially trained. Large stock of standard products carried at works and branches insures prompt shipment of orders. Line sold by the hardware trade throughout the United States and Canada and considered standard.

PRICES.

Prices reasonable and quotations made on application. Estimates furnished on special work.

CO-OPERATIVE
SERVICE.

We are at all times pleased to send to architects or others upon receipt of request, complete descriptive matter, catalogue, price-lists and samples.

GUARANTEE.

We fully guarantee all of our products and will replace, free of charge, any piece of goods sold by us found to be defective on account of workmanship or material, but we will not be responsible for any goods unless used according to directions.

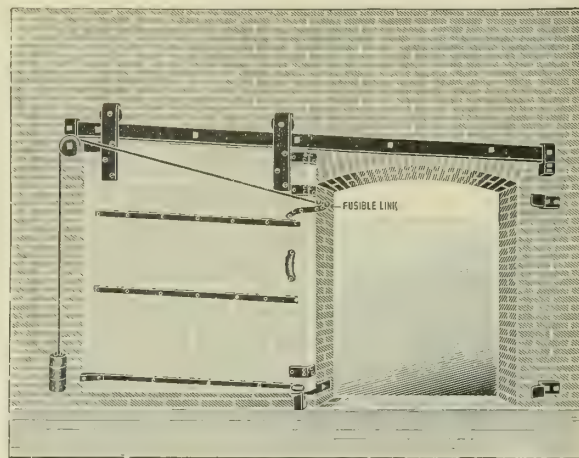


FIG. 9. NO. 201, "RICHARDS MUTUAL" APPROVED FIRE-DOOR FIXTURES

THE RICHARDS MANUFACTURING COMPANY

INCORPORATED

“Superior” Spring Hinges and Door Holders

AURORA, ILL.

CABLE ADDRESS, “TROLLEY, AURORA”

BRANCH OFFICES

CHICAGO, ILL., 49 East Lake Street
BOSTON, MASS., 139 Pearl Street

NEW YORK, N. Y., 101 Reade Street
ST. LOUIS, MO., 737 Century Building

PRODUCTS.

We furnish “SUPERIOR” SPRING HINGES, “SUPERIOR” FLOOR SPRING HINGES, “SUPERIOR” DOOR HOLDERS, and “SUPERIOR” VENTILATING BOLTS in all standard finishes.

We also make SLIDING-DOOR HANGERS and HARDWARE SPECIALTIES. (See General Index for our other pages.)



DESCRIPTION.

The “Superior” Spring Hinge (Fig. 1) is far superior to the old-style floor hinge, because it is above the floor, concealed in the door between side plates, which fully protect it from grit and moisture. The ball bearing is located on top of hinge. These hinges are used to the best satisfaction wherever spring hinges are wanted. They are easily and quickly applied, have large wearing surfaces, and are neat, strong, durable and fully guaranteed.

The “Superior” Floor Spring Hinges (Fig. 2) are the most simple and compact hinges of this form. They take up less floor space and less time to set in place than any other floor hinges.

“SUPERIOR” DOOR HOLDER.

The “Superior” Door Holder (Fig. 3) is a neat, strong, and durable device that is operated by foot pressure. It can not injure any kind of floor or carpet, nor has it any projection to catch on garments.

This holder should be used on all doors with spring hinges or door checks. They are made in two sizes: The smaller size will reach $1\frac{1}{2}$ " from door to floor, the larger size $2\frac{1}{2}$ " from door to floor.

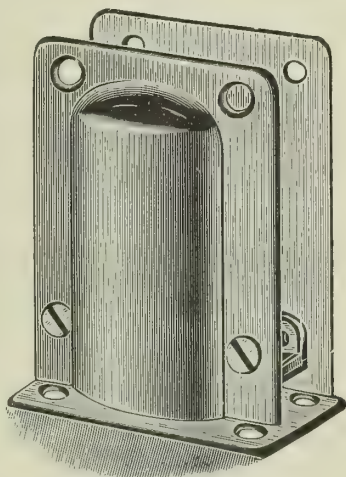


FIG. 1. “SUPERIOR” SPRING HINGE

Dimensions of side plates for $\frac{7}{8}$ to $1\frac{1}{2}$ in. door $3\frac{1}{2} \times 4\frac{1}{2}$, for $1\frac{3}{4}$ to 2 in. door $4 \times 5\frac{1}{2}$

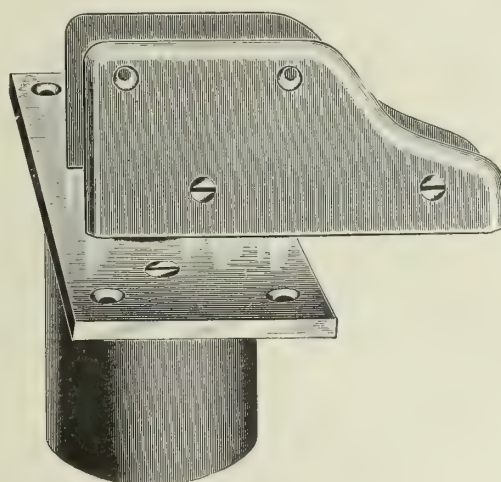


FIG. 2. “SUPERIOR” FLOOR SPRING HINGE



FIG. 3
“SUPERIOR”
DOOR HOLDER

EMIL W. RITTER COMPANY

Building Appliances and Specialties

40 Dearborn Street

CHICAGO, ILL.

BRANCH OFFICE

ST. LOUIS, MO., EDWARD MUEHLENBOCK & Co., 400 NORTH MAIN STREET

AGENCIES IN ALL PRINCIPAL CITIES

FACTORY

HOLLAND, MICH., HOLLAND FURNACE Co.

PRODUCTS.

BUILDING SPECIALTIES: COAL CHUTES; WINDOW CHUTES; UNITED STATES MAIL CHUTES; "IDEAL" CAST-IRON PORCH COLUMN BASE; POST CAPS; "ATLAS" SCAFFOLD CLAMPS; HARDWARE SPECIALTIES; SIDEWALK LIGHTS; PRISMATIC LIGHTS; VAULT LIGHTS; WALL PLUGS; WALL TIES; "HOLLAND" WARM-AIR FURNACES and "BURKE" SMOKELESS FURNACES for Steam Boilers.

WINDOW CHUTE.

The Window Chute is a glass window and a coal receiving hopper combined. When opened for use as a chute a heavy plate lies above and completely covers the glass, forming the bottom of the receiving hopper, and as this plate does not rest upon or touch the glass no shock is imparted. When closed, this apron or shield is raised and rests on projecting lugs at the top of frame, leaving a free opening for the light through the window and at the same time locking the chute. Three years of successful use have demonstrated the durability and reliability of this chute.

ADVANTAGES.

The Window Chute is always a window; other chutes are of use only while the coal is being put in. It locks automatically from the outside when pushed shut, and can be opened from the inside only. It is unnecessary to climb over a dirty coal pile to lock or unlock the window, as with other chutes. It has no hinges on the outside.

SPECIAL ADAPTATIONS.

The Side Special type takes the place of areas and gratings in the sidewalk when the low level of the first floor will not permit basement windows above grade.

The Store-Front Special permits delivery of fuel or merchandise through the space under bulk-head, without shutting the light from the basement.

INSTALLATIONS.

The Window Chute is simply set in place and built into the walls. The top and bottom of the wall frame being in a horizontal plane makes it easy to set, avoiding the difficulties inherent to setting a chute with slanting top and bottom. Projecting lugs at the back of frame hold it securely in the wall.

SIZES AND PRICES.

Sizes G and N now have steel hopper, recessed to show about 2 inch reveal around inside of frame.

Size of Regular Chutes	Size of Casing		Over-all Dimensions		Glass Inches	Price
	Height Inches	Width Inches	Height Inches	Width Inches		
A	16 $\frac{3}{4}$	22 $\frac{1}{2}$	19	25	1 L. 12 x 18	\$10.00
D	20 $\frac{3}{4}$	24 $\frac{3}{4}$	23	27	2 L. 10 x 16	12.50
G	24 $\frac{3}{4}$	32 $\frac{3}{4}$	27	35	2 L. 14 x 20	15.00
N	36	36	40	40	2 L. 14 x 30	25.00

To avoid breakage in shipment and high freight rates, glass is omitted. Glass is standard size and can be replaced if broken, as with any window.

ORDERING.

When ordering the Window Chute specify "for glass" or "with solid front." We make it both ways.

CO-OPERATIVE SERVICE.

Sectional cuts, prints, etc., showing special adaptations of the Window Chute will be cheerfully furnished to architects upon application.



FIG. 1. Closed and Locked



FIG. 2. Open (Glass covered)
THE WINDOW CHUTE

W. S. ROOF & SON

Manufacturers of Partition Hangers

BILOXI, MISS.

PRODUCT. A FOLDING-DOOR HANGER.

DESCRIPTION.

The Folding-Door Hanger made by W. S. ROOF & SON is something entirely new and useful, and must appeal to architects and builders. It was originally invented to operate a large folding partition in a church, where it is in operation to-day.

All the movable parts work on ball bearings, thereby reducing the friction to a minimum. The trolley being turned from solid steel insures it against breaking. This trolley may be adjusted at any time, if necessary, after the partition is completed, a small removable panel being left at the side of the opening to which the doors fold. The lintel must always be of sufficient size, strong, and well made, of iron or well-seasoned wood, in order to prevent sagging. The hanger, Fig. 1, is made of cast-iron, and occupies a space of 5 x 9 inches. The track is of steel and is securely fastened to the casting. The trolley is made of a solid piece of steel. The wheels and suspending or swivel rod work on ball bearings. The clasp over the door is of solid brass, finished as desired. Clasps are made for $1\frac{3}{4}$ -inch doors unless otherwise ordered.

ADAPTABILITY
AND
ADVANTAGES.

This Hanger is particularly adapted for church and school work, where movable partitioning is needed that will operate with ease and little noise. It is just as useful in dwellings and other buildings where division and subdivision of space are temporarily necessary. The uses of this hanger, in fact, are almost unlimited. Fire-proof partitions may be hung with it, besides store fronts and circular partitions.

WHEN
ORDERING.

It must be distinctly understood that W. S. ROOF & SON do not furnish the doors or partitioning, only the hangers and track. Any design will do, but it should be noted that a particularly handsome piece of partition furniture may be possible by having a nicely made and finished door. The partition doors should be made interlocking, so that when closed or extended they will be perfectly tight, dust-proof and practically sound-proof. In asking prices, always state the width of the opening and the number of doors you expect to use. Satisfactory replies to inquiries can not be made unless this information is given.

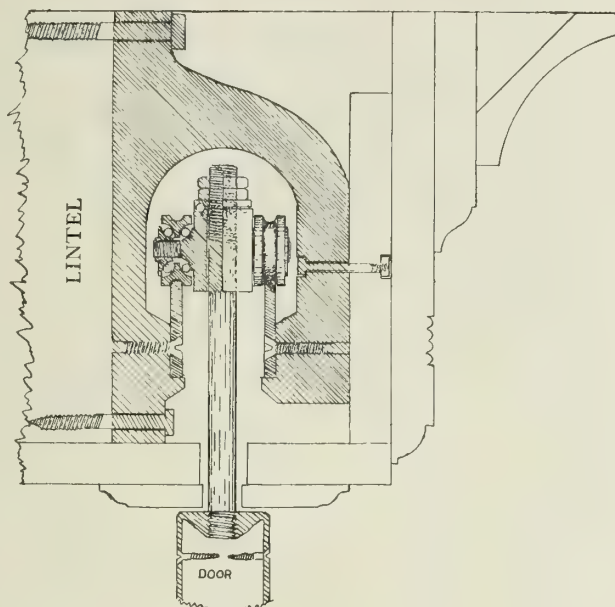


FIG. 1. A SECTION OF THE HANGER, SHOWING THE OPERATING PARTS

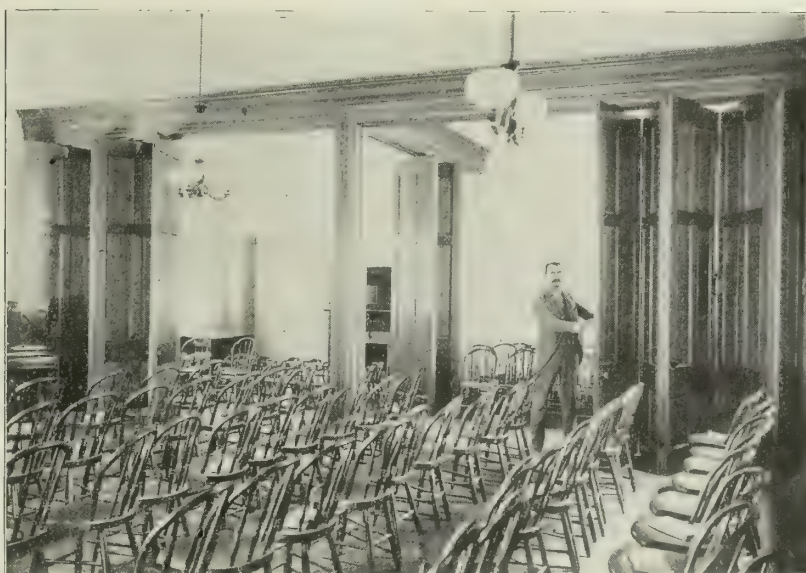


FIG. 2. THE HANGER IN USE

OSCAR C. RIXSON CO.

Double-Acting Checking Floor Hinge

111 West Harrison Street
CHICAGO, ILL.

PRODUCTS.

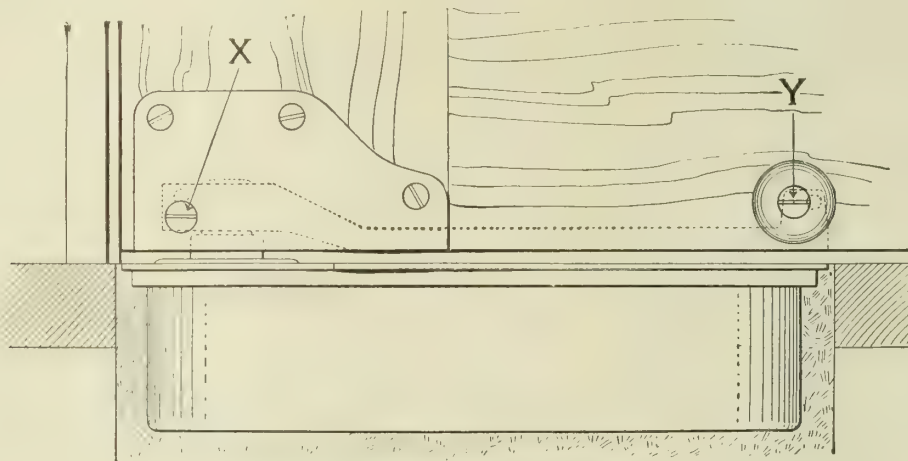
Manufacturers and sellers of DOUBLE-ACTING CHECKING FLOOR HINGE for Entrance and Vestibule Double-Acting Doors.

THE "RIXSON" DOUBLE-ACT- ING CHECKING FLOOR HINGE. DESCRIPTION.

This device is peculiarly adapted for use on entrance and vestibule double-acting Doors in public buildings of any character. Doors of this type are usually subjected to constant usage, and the service required of the closing and checking mechanism is very exacting.

In each device we have two springs, one of which operates to close the door inward and the other operates to close the door outward. One of these springs is always at rest and inactive while its mate is in operation.

The power of either spring may be wound up to a high point while that of its mate may be adjusted at a very low point. Any degree of power up to the maximum capacity may be secured from either spring without affecting the power of the other spring.



SHOWING POSITION OF HINGE IN FLOOR WITH DOOR MOUNTED

In each device we also have two entirely independent checking mechanisms, one of which retards the action of the door when closing inward, the other checking the door when closing outward. These are adjusted independently of each other and any alteration of the adjustment of one has no effect whatever upon the other.

All adjustments of both spring and checking power are made from the surface of the floor without dismounting the door.

The device closes the door quickly and silently, stopping it at the center and doing away with all flopping back and forth.

The power of the springs as applied to the door is greatest at the central or closed point, which is a great advantage in holding an outside door closed against wind or atmospheric pressure.

PRICES.

No. 30. For outside doors not over 3' x 7' 6", . . . \$30.00

No. 40. For extra large outside doors, . . . 50.00

Cast-iron box for use in cement or tile floors furnished without extra charge.

This device is made upon honor, no expense being spared to make it the most efficient and durable equipment in the world for doors of this type.

Full detailed information will be supplied by the manufacturers.

OSCAR C. RIXSON CO.

Casement Window Lock and Adjuster

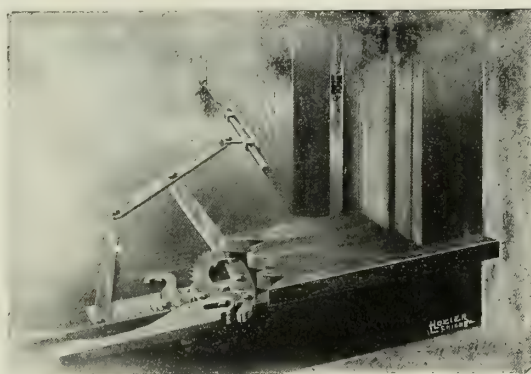
540 West Harrison Street
CHICAGO, ILL.

PRODUCTS.

"SPERRY"
CASEMENT
WINDOW
LOCK AND
ADJUSTER.

The "SPERRY" CASEMENT WINDOW LOCK and ADJUSTER.

We offer the "Sperry" Casement Window Lock and Adjuster to the careful scrutiny of architects and builders. We are confident that it will at once commend itself as a simple and effective fixture in the line of builders' hardware for which they have for a long time searched in vain.



THE "SPERRY" CASEMENT WINDOW LOCK AND ADJUSTER
(Patented)

DESCRIPTION.

The parts of this fixture are stamped from heavy, hard, rolled brass and steel, thus assuring evenness of construction and workmanship. It is assembled with specially designed hard-brass shouldered rivets, insuring durability. All the working parts are made extra strong, protecting them against any sudden or accidental strain. In applying this fixture there is no fitting of parts, as it is perfectly assembled and adjusted in one piece before leaving the factory, and instructions for installing accompany each fixture.

OPERATION.

The fixture is operated in the following manner: Swing the operating handle around and slip the flange into the slot. Pull out the locking lever, and by means of the operating handle swing the window to the desired position.

They are made for windows opening to the right or left. If the hinges of the window are at the right (facing the window from inside the house), a right hand fixture is used, and vice versa.

ADVANTAGES.

This fixture operates easily and opens the window out, the proper way. The screen, storm sash, or curtains are not disturbed in operating the window and the device holds the window rigidly at any point of adjustment. The window is positively locked when closed and can not rattle at any position. It is completely covered by the window stool; there are no levers or rods to project into the room. It can easily be placed in position by any carpenter.

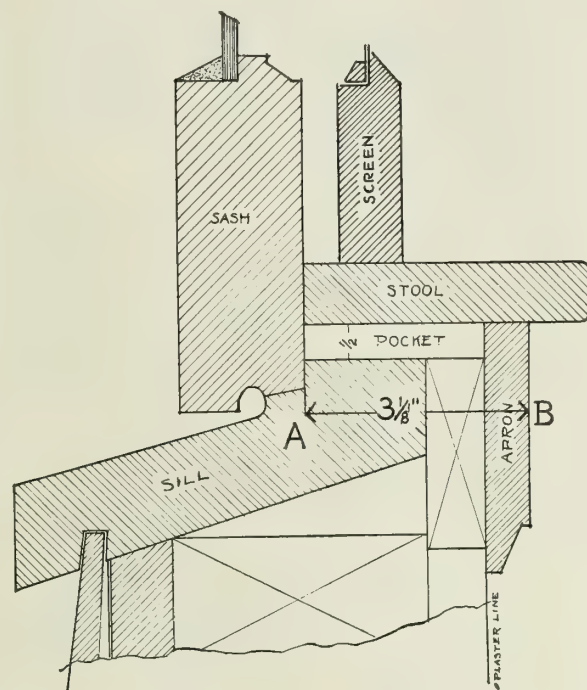
PRICES AND SIZES.

For regular fixture, the distance between A and B, as shown in detail of window-frame, must be exactly $3\frac{1}{8}$ inches. For special fixture, made to order, the distance between A and B may be anything from $3\frac{1}{2}$ to 6 inches.

Price of Regular Fixture, \$2.25; Special Fixture, \$2.65.

DIRECTIONS FOR ORDERING.

Give distance between A and B. Give number of each, right and left hand windows. Give width of windows.



DETAIL OF SILL, SHOWING DISTANCE A-B REQUIRED FOR THE OPERATION OF "SPERRY" LOCKS AND ADJUSTERS

THE SHELBY SPRING HINGE CO.

MANUFACTURERS OF

The "Shelby Chief" Ball-Bearing Floor Hinges

SHELBY, OHIO

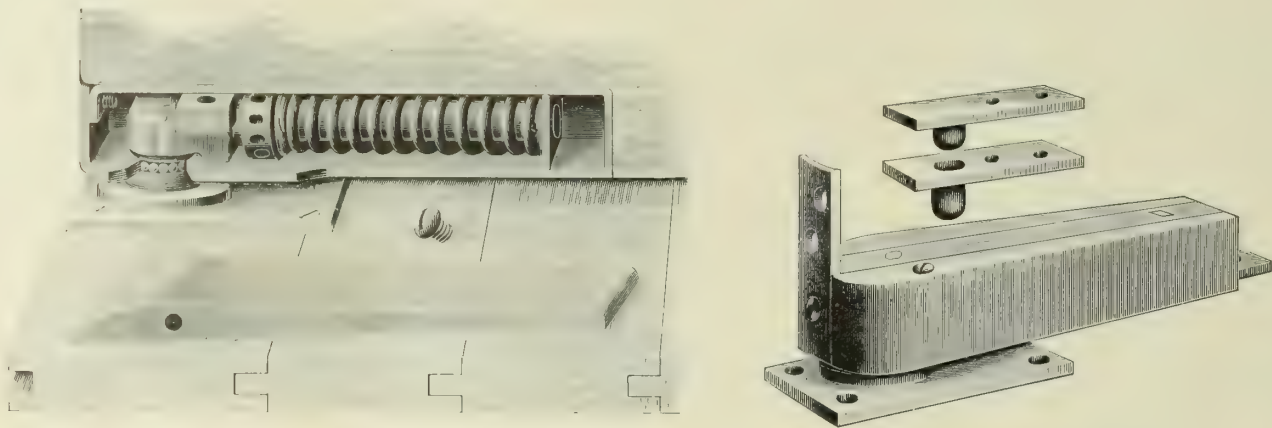
NEW YORK OFFICE
84-86 CHAMBERS STREET

PRODUCTS. We manufacture the "SHELBY CHIEF" DOUBLE-ACTING, BALL-BEARING FLOOR HINGES, "SHELBY" BALL-BEARING SPRING BUTT HINGES, DOOR HOLDERS, and FLEXIBLE DOOR BUMPERS; also, STEEL SASH LOCKS, SCREEN DOOR HINGES, and other BUILDERS' HARDWARE.

"SHELBY CHIEF" FLOOR HINGE. A most important feature of this Hinge (see cuts below) is that it rests upon the surface of the floor, a point which at once appeals to the carpenter and builder as a most economical and labor-saving device, being quickly applied by screws to the floor or by expansion bolts to stone or cement sills.

INSTALLATION. The Hinge is first applied to the door, and this is done by sawing out a square cut at the bottom corner of the door, no mortising being required. When the Hinge is in place the door is placed in an upright position with its opposite edge placed to the center of jamb or opposite door (when double doors are used), thus getting the door in line before the base-plate is screwed fast to the floor.

This Hinge holds open at right angles, which is greatly appreciated by the one using the door. The tension of the spring can be regulated at any time after the door has been hung, thus enabling one to adjust the swing of the door as desired.



Side-Plates removed, showing Working Parts, Adjusting Nut and Ball-Bearing

The Hinge ready for use

"SHELBY CHIEF" DOUBLE-ACTING, BALL-BEARING FLOOR HINGE

PRICES AND FINISHES.

Finish							Finish							Finish						
Steel Unpolished	No.	Thickness of Door 1 3/8 to 1 1/2	No.	Thickness of Door 1 3/4 to 2	No.	Thickness of Door 2 1/4 to 3	Steel Polished	No.	Thickness of Door 1 3/8 to 1 1/2	No.	Thickness of Door 1 3/4 to 2	No.	Thickness of Door 2 1/4 to 3	Bronze or Brass Metal	No.	Thickness of Door 1 3/8 to 1 1/2	No.	Thickness of Door 1 3/4 to 2	No.	Thickness of Door 2 1/4 to 3
Japanned Dead Black	2	\$2.80	4	\$3.50	6	\$6.10	Bronze Plated.....	62	\$4.55	64	\$4.90	66	\$7.50	Bronze, High Polish	122	\$7.00	124	\$8.40	126	\$11.60
Bronze Plated.....	12	3.50	14	4.20	16	6.80	Brass Plated.....	72	4.55	74	4.90	76	7.50	Brass, High Polish..	132	7.00	134	8.40	136	11.60
Dull Brass Plated...	15	3.75	17	4.55	19	7.35	Nickel Plated.....	82	4.55	84	4.90	86	7.50	Antique, Copper						
Antique, Brass Plated	21	3.75	23	4.55	25	7.35	Antique, Copper							Finish.....	142	7.70	144	9.10	146	12.25
Brass Plated.....	22	3.50	24	4.20	26	6.80	Plated.....	92	4.80	94	5.25	96	8.00	Dull Brass Finish...	152	7.70	154	9.10	156	12.25
Sand Blast Antique							Dull Brass Plated...	102	4.80	104	5.25	106	8.00	Antique, Brass Finish	153	7.70	155	9.10	157	12.25
Copper.....	32	4.45	34	4.70	36	7.45	Antique, Brass Plated	111	4.80	113	5.25	115	8.00	Nickel Finish.....	162	7.70	164	9.10	166	12.25
Antique, Copper							Sand Blast Antique							Oxidized, Silver						
Plated.....	42	3.75	44	4.55	46	7.35	Brass.....	112	4.80	114	5.25	116	8.00	Finish.....	172	11.20	174	12.60	176	16.00
Imitation Bower-							Verd Antique.....	117	5.30	119	5.70	121	8.40	Verd Antique.....	182	8.40	184	9.80	186	13.20
Barf.....	52	3.75	54	4.55	56	7.35														

Above prices per complete set packed in box with screws.

“SHELBY”
BALL-BEARING
SPRING
HINGES.

These Hinges are made in sheet steel, sheet bronze, and brass, to match all finishes. They sustain the weight of the door upon hardened ball bearings which do not wear or need lubrication, which is important in brass or bronze hinges, owing to the softness of the metal. This Hinge has successfully stood tests beyond anything in actual practice. Each hinge is fitted with a carpenter's gauge which simplifies the hanging of the door.

SIZES, PRICES AND FINISHES
Unpolished Steel, Double-Acting

For Doors not larger than	6x2 ft. x ¾ to 1 in. Use 3 in.		7x2 ft. x 1 to 1 ½ Use 4 in.		7x2 ¼ ft. x 1 to 1 ½ Use 5 in.		7x2 ½ ft. x 1 to 1 ½ Use 6 in.		8x2 ½ ft. x 1 ½ to 2 Use 7 in.		8x3 ft. x 1 ½ to 2 ¼ Use 8 in.		9x3 ft. x 1 ¾ to 2 ½ Use 10 in.		10x3 ft. x 2 to 3 in Use 12 in.	
	No.	Per Set	No.	Per Set	No.	Per Set	No.	Per Set	No.	Per Set	No.	Per Set	No.	Per Set	No.	Per Set
Japanned Dead Black....	2031	\$1.65	2041	\$2.10	2051	\$2.65	2061	\$3.65	2071	\$4.75	2081	\$6.90	2101	\$9.45	2121	\$12.60
Bronze Plated.....	2032	2.10	2042	2.50	2052	3.25	2062	4.50	2072	5.75	2082	8.35	2102	11.50	2122	15.10
Dull Brass Plated.....	2033	2.30	2043	3.00	2053	3.70	2063	5.20	2073	6.70	2083	9.50	2103	13.00	2123	17.40
Antique Brass Plated....	2034	2.30	2044	3.00	2054	3.70	2064	5.20	2074	6.70	2084	9.50	2104	13.00	2124	17.40
Brass Plated.....	2035	2.10	2045	2.50	2055	3.25	2065	4.50	2075	5.75	2085	8.35	2105	11.50	2125	15.10
Antique Copper Sand....	2036	3.15	2046	4.00	2056	5.00	2066	6.60	2076	8.50	2086	11.80	2106	16.00	2126	21.00
Antique Copper Plated...	2037	2.30	2047	3.00	2057	3.70	2067	5.20	2077	6.70	2087	9.50	2107	13.00	2127	17.40
Int. Bower Larff.....	2038	2.30	2048	3.00	2058	3.70	2068	5.20	2078	6.70	2088	9.50	2108	13.00	2128	17.40

Polished Steel, Double-Acting

Bronze Plated.....	2231	4.75	2241	5.25	2251	6.30	2261	7.90	2271	9.50	2281	12.00	2301	16.30	2321	22.00
Brass Plated.....	2232	4.75	2242	5.25	2252	6.30	2262	7.90	2272	9.50	2282	12.00	2302	16.30	2322	22.00
Nickel Plated.....	2233	4.75	2243	5.25	2253	6.30	2263	7.90	2273	9.50	2283	12.00	2303	16.30	2323	22.00
Antique Copper Plated...	2234	5.25	2244	5.75	2254	6.80	2264	8.75	2274	10.40	2284	13.40	2304	18.00	2324	24.25
Dull Brass Plated.....	2235	5.25	2245	5.75	2255	6.80	2265	8.75	2275	10.40	2285	13.40	2305	18.00	2325	24.25
Antique Brass Plated....	2236	5.25	2246	5.75	2256	6.80	2266	8.75	2276	10.40	2286	13.40	2306	18.00	2326	24.25
Antique Brass Sand.....	2237	5.35	2247	5.85	2257	6.90	2267	8.85	2277	10.50	2287	13.50	2307	18.10	2327	24.35
Verd. Antique.....	2238	5.50	2248	6.10	2258	7.35	2268	9.25	2278	11.00	2288	14.20	2308	19.10	2328	25.60

Bronze or Brass Metal, Double-Acting

Bronze High Polish.....	2631	7.80	2641	9.00	2651	10.75	2661	13.10	2671	16.75	2681	21.50	2701	28.75	2721	38.75
Brass High Polish.....	2632	7.80	2642	9.00	2652	10.75	2662	13.10	2672	16.75	2682	21.50	2702	28.75	2722	38.75
Antique Copper Finish...	2633	8.50	2643	10.00	2653	11.80	2663	14.50	2673	18.50	2683	23.75	2703	32.00	2723	42.50
Dull Brass Finish.....	2634	8.50	2644	10.00	2654	11.80	2664	14.50	2674	18.50	2684	23.75	2704	32.00	2724	42.50
Antique Brass Finish....	2635	8.50	2645	10.00	2655	11.80	2665	14.50	2675	18.50	2685	23.75	2705	32.00	2725	42.50
Nickel Finish.....	2636	8.50	2646	10.00	2656	11.80	2666	14.50	2676	18.50	2686	23.75	2706	32.00	2726	42.50
Oxidized Silver Finish...	2637	10.00	2647	11.40	2657	13.60	2667	16.50	2677	21.00	2687	27.00	2707	36.00	2727	48.50
Verd. Antique.....	2638	8.70	2648	10.20	2658	12.20	2668	14.90	2678	19.00	2688	24.50	2708	32.55	2728	43.60

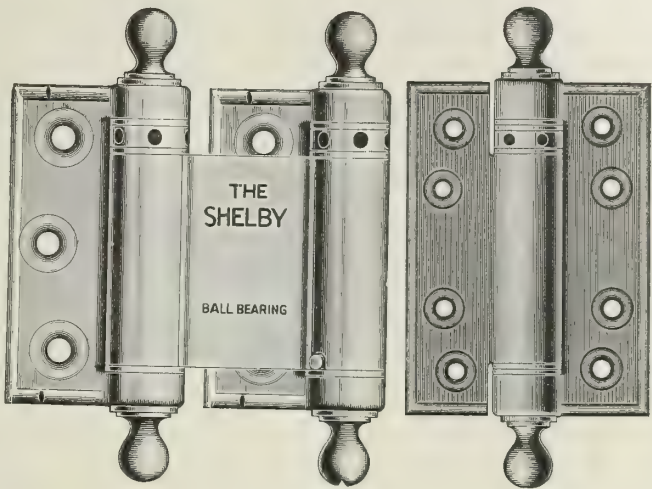
For numbers in single-acting, advance one hundred above numbers of double-acting

FLEXIBLE
DOOR
BUMPER.

The Flexible Door Bumper is flexible as its name indicates, and will give sufficiently not to scratch furniture or break off at base-board. The rubber tip has no metal part to wear through and mar the door and it is the most durable and least expensive base-knob made. Finished to match hardware.

“SHELBY”
DOOR
HOLDER.

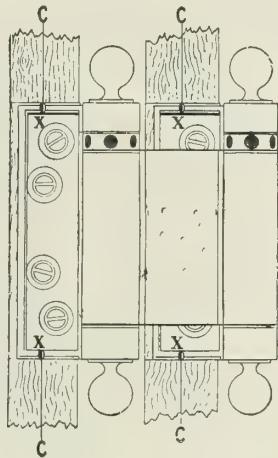
The “Shelby” Door Holder is operated entirely with the foot; is neat in appearance and strong enough to hold the largest door. It will hold at any point and has compression spring arranged to take care of any variation in the floor, thus maintaining a constant pressure when in use.



Double-Acting
“SHELBY” BALL-BEARING SPRING HINGES



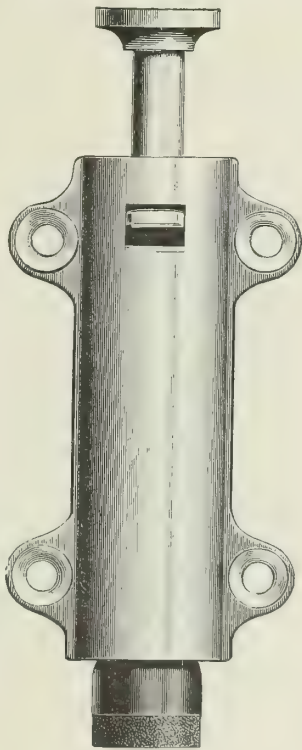
Sectional View Showing Ball Bearings
“SHELBY” SPRING HINGE



“SHELBY” SPRING HINGE
Showing Carpenter's Gauge



“SHELBY” FLEXIBLE DOOR BUMPER



“SHELBY” DOOR HOLDER

SOSS MANUFACTURING COMPANY

"Soss" Invisible Hinges

245 Broadway
NEW YORK, N. Y.

PRODUCTS.

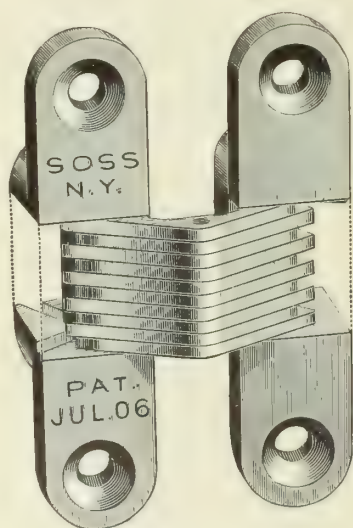
Manufacturers of "SOSS" INVISIBLE HINGES.

DESCRIPTION.

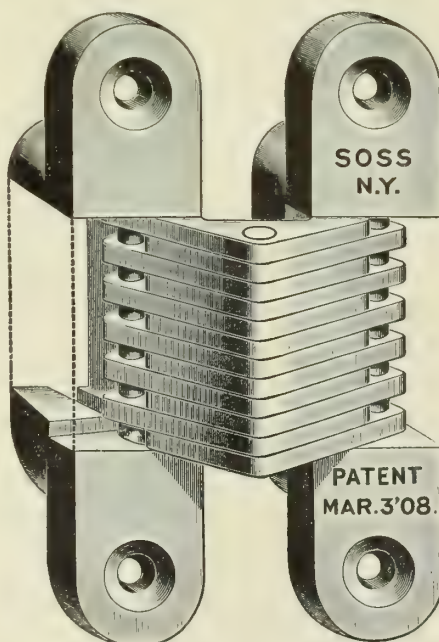
"Soss" Invisible Hinges are made of a composition metal which makes them frictionless, and they will stand as much rough usage as the ordinary butt. They are applied to the same part of the door and jamb as the ordinary butt and require no special arrangement of the work. The actual working parts are a series of twelve working arms, six on each side, which in turn are fitted in five hard steel pins. Rollers are inserted in the two end channel pins, and when the hinge is open at a 90-degree angle every pin turns 18 degrees, which eliminates the friction of the hinge and makes the movement of this hinge as smooth as any ball-bearing hinge.

ADVANTAGES.

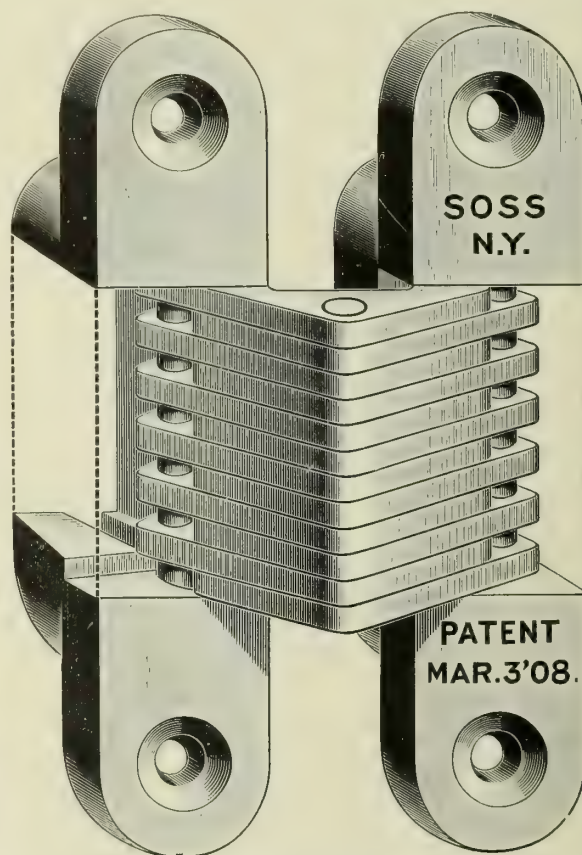
The "Soss" Invisible Hinge fits into a mortise inside the door and jamb and can only be seen when the door is open; there is no projecting metal at either side of the door and, because it fits into the mortise, there is no wide crack when the door is open, so that a person in one room can not peer through the crack into another. In hotels, where a suite is oftentimes broken up by closing and locking the doors, the occupant of one room can not break into another by lifting out the pintle, as may be done with the ordinary hinge. In no way can the hinge be gotten at unless the door is opened. Doors fitted with the "Soss" Invisible Hinge can not sag and will not crack or screech. They close easily and noiselessly.



HINGE NO. 108
Full size



HINGE NO. 112
Full size



HINGE NO. 116
Full size

TESTS.

Many tests which have been made show the superiority of the "Soss" Invisible Hinge over the ordinary style hinge. At a recent fire test two closets built of fireproof materials were used, the door of one being fitted with an ordinary hinge and the other with a "Soss" Invisible Hinge and within each closet was placed a case of wine.

The result of the test showed that the ordinary hinge had melted away, causing the door to fall off, and ruining the contents of that closet. The "Soss" Invisible Hinge was found to be uninjured after being subjected to an exactly similar test; the door on this closet remained in place, and the entire contents were found in perfect condition.

TEMPLET FOR MOUNTING.

With each pair of hinges is furnished a templet. By applying this templet when mounting the hinge and drilling four holes with the proper size bit and then connecting the same at the sides the hinge will fit perfectly.

SIZES.

No.	SIZE	No.	SIZE
101	1 3/8 inches long	108	2 3/4 inches long
102	1 13/16 inches long	112	3 1/2 inches long
104	2 3/8 inches long	116	4 3/8 inches long

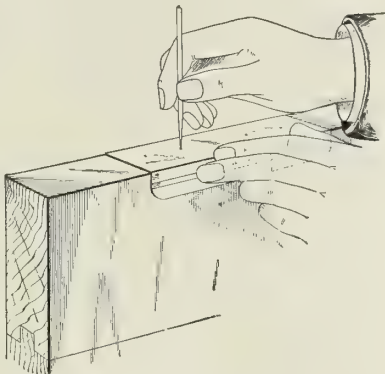
In brass, bronze, nickel and oxidized copper finish.

It is difficult to say that a certain size hinge will carry a door of a certain thickness, as without respect to thickness doors may vary greatly in weight, but the following will be found to apply generally:

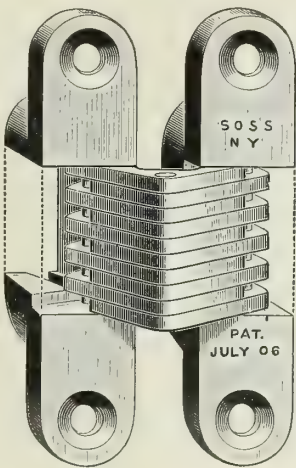
- No. 101. Wood 1/2 inch thick, doors 7/8 inch or more thick, if not more than 3 feet x 18 inches.
- No. 102. Same carrying capacity as No. 101, but has square corners.
- No. 104. Wood must be 3/4 inch. Will carry door 5 ft. x 2 ft. x 7/8 inch.
- No. 108. Wood must be 7/8 inch. Will carry a door 6 ft. x 30 in. x 1 1/8 in.
- No. 112. Wood must be 1 1/8 to 1 1/2 in. Will carry a door 6 ft. x 2 ft. 6 in. x 1 1/8 to 1 1/2 in.
- No. 116. Wood must be 1 3/8 to 2 1/2 in. Will carry a door from 1 3/8 to 2 1/2 inches in thickness.

WHERE USED.

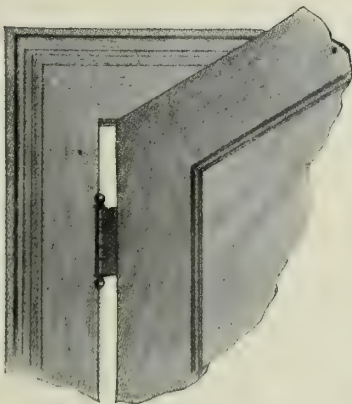
"Soss" Invisible Hinges are used on fine residences, office buildings, cabinet and furniture work, pianos, etc. They can also be used for scuttles on sidewalks and trap doors to eliminate the projecting metal which causes people to trip. They have been adopted by many prominent architects throughout the country.



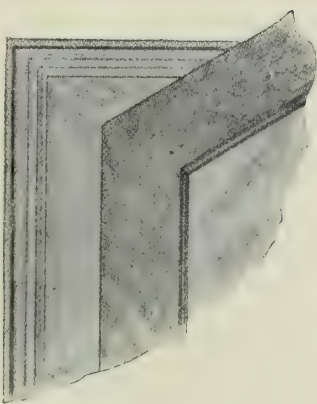
APPLICATION OF TEMPLT



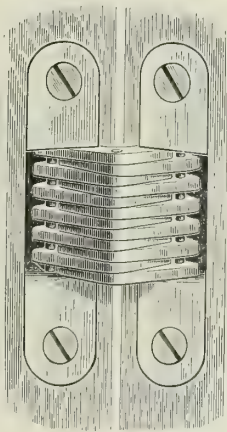
NO. 104 HINGE
Full size



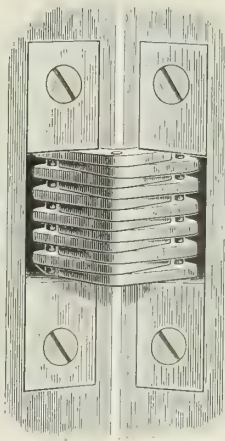
DOOR FITTED WITH
ORDINARY BUTT



DOOR FITTED WITH
"SOSS" INVISIBLE HINGES



NO. 101 HINGE
Full size



NO. 102 HINGE
Full size

SHARON STEEL HOOP CO.

Commercial National Bank Building
CHICAGO, ILL.

EASTERN AGENTS

FULLER BROS. & COMPANY, 139 Greenwich Street, New York, N. Y.

PRODUCT. Manufacturers of the "PARKER" STEEL CORNER BEAD for the protection of Plastered Corners.

DESCRIPTION. The "Parker" Steel Corner Bead is hot-galvanized, and hence will not rust. Its projecting lip grips and protects the edge of the plaster and prevents it from flaking and crumbling away from the face of the stem and edge of the bead.

ADVANTAGES. "Parker" Corners will stand during the life of a building, thus saving the owners in repairs many times their cost.

"Parker" Bead used around windows makes a finished, neat, fireproof, vermin-proof corner, gives more light and room space and saves the cost of the furnishing, painting and varnishing of wood trim.

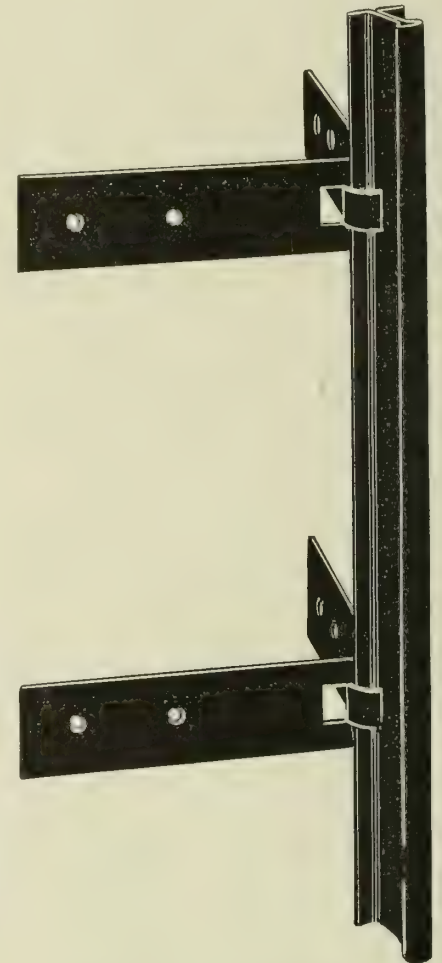
Strike any corner bead that has side punchings for the alleged keying of plaster a moderate blow on its face and you will break the bond as far as the vibration extends. The larger the punching the greater the danger of damage to the plastered corner. The "Parker" is the only bead that will hold plaster firmly without its stem being punched and weakened by clinch-holes. The plaster on this bead is keyed-in between the lower flange and the extending lip with a grip that enables it to stand any blow that the face of the bead would be likely to receive.

SIZES. The "Parker" Bead is shipped in stock lengths of 6, 7, 8, 9 and 10 feet, fifty strips in a bundle. Longer strips to order.

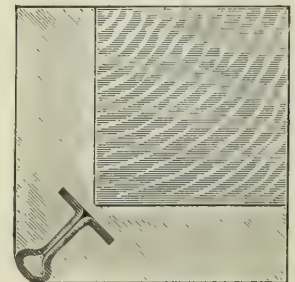
It can be spliced to any length, by inserting a small wire in the opening at the end of each length.

INSTALLATION
OF "PARKER"
BEAD.

Attach clips to bead about one foot apart before erecting. Do this with pliers that will straddle edge of bead. Put in place the plaster grounds for picture moulding and base-board and nail fast the top and bottom clips of bead. Then attach a plumb line at top on outer edge of bead, fasten the line at bottom in same position, and work bead to the line.



"PARKER" STEEL CORNER BEAD
With Clips Attached



"PARKER" STEEL CORNER
BEAD
Cross-section

THE STANLEY WORKS

Builders' Hardware

FACTORIES

NEW BRITAIN, CONN.

WAREHOUSES

NEW YORK, N. Y., 79 Chambers Street

CHICAGO, ILL., 15 Lake Street

PRODUCTS.

Makers of WROUGHT-STEEL BUILDERS' HARDWARE — BUTTS, HINGES, DOOR BOLTS, SHELF BRACKETS, BLIND TRIMMINGS, etc.; BALL-BEARING HINGES of WROUGHT BRONZE and STEEL.

TERRITORY.

Our goods can be obtained from the leading hardware merchants the world over.

While our principal product is Wrought-Steel Hinges, we are prepared to furnish a line of Solid Wrought-Bronze Metal Butts with Ball-Bearing Washers.

IDENTIFICATION OF OUR PRODUCTS.

Architects and others interested frequently ask if we mark our hinges in any way so that there can be no doubt that the hinges specified are actually furnished. Our line of Wrought-Bronze Ball-Bearing Butts we designate as No. 180, and we stamp this number on the back of the hinge near the top (Fig. 2). Our standard plated Butts are very highly polished and heavily electroplated, so that they are well protected against the atmosphere, and are fully equal in appearance to those made of bronze metal. We call this grade No. 239, and stamp the number on the hinge in the same way as No. 180 above.

Our second grade is superior in weight and finish to the best of other makes, and is designated No. 241½. On these we stamp our trade-mark (Fig. 1). We make these hinges in any of the popular finishes, and can match any color desired.

SPECIFICATIONS.

Architects, in specifying our goods, should use the word "Stanley's" as "Stanley's Steel Butts," "Stanley's Ball-Bearing Hinges," etc., and in addition thereto, if possible, the class number of the article specified.

BALL-BEARING HINGES.

Our Ball-Bearing Hinges (Fig. 3) are acknowledged to be the best hinges made for the hanging of doors. Their use eliminates the disagreeable creaking that accompanies ordinary hinges; they do away with the necessity for oiling, and allow the door to swing smoothly and noiselessly. Doors hung with these hinges never sag or wear down. The balls used in the bearings are turned from solid steel, and each one will sustain a weight of one thousand pounds without crushing. The Washers (Fig. 4) in which the bearings are encased are so constructed that they can not come apart in use.

NON-RISING PINS.

The pins in our Nos. 180 and 239 Butts, both with and without ball bearings, are made with a patent pin that will not rise, and are the only butts made with a non-rising pin that do not have any locking device for the pin. The pin slips in and out with perfect freedom but will not rise under the action of the door.

TRADE
S.W.
MARK
FIG. 1

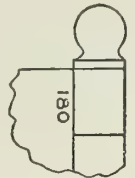


FIG. 2

IDENTIFICATION

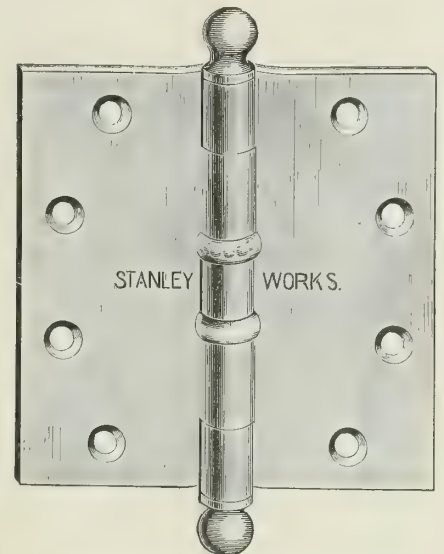


FIG. 3. BALL-BEARING HINGE

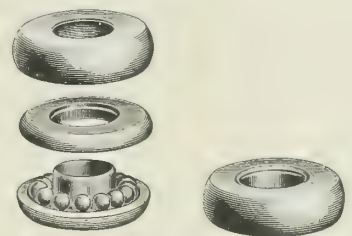


FIG. 4. WASHER AS NOW MADE
Perfect protection against dust and moisture

STOWELL MANUFACTURING AND FOUNDRY CO.

Hardware Specialties
SOUTH MILWAUKEE, WIS.

CHICAGO, ILL.
ST. LOUIS, MO.

BRANCH OFFICES
SAN FRANCISCO, CAL.
DENVER, COLO.

SALT LAKE CITY, UTAH
DETROIT, MICH.

PRODUCTS.

Manufacturers of HARDWARE SPECIALTIES, including "ACME" PARLOR-DOOR HANGERS; "WILBERN" BARN, FACTORY, RAILROAD and FIRE-DOOR HANGERS; ELEVATOR HANGERS, LOCKS and LATCHES; PARLOR-DOOR HANGERS and TRACKS; FREIGHT-CAR DOOR FIXTURES; FIREPROOF DOORS; FIRE-DOOR EQUIPMENT; SIDE-WALL REGISTERS; SEMI-STEEL REGISTERS; GRATE BARS; HAY TOOLS; WAGON and CARRIAGE MALLEABLES, and SPECIAL MALLEABLE CASTINGS to order.

"ACME" PARLOR-DOOR HANGER AND TRACK.

The Hanger (Figs. 1 and 3) is made entirely of steel, and is neat, strong, and durable. The steel wheel has fiber tread, making it smooth and noiseless. The adjustment at the end of the door is convenient and effective. There is no cutting of woodwork or special tool to adjust. The Hanger has ball bearings, insuring ease and smooth running. It is the only parlor-door hanger on the market permitting the rear end of the track in the pocket to be adjusted from the center of the opening.

TRACK.

The steel Track is fixed to wooden strips. The adjustments are made by a screw-driver from the center of door without removing woodwork, and can be done by any one at any time. The adjustment is made in two places independent of the hangers, so that if the house sags, or carpenter miscalculates, the fault is easily remedied by the adjustment of track or hangers. The track is raised or lowered by using a screw-driver in the adjusting screw in the center of the opening in the doorway, which is easily found.

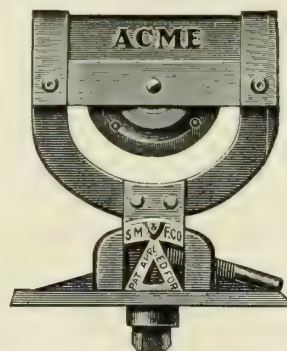


FIG. 1. "ACME" HANGER

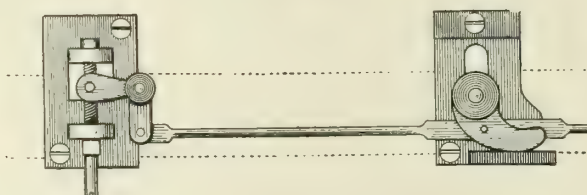


FIG. 2. ADJUSTING SCREW AND ONE BRACKET OF "ACME" TRACK

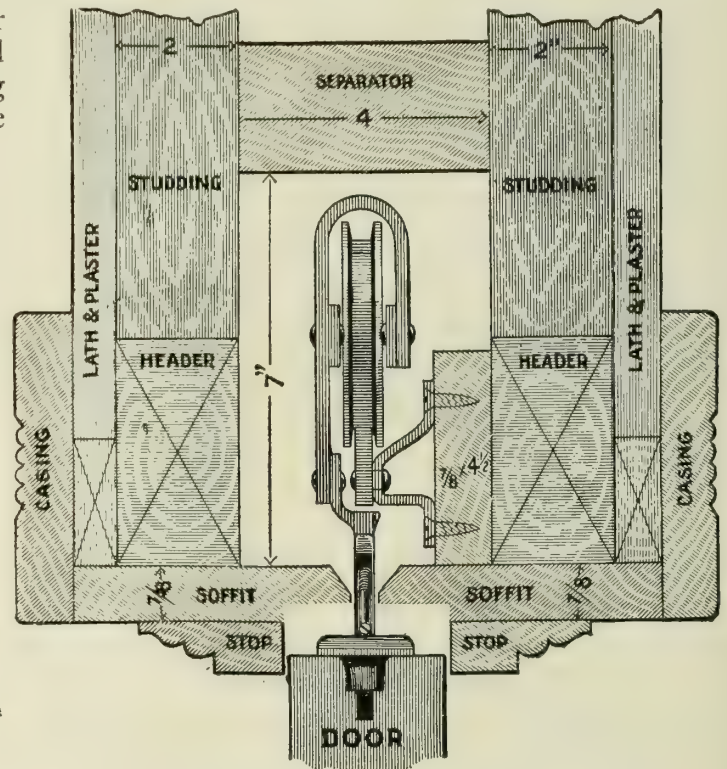


FIG. 3. SECTIONAL VIEW OF "ACME" PARLOR-DOOR HANGER WITH ADJUSTABLE TRACK

"WILBERN" ADJUSTABLE DOOR HANGERS. LIST OF SIZES OF "WILBERN" HANGERS.

Lateral adjustment of the "Wilbern" Hanger (Figs. 4, 5 and 6) is procured by means of a threaded axle. Vertical adjustment is procured by means of a plate and a ratchet on the depending arm of the hanger. The doors can not jump the track. The lug protruding prevents jumping. (See Fig. 5.)

No. 5, for barn and freight-house doors, round and flat track; No. 2, freight-house, $1\frac{1}{2}'' \times \frac{3}{16}''$ track; No. 2 special, heavy freight-house doors, $2\frac{1}{2}'' \times \frac{5}{16}''$ track; No. 4-A, fire doors, parallel doors, and all unusually heavy doors, $3\frac{1}{2}'' \times \frac{3}{8}''$ track. Will carry doors weighing a ton or more. All above are made of high-grade malleable iron.

“WILBERN”
FIRE-DOOR
EQUIPMENT.

Fire doors are hung against rough brick walls, and unless they can occasionally be adjusted are likely not to operate successfully in a crisis. The “Wilbern” (Fig. 4) is best for the owner, as he can keep his doors in constant repair without expense; best for the contractor, because he can install doors perfectly in far less time than is required with common hangers; best for the architect because he always wishes to give his clients the most trustworthy material at the lowest ultimate cost; best for the Underwriter, because Inspectors can insist that imperfectly working doors be corrected in their presence. Adjustments are especially necessary on double doors meeting in the center of the opening (Fig. 7), it being almost impossible to hang these doors on incline tracks with rigid hangers so as to prevent a “V” shaped opening between them. Such an opening, of course, would permit a fire to creep through. The “Wilbern” Fire Door Equipment is regularly inspected and labeled under the supervision of the Underwriters’ Laboratories (Inc.).

SPECIFICA-
TION.

Architects should specify: “No. 4-A ‘Wilbern’ Adjustable Hangers with No. 20-A ‘Wilbern’ Automatic Closing Fixtures” to give their clients labeled hardware.

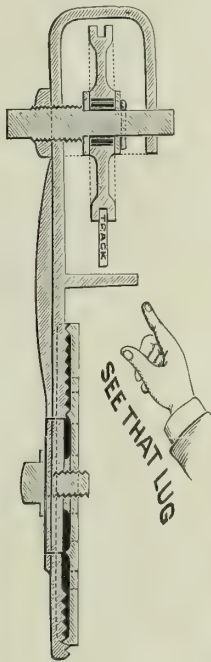


FIG. 5. SECTIONAL VIEW OF “WILBERN” ADJUSTABLE DOOR HANGER.

“WILBERN”
HANGERS FOR
RAILROAD
WORK.

“WILBERN”
PARALLEL
DOOR
EQUIPMENT.
PRICES.

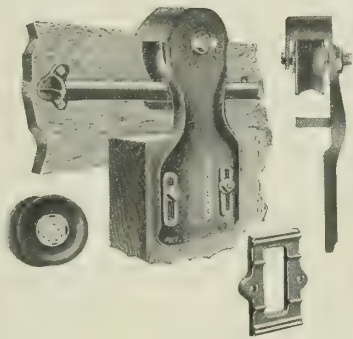


FIG. 6. “WILBERN” HANGER FOR ROUND TRACK

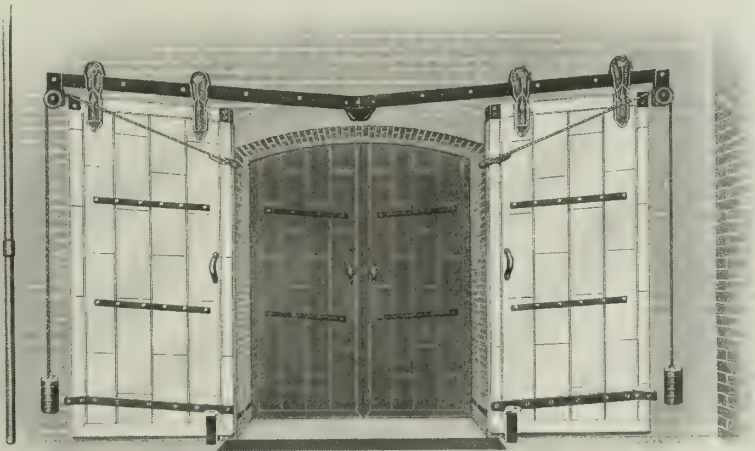


FIG. 7. NO. 4-A “WILBERN” ADJUSTABLE HANGERS AND NO. 20-A “WILBERN” AUTOMATIC CLOSING FIXTURES FOR DOUBLE DOORS

The “Wilbern” Adjustable Hanger is used extensively by Railroads for warehouses and freight-houses. (See Figs. 4 and 6.) The adjustments enable ordinary workmen to correct doors which give trouble, thus materially reducing the repair account. When doors run hard they can be adjusted, avoiding the expense of sawing the bottom of the doors or of resetting the hangers. The “Wilbern” has been adopted for exclusive use by many of the largest systems in the country.

Send for blue-prints of the “Wilbern” Parallel Door Equipment for large freight-houses and dock sheds. It is the most satisfactory ever manufactured, and was adopted by the Canadian Government for five miles of dock sheds along the St. Lawrence River.

Prices of all our goods will be furnished to architects upon application.

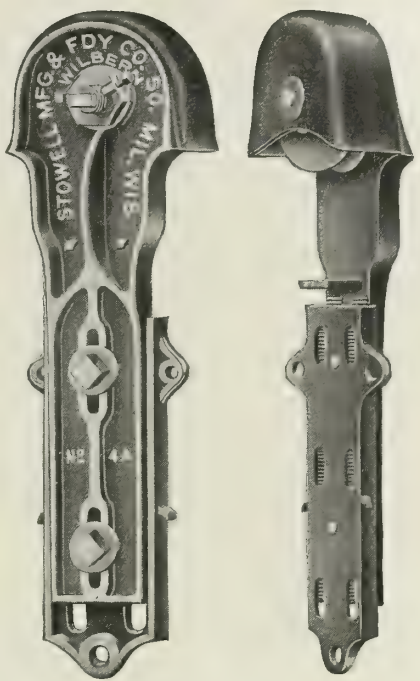


FIG. 4. NO. 4-A “WILBERN” ADJUSTABLE HANGER FOR FIRE DOORS AND HEAVY RAILROAD WORK

H. C. STREETER

MANUFACTURER OF

“Streeter’s” Patent Steel Clips, etc.

416 West Indiana Street

CHICAGO, ILL.

LONG DISTANCE TELEPHONE, NORTH 674

PRODUCTS.

“STREETER’S” PATENT STEEL CLIPS, ROOF CLIPS, CEILING CLIPS, BRIDGE CLIPS; ENGINEERS’ SUPPLIES, IRON and STEEL CONSTRUCTION CLIPS, for connecting Tees and other sections to Beams, Channels, other Angles and Tees, Girders, etc.; also, “STREETER’S” PATENT METALLIC WINDOW FRAMES and SASH, for Fireproof Buildings.

ADVANTAGE AND COM- PARATIVE COST.

Any contractor or architect figuring the labor on the ordinary bolted construction as shown below, computing the net cost per joint and then comparing same with our clip construction, adding the price of the clip to the price of erection, will readily see that a net saving of from fifty to seventy-five per cent results, directly proportional to the complexity of construction.

Comparison of a roof fitted by Bolted Construction and Clip Construction, covered with tees placed at right angles to the roof beams:

In the Bolted Construction we find the extra cost in punching flange of roof beams, the extra cost of punching roof tees, the cost of skilled labor in the setting of tees, the cost of bolts and the extra cost of reaming, drilling, and gauging, which are frequently necessary owing to careless shop layout or error in engineer’s details. This item is usually not considered, but it too often occurs to be neglected. Cost is variable.

In the Clip Construction no detailing is necessary; no flange punching of any kind is required. Less than half the time is required to set. Tees are put on at random lengths. No fitting is necessary, and the cost of clips, compared with the cost of bolts, is a great saving.

CLIP E.

Clip E is for Hips and Valleys (see Fig. 1). Made to suit any sections and can be adjusted in the field to any angle.

CLIP F.

Clip F (see Fig. 2) is used for fastening tees and angles to channels in roof construction. In the reversed position this clip is specially adapted for fastening furring for suspending ceilings in fireproof or other buildings.

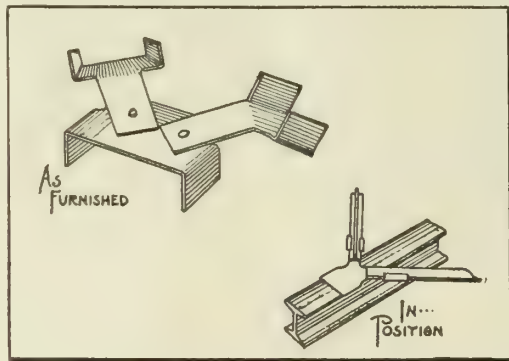


FIG. 1. CLIP E

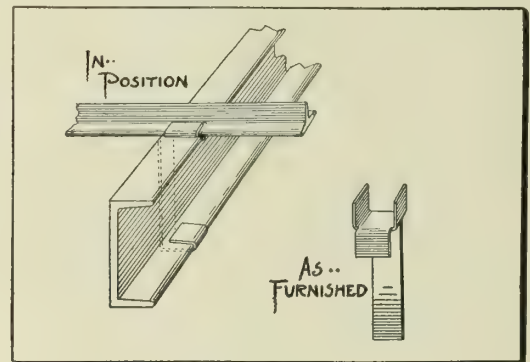


FIG. 2. CLIP F

CLIP G.

Clip G (see Fig. 3) is used for fastening tees to I-beams in roof construction, either flat or pitched. In the reversed position this clip is used for suspending tees and flat bars for ceilings.

CLIP R.

Clip R (see Fig. 4) is used for fastening purlins, any style section, to I-beams on extremely steep roofs.

CLIP J.

Clip J (see Fig. 5) is used for suspending angles from beams and channels. In the case of unequal legs it is necessary to know which leg is applied to the beam and whether the perpendicular leg is right or left. This clip is also extensively used on roofs.

CLIP O.

Clip O (see Fig. 6) is very extensively used for suspended ceiling work. Holes for spikes may be put in the upper arm, allowing same to be spiked to the wood joists for fire-proofing of a wood floor.

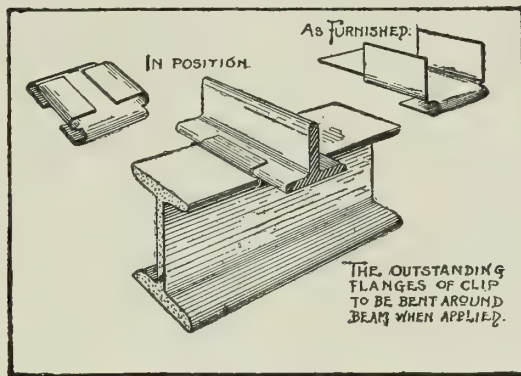


FIG. 3. CLIP G

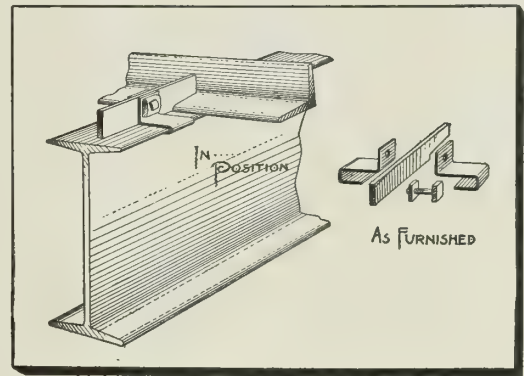


FIG. 4. CLIP R

SHIPMENTS.

We are in a position to make shipments on short notice.

SPECIFICATION AND COST.

In order to make prices on all kinds of Clips as specified, it is necessary that we should know the style and size of sections to be connected and their relative position.

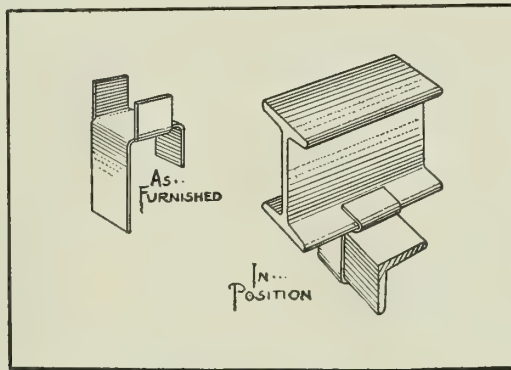


FIG. 5. CLIP J

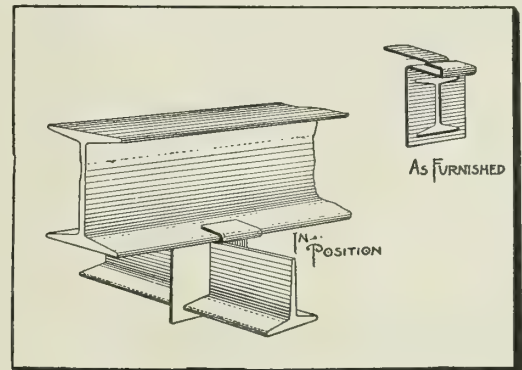


FIG. 6. CLIP O

REFERENCES.

The following is a list of prominent buildings upon which "Streeter's" Patented Clips have been used:

Carnegie Building, Pittsburg, Pa.
The People's Natural Gas Co. and Machine Shop, Pittsburg, Pa.
Henry Phipps Building, Pittsburg, Pa.
Parmelee Building, Cleveland, Ohio
McAllister & Dall Building, Cleveland, Ohio
New England Building, Cleveland, Ohio
Garfield Building, Cleveland, Ohio
Equitable Building, Atlanta, Ga.
Peters Building, Atlanta, Ga.
Milliken Bank Building, Decatur, Ill.
Michigan Trust Co. Building, Grand Rapids, Mich.
City Hall, Davenport, Iowa

Spitzer Building, Toledo, Ohio
Bourse Building, Philadelphia, Pa.
Land Title and Trust Building, Philadelphia, Pa.
Morgan Building, Buffalo, N. Y.
Savoy Hotel, New York, N. Y.
National Biscuit Co., Factory No. 4, New York, N. Y.
Wyandotte Building, Columbus, Ohio
Cairo Apartment Building, Washington, D. C.
Stoneleigh Court Apartment House, Washington, D. C.
United States Capitol Building, Washington, D. C.

Blackstone Memorial Library, Bradford, Conn.
Massillon Bridge Co., Toledo, Ohio
Detroit High School, Detroit, Mich.
Ellicott Square Building, Buffalo, N. Y.
Crane Elevator Co. Building, Chicago, Ill.
Atwood Building, Chicago, Ill.
Newberry Building, Chicago, Ill.
Marquette Building, Chicago, Ill.
Reliance Building, Chicago, Ill.
Kearsage Building, Chicago, Ill.
Monadnock Building, Chicago, Ill.
Temple Building, Chicago, Ill.
Ashland Block, Chicago, Ill.
The Fair Building, Chicago, Ill.

TESTIMONIALS.

Of many excellent testimonials, we are pleased to give prominence to these, as follows:

MR. H. A. STREETER, Chicago, Ill.

Dear Sir—We have had occasion to use your Patent Clips on many of our buildings and have always found them to be a great labor saver and to answer the purpose in every way for which you recommend them. We consider them a first-class mechanical construction.

Yours truly,

FALKENAU CONSTRUCTION CO.
Per V. FALKENAU.

MR. H. A. STREETER, Chicago, Ill.

Dear Sir—In answer to your inquiry, we beg to state that we have used a large number of your Patent Steel Clips for fastening tees and angles to I-beams in the Carnegie building, Pittsburg, Pa., and elsewhere, and find them a most economical and effective device for this purpose.

Yours truly,

THE CARNEGIE STEEL CO., LTD.
F. H. KINDL, Structural Engineer, Pittsburg, Pa.

MR. H. A. STREETER, Chicago, Ill.

Dear Sir—We are using your Patent Steel Clip for connecting tee irons to I-beams for roofing purposes and in our constructional work for some time, and find that they are both economical and convenient, as they are always ready and can be put on rapidly by unskilled labor. We are always glad to recommend them to anyone in our line of business.

Yours truly,

GEORGE A. FULLER Co., General Contractors, Chicago, Ill.

THE STAR EXPANSION BOLT CO.

MANUFACTURERS OF

All Kinds of Expansion Bolts, Toggle Bolts and Steel Drills for Masonry

147 Cedar Street
NEW YORK, N. Y.

BRANCH OFFICES

CHICAGO, ILL., 142 Lake Street

SAN FRANCISCO, CAL., 1010 Howard Street

NEW ORLEANS, LA., 504 Audubon Building

PRODUCTS.

"STAR" EXPANSION BOLTS; "STAR" SCREW ANCHORS; IMPROVED "STAR" SINGLE and DOUBLE MACHINE EXPANSION BOLTS; TOGGLE BOLTS; CABLE APPLIANCES; DRILLS for Brick, Stone, and Concrete.

DESCRIPTION.

"Star" Expansion Bolts are Standard; made in sizes from $\frac{1}{8}$ " to 2" diameter, any length, in malleable iron, brass and Government composition metal or bronze. They have been tested, approved, and are being used constantly by the United States Government engineers.

PRICES.

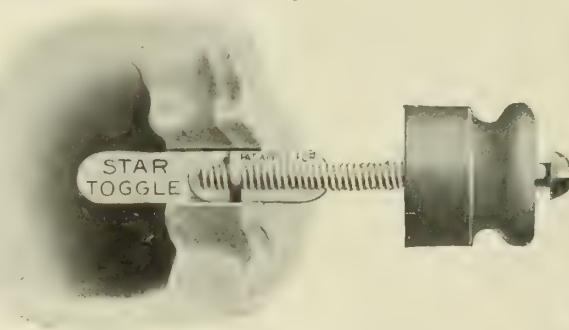
The wide range of varied styles and sizes made by us renders it impracticable to attempt to quote prices here, and this page is therefore submitted merely to show what we have to offer; after selecting the type best suited for your requirements, write us. We will send you our new Catalogue with samples, and net prices covering just what you require.

DISTRIBUTION.

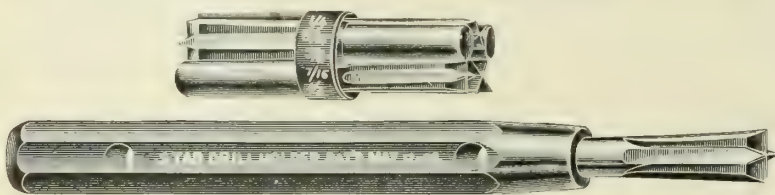
Complete stocks carried at our New York house and All Branches. We are represented by hardware and supply houses in nearly every American and Canadian City.



"STAR" TOGGLE BOLT
 $\frac{1}{4}$ ", $\frac{3}{16}$ ", and $\frac{1}{2}$ " diam. and 3", 4", and 6" lengths. Special sizes to order. Fits any machine screw. The head automatically adjusts itself. Used in Tile, Hollow Brick, Marble, Wood, or Metal Lathing



METHOD OF INSERTING TOGGLE IN WALL



"STAR" DRILL SET

Nine finely tempered steel drills to fit holder. Will drill $3\frac{1}{2}$ " or deeper. Holder made of $\frac{3}{4}$ " octagon tool steel. Set can be conveniently carried in hip pocket, $\frac{1}{4}$ " to $\frac{3}{4}$ " diam. Specially designed for fine work in marble, tile or granite



"STAR" EXPANSION BOLT

"Star" Union Expansion Shields are used with any make Lag Screw; $\frac{5}{32}$ " to $1\frac{1}{2}$ " diam. Any length. For heavy work in Stone, Brick, Concrete, etc. Note the inner-end expansion which prevents chipping away or defacing the outer surface. (United States Government Approved)



"STAR" SPLIT PIPE EXPANSION

Brass, $\frac{3}{16}$ " and $\frac{1}{2}$ " diam. Any length up to 3"



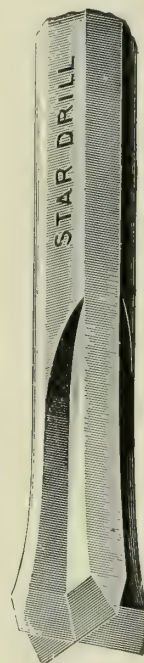
"STAR" SCREW ANCHOR

Soft Lead Composition, absolutely rust-proof. Used with any wood screw $\frac{1}{8}$ " to $\frac{3}{8}$ " diam. Any length. Note inner-end expansion principle. (United States Government Approved)



"STAR" PIPE DRILL

Best tool steel. For Brick, Concrete, etc., $\frac{1}{4}$ " to 3" diam. 12" to 24" in length. Other sizes to order.



"STAR" DRILL

For Stone, best tool steel, carefully tempered, $\frac{1}{4}$ " to 3" diam. 12" to 24" in length. Other sizes to order



Single Type



Double Type

"STAR" EXPANSION BOLT

Malleable Iron, Brass, or Government composition metal; $\frac{1}{4}$ " to 2" diam. Any length. (United States Government Approved)

UNIVERSAL SAFETY TREAD CO.

MAIN OFFICE

113 Devonshire Street
BOSTON, MASS.

REPRESENTED IN ALL PRINCIPAL CITIES

FACTORY
GROTON, N. Y.

PRODUCT. Manufacturers of the UNIVERSAL SAFETY TREAD.

CONSTRUCTION. The Universal Safety Tread is constructed of a heavy steel base-plate with openings punched to receive the lead inserts. The reinforcing steel teeth retard the too rapid wear down of the lead which presents a non-slipping surface until the base-plate is worn through. (See Fig. 1.) Tread can be furnished up to twelve inches in width in a single piece.

CONCRETE WORK. We manufacture a special anchor which is screwed to the tread and embedded in the soft concrete before it sets. Treads thus secured can never work loose from the concrete.

CORK CARPET AND SAFETY TREAD. This combination makes a most satisfactory form of covering for stairs and landings, and for large surfaces is more economical than a complete installation of safety tread.

SPECIAL TREAD PLATE. In situations where a light fireproof stair construction is desired, we furnish a special Tread-plate, properly braced underneath with back and front edges bent for riveting to the risers. This plate can be figured to sustain whatever live load is required.

ADAPTABILITY. The Universal Safety Tread is being specified by leading architects throughout the country for hotels, restaurants, cafés, apartment houses, department stores, offices and bank buildings, factories, schools, churches, railroad stations, stables, elevator landings, car steps, etc. For repairing worn stairways of wood, stone or iron it furnishes a safe and economical method of making them as good as new.

REFERENCES. The following is a partial list of prominent buildings where our Treads are in use:

Simons Mfg. Co., Chicago, Ill.
Broad-Exchange Building, New York, N. Y.
Old Colony Trust Building, Boston, Mass.
Pennsylvania Railroad Station (Broad Street), Philadelphia, Pa.
New York, New Haven & Hartford Railroad Station, Bridgeport, Conn.
General Electric Company, Schenectady, N. Y.
Wood Worsted Mills, Lawrence, Mass.
Fall River Iron Works, Fall River, Mass.
Waltham Watch Company, Waltham, Mass.
Crompton & Knowles Loom Works, Worcester, Mass.

PRICES. Catalogues, samples and estimates will be promptly furnished upon application.

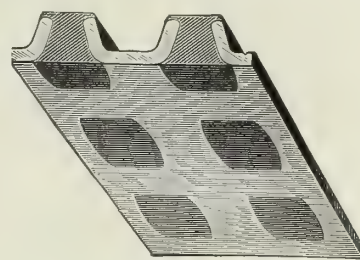


FIG. 1. UNIVERSAL SAFETY TREAD

Showing the lead extending through the plate



FIG. 2. STATION OF THE N. Y., N. H. & H. R. R., BRIDGEPORT, CONN.

Showing Safety Treads in use

VONNEGUT HARDWARE COMPANY

DISTRIBUTERS OF

"Von Duprin" Self-Releasing Fire-Exit Devices INDIANAPOLIS, IND.

TERRITORIAL SELLING REPRESENTATIVES

NEW YORK, N. Y., GRANT PULLEY AND HARDWARE Co., 3 West 29th Street
PHILADELPHIA, PA., T. B. AND H. S. HENDRICKSON, 521 Commerce Street
CHICAGO, ILL., J. C. BOLD, 216 South Jefferson Street

PRODUCTS.

FIRE CATAS- TROPHES.

"VON DUPRIN" SELF- RELEASING FIRE-EXIT LATCH.

"VON DUPRIN" SELF-RELEASING FIRE-EXIT LATCHES; also, High-Grade BUILDERS' HARDWARE.

In most every fire catastrophe the appalling loss of life is due primarily to the fact that the exit doors refuse to operate at the crucial moment. The terrified people pile themselves in heaps about the exits and half the poor unfortunates are trampled to death before the fire even reaches them.

The repetition of such disasters is rendered absolutely impossible by the "Von Duprin" Self-Releasing Fire-Exit Latch Operation.

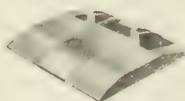
The "Von Duprin" Self-Releasing Fire-Exit Latch takes advantage of the inevitable rush of the panic-stricken crowd, and uses it as the natural means of throwing open the way to escape and safety. A child has the same control as an adult, no great pressure being necessary—merely a touch.

The essential features of the "Von Duprin" Device are these:

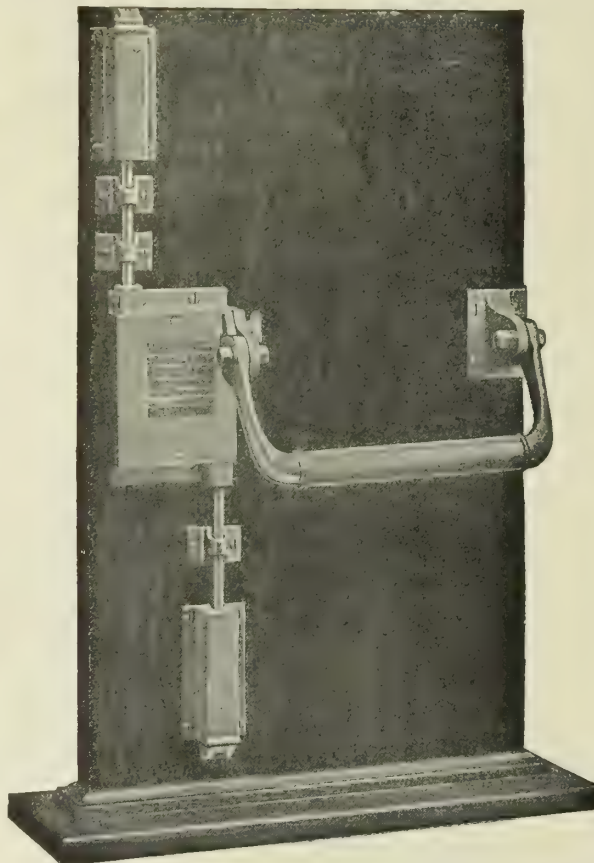
- (1) It combines into one the usual features of all locking devices, i. e., the dead-lock and the top and bottom latches.
- (2) The usual hardware trim is applied on the outside of the door.
- (3) On the inside, about waist high, a solid bar stretches across the door. This bar stands away from the wood and connects directly with the mechanism of the latch. *Any pressure applied to any part of the bar instantly and positively releases dead-lock and latches simultaneously and permits doors to open.*



Upper Strike



Lower Strike



Regular Knob and
Escutcheon for
Outside of Door

FIG. 1. DEVICE NO. 123, FOR DOUBLE DOORS
OPENING OUT

FOR DOUBLE
DOORS, OPEN-
ING OUT.

The operation of the "Von Duprin" Device under actual conditions of a panic is self evident. The people rush blindly toward the exit doors, the leaders are forced against the bar across the opening, the latches operate automatically, and the doors swing open to safety.

No. 123 Latch (Fig. 1) is designed for schoolhouse, church, public building exits, auditorium or assembly hall corridor doors. It is made with outside dead-locking and unlatching feature, where entrance and exit both are necessary. It is made with knob and escutcheon on outside of door; latch operated from outside in same manner as any ordinary lock and latch device. It is featured to unlatch bolts from inside by touch against bar at any point, even though dead-locked from outside, at the same time permitting door to open outward.

No. 123, finish 10, is of brass metal, with polished 12" x 3" escutcheon, cast-brass knob, two-cylinder keys, 5-pin tumbler lock. Made in all finishes. Not reversible. In ordering state width and height, width of stile, thickness, hand of doors, and finish required.

No. 27 is designed for theater fire-exits, and standing doors where bolting is required, and is made without dead-locking or outside unlatching feature. This device is made with no hardware on outside of doors, has push-bar and latch on inside, and is featured to unlatch bolts from inside by touch against bar at any point, at same time permitting door to open outward.

No. 27, finish 10, is of brass metal, polished. Made in all finishes. Not reversible. In ordering state width and height, width of stile, hand of doors and finish required.



Regular Knob and
Escutcheon on Out-
side of Door

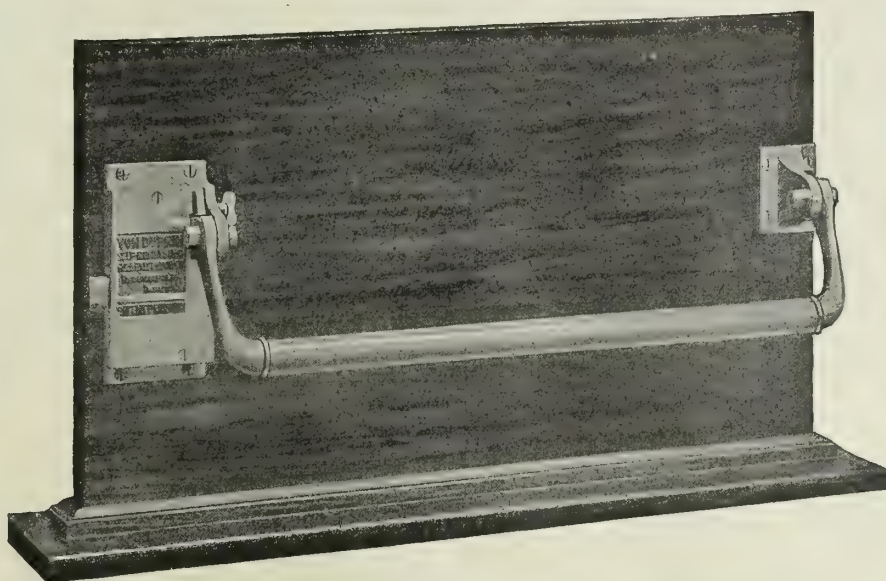


FIG. 2. DEVICE NO. 125, FOR SINGLE DOOR, OPENING OUT

FOR SINGLE
DOOR, OPEN-
ING OUT.

No. 125 Latch (Fig. 2) is designed for schoolhouse, church, public building exits, auditorium or assembly room corridor doors, and is made with outside dead-locking feature where entrance and exit are both necessary.

The device is made with knob and escutcheon on outside of door, and latch is operated from outside in same manner as any ordinary lock and latch device. It is featured to unlatch latch from inside by touch against bar at any point even though dead-locked from outside, at the same time permitting the door to open outward.

No. 125, finish 10, is of brass metal, has polished 8" x 2½" escutcheon and cast-brass knob, two-cylinder keys, 5-pin tumbler lock. Made in all finishes. Not reversible. In ordering state width of door, width of stile, thickness, hand and finish required.

No. 28 Latch is designed for hotel, school or theater fire-exits only, and is made without dead-locking or outside unlatching feature. This device is made with no hardware on outside of door, has push-bar and latch on inside, and is featured to unlatch bolt from inside by touch against bar at any point, at same time permitting door to open outward.

No. 28, finish 10, is of brass metal, polished. Made in all finishes. Not reversible. In ordering state width of door, width of stile, hand and finish required.

DISTRIBUTION.

For sale by all builders' hardware dealers throughout the United States and Canada. Send for fully illustrated Catalogue.

THE VAN DORN IRON WORKS CO.

Manufacturers of Steel Joist Hangers, Post Caps, etc.

CLEVELAND, OHIO

PRODUCTS.

We are manufacturers of the "VAN DORN" PATENTED STEEL JOIST and WALL HANGERS, STEEL POST CAPS and BASES.

Also, BURGLAR-PROOF PRISON CELLS, JAIL and LOCK-UP CAGES, STEEL JOIST HANGERS, WROUGHT-IRON FENCING, STEEL STRUCTURES, STEEL CRANES and CONVEYORS, STEEL WIRE FENCING, JAPAN OVENS, BURGLAR-PROOF GRATINGS, IRON STAIRS and RAILINGS, IRON RAILINGS, STEEL DOCUMENT CASES and FILES, ROLLER BOOK-SHELVES, WROUGHT GRILLE WORK, STEEL DRYING and BREAD TRUCKS, METALLIC FURNITURE, WINDOW GRATINGS, VAULT DOORS, FOLDING and EXPANSION GATES, LAWN SEATS, STABLE APPLIANCES, STATION-HOUSE CELLS, ELEVATOR FRONTS, IRON VASES, WIRE and OFFICE RAILING, FIRE-PROOF SHUTTERS, CRESTINGS and VANES, HITCHING POSTS and GUARDS, PIPE RAILINGS, FIRE-ESCAPES.

"VAN DORN" HANGERS.

Architects and engineers will note the superior appearance and application of the hangers.

The perfect bearing on girder and lateral stiffness of these hangers must not be overlooked. The "Van Dorn" Hangers are forged from rolled steel, having a guaranteed ultimate tensile strength of 56,000 pounds per square inch; each hanger will carry six times more than will be required in actual use. It is easily applied, the hook fitting over the top of the header and notched in, so as to come level. It is held in place by two heavy wire nails. The flanges fitting on the sides of the header may be spiked if preferred. This is not essential, but it is an improvement, as it holds the hanger solidly in place. The joist may be nailed through hole in bottom of hanger if desired. This hanger insures the full strength of the header and joist.

One of the most valuable and important uses of the steel hanger is in connection with partition or outside walls. It not only anchors the walls together, but in case of fire, when the interior is burned out, leaves the walls intact without bulging, and the joist can be replaced without changing the hanger. The importance of this feature is appreciated by architects, contractors and owners, and also by insurance companies, who recognize it in the rates on buildings.

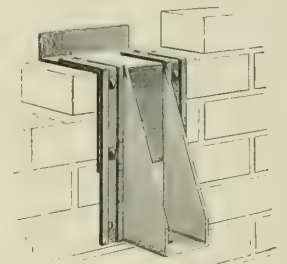
SIZES, PRICES,
AND
FURTHER
INFORMATION.

Write us for estimates and prices on Wall Hangers, Single or Double I-Beam Hangers, or special sizes that you may require.

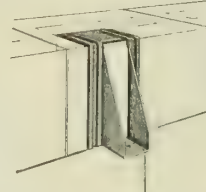
We invite correspondence from architects and builders. Further information regarding our products will be cheerfully furnished.



NO. 1 HANGER FOR
WOOD HEADERS



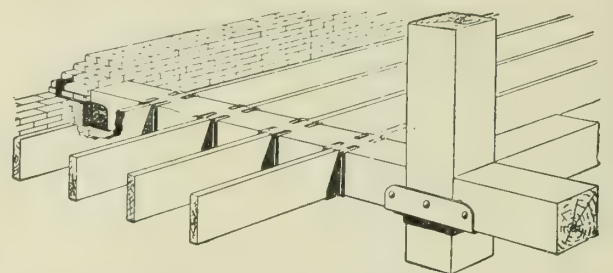
NO. 4 WALL HANGER



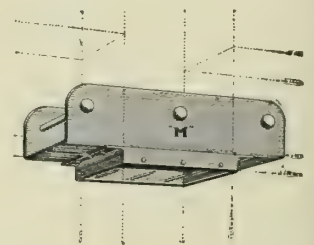
NO. 5 HANGER FOR
CONCRETE BLOCKS



NO. 6 HANGER



NO. 10 PLAN OF FRAMING
Showing Regular Hangers, Wall Hanger, and Three-Way
Post Cap



TWO-WAY POST CAP
"M"

G. F. S. ZIMMERMAN & CO.

MANUFACTURERS OF

Shutter Fasteners and Casement Adjusters and Strap Hinges

FREDERICK, MD.

PRODUCTS.

Sole manufacturers of "ZIMMERMAN'S" ALL-STEEL SHUTTER FASTENERS and CASEMENT WINDOW ADJUSTERS (Patented and other patents pending), "WALLING'S" SHUTTER FASTENER and "ZIMMERMAN'S" ANTI-SAG STRAP HINGE.

"ZIMMERMAN'S" SHUTTER FASTENER.

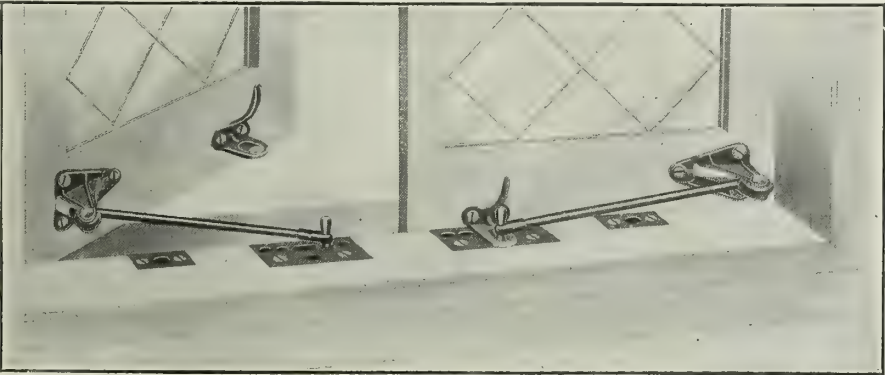
DESCRIPTION AND ADVANTAGES.

"Zimmerman's" All-Steel Shutter Fastener and Casement Window Adjuster, seen in the accompanying illustration, is for use on bay windows, outside blinds, hinged sash, iron, and fire shutters.

This Fastener is entirely of steel, making it more durable and more serviceable than those made of iron. It can be locked from without as well as from within; can be attached to any blind, old or new, without cutting or notching. It binds the stile and bottom rail together, strengthens the blind at the weakest point, and saves the glass from being broken in stormy weather. Every part is interchangeable; no rights or lefts for the dealer to even up or to confuse the carpenter. This fastener serves as a handle to the blind, holds it at any angle, and is a self-lock. It can be worked on any shutter, blind or hinged sash. Any length of bar and any style of finish will be made to order.

"ZIMMERMAN'S" ANTI-SAG STRAP HINGE.

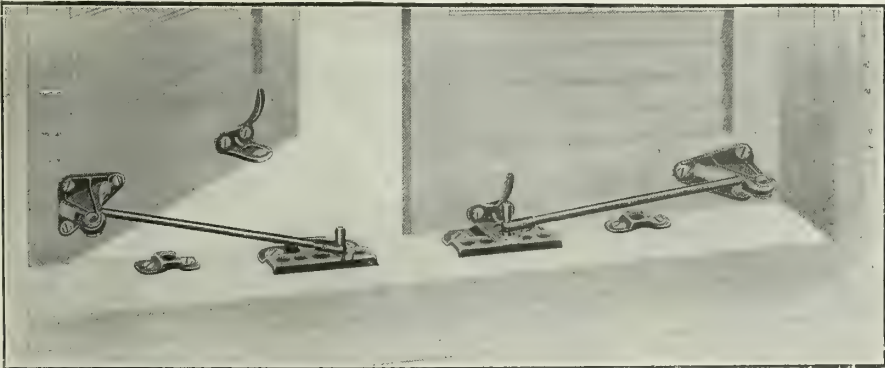
This Hinge is easily attached to masonry or wood and is specially adapted for heavy doors and gates, fire doors and shutters. It is the strongest hinge ever offered to the trade and one which will be found dependable no matter to what stress it may be subjected. It is made in twenty-two sizes, varying from six inches to six feet.



"ZIMMERMAN'S" ALL-STEEL CASEMENT SASH FASTENER

MODELS.

Models for demonstration and illustration will be supplied upon application to the manufacturers.



"ZIMMERMAN'S" ALL-STEEL SHUTTER FASTENER

ENDORSEMENT.

We were given the highest award at the Jamestown Exposition for our Shutter Fastener, Casement Fastener, and Anti-Sag Strap Hinge.

PRICES.

The prices for the fasteners are the same, and are given per dozen sets in the following table, subject to special trade discounts. "Walling's" Fasteners are made only japanned and galvanized and from seven to eighteen inches long. All goods are packed with screws.

Shutter Fasteners, Stock No.	Casement Sash Fasteners, Stock No.	Size	Japanned	Galvanized	Copper, Copper Oxidized	Copper Bronze, Brush Brass	Used on Outside Blinds or Casement Sash
40	60	7 inch ⁵ / ₁₆ in. Steel	\$4.50	\$6.00	\$22.50	\$40.00	12 in. or less
41	61	9 " ⁵ / ₁₆ " "	4.50	6.00	22.50	40.00	13 in. wide
42	62	10 ³ / ₄ " ⁵ / ₁₆ " "	5.00	6.50	25.00	45.00	14 or 15 in.
43	63	12 " ⁵ / ₁₆ " "	5.50	7.00	27.50	50.00	16 or 17 in.
44	64	14 " ⁵ / ₁₆ " "	6.50	7.75	30.00	55.00	18 or 19 in.
45	65	16 " ⁵ / ₁₆ " "	7.00	8.50	32.50	60.00	20 or 21 in.
46	66	18 " ⁷ / ₁₆ " "	8.00	10.00	37.50	75.00	22 or 23 in.
47	67	20 " ⁷ / ₁₆ " "	8.50	10.50	40.00	80.00	24 or 25 in.
48	68	22 " ⁷ / ₁₆ " "	9.50	11.50	45.00	90.00	26 or 27 in.
49	69	24 " ⁷ / ₁₆ " "	10.00	12.00	47.50	95.00	over 28 in.

AMERICAN BAR-LOCK COMPANY

SOLE MANUFACTURERS OF

Porcelite "Bar-Lock" Sidewalk, Floor, and Skylight Construction

OFFICES AND WORKS

Twenty-Sixth Street and Pennsylvania Avenue

PHILADELPHIA, PA.

NEW YORK OFFICE: 160 FIFTH AVENUE

REPRESENTATIVES IN EVERY LARGE CITY
IN THE UNITED STATES AND CANADA

PRODUCTS.

PORCELITE "BAR-LOCK" WROUGHT-STEEL VAULT, FLOOR, PAVEMENT, and SKYLIGHT CONSTRUCTION with "3-POINT" PRISMS or "ARCH PLAIN" LIGHTS; also, NEW "BAR-LOCK" SIDEWALK DOORS and COAL-HOLE COVERS.

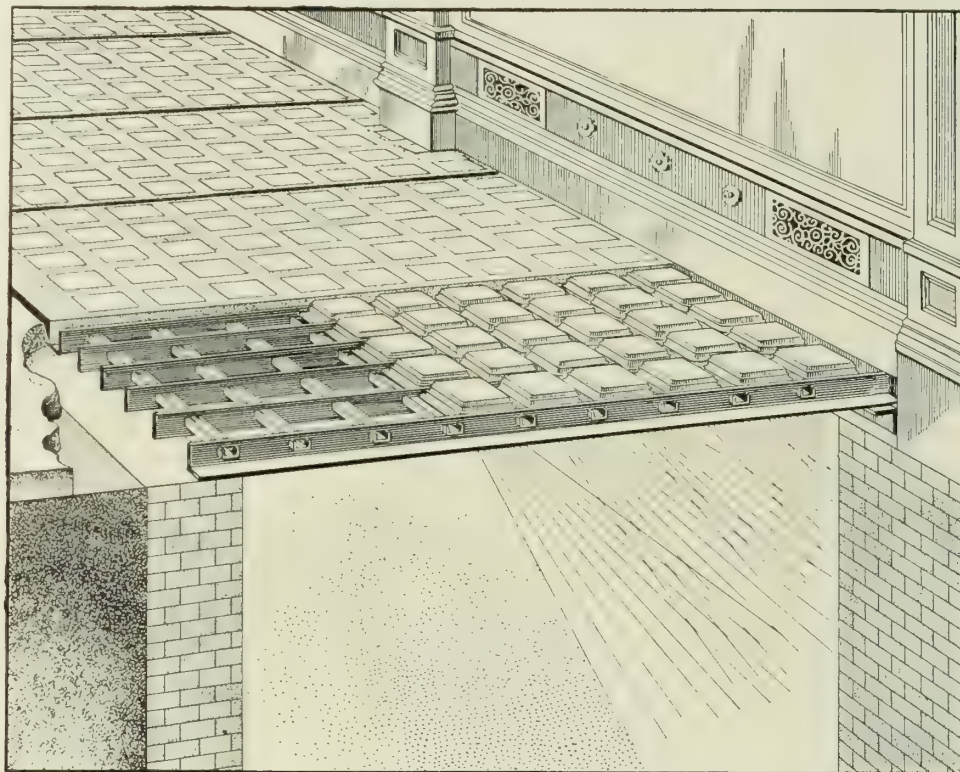


FIG. 1. "BAR-LOCK" CONSTRUCTION WITH "3-POINT" PRISM GLASS
Containing 77 per cent glass surface and a portion cemented complete, finished flush with pavement

DESCRIPTION.

"Bar-Lock" is constructed of heavy wrought-steel bars, set on edge, with channel-bars intersecting at right angles, clamped in place, forming receptacles for the glass, as shown in Fig. 1. The function of the channel-bar is very important, as it affords a deep interlocking rib of cement between the glasses which have two ribs entirely encircling the upright walls, giving them an additional bearing in the concrete as well as on the steel channels. In the "Bar-Lock" construction there is a total absence of the cumbrous heavy appearance and leakages, which are unavoidable in the old-style cast-iron frame and also in the so-called "Modern Concrete Construction," which allows about 50 per cent of glass area, against the approximate 77 per cent glass area contained in the "Bar-Lock" construction. This is also an important feature, as our construction allows a minimum amount of concrete surface to the maximum amount of glass surface for a less price than is charged for the old-style

Continued on next page

constructions consisting of about fifty per cent of concrete surface which can be purchased at 15 cents to 18 cents per square foot for which you pay full vault light prices.

PORCELITE
"BAR-LOCK."

Porcelite "Bar-Lock" Construction, with Patented "3-Point" Prisms or "Arch Plain" Lights, is the only vault, floor, pavement, and skylight that is perfect in every respect. The Porcelite frames are far superior to the old form of galvanizing, as each coat is baked on under high temperature, assisting very materially in the diffusion of light, as they cast no shadows, and guaranteed against rust and corrosion. This white Porcelite finish for Vault, Floor, Pavement, and Skylight Constructions can be furnished by no other concern.

ADAPTABILITY.

Porcelite "Bar-Lock" Wrought-Steel Construction, with either patented "3-Point" Prisms or "Arch Plain" Lights, is being specified by the most prominent architects and engineers throughout the country, in the largest and best buildings that are being erected. It is adaptable for use in large department stores, office buildings, hospitals, factories, dwellings, etc., transforming dark, dismal spaces into bright, cheerful areas, utilizing every available space for use or renting purposes.

ADVANTAGES.

One of the advantages of the "Bar-Lock" Wrought-Steel Construction with Patented "3-Point" Prisms over all other methods of illumination is that it gives approximately 77 per cent glass area for vault lights, against 25 to 50 per cent glass area in other styles. This is a gain of approximately 100 per cent, and is augmented by the installation of "3-Point" Prisms. Each of these lenses is composed of three separate and distinct prisms, of different sizes, set parallel and with the angles of the prisms so constructed that they diffuse the light in three different directions. (See Fig. 2.)

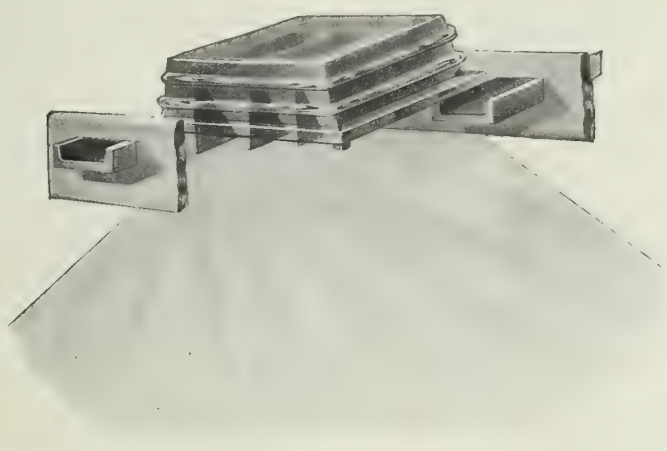


FIG. 2. PORCELITE BAR-LOCK CONSTRUCTION, WITH PATENTED "3-POINT" PRISMS OR "ARCH PLAIN" LIGHTS

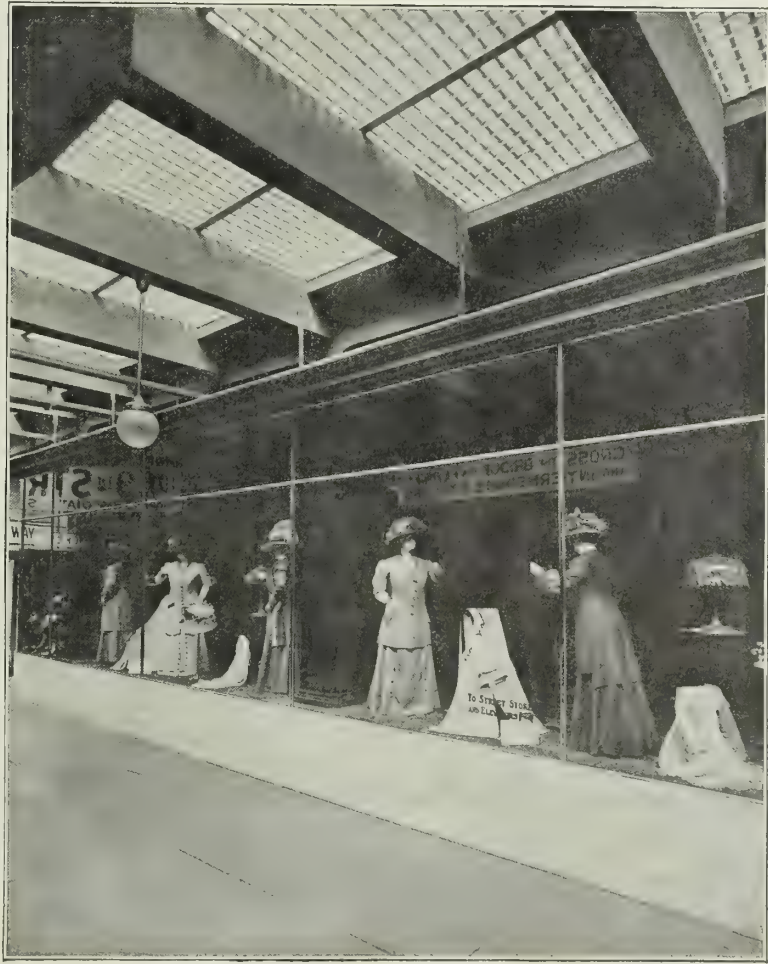


FIG. 3. EFFECTIVENESS OF BAR-LOCK SIDEWALK LIGHTS IN RAPID TRANSIT SUBWAY, PHILADELPHIA, PA.

GLASS.

The accompanying cut shows our No. 20 regular Patented "3-Point" Prism Glass. This lens is also made 1 inch in thickness, which permits the points of these prisms to extend $\frac{1}{2}$ inch below the regular No. 20 prism. The extra heavy glass is used where traffic is exceptionally heavy.

Our No. 21 Glass is our $\frac{1}{2}$ inch thick "Arch Plain" glass, which is used in our Standard "Bar-Lock" Construction. This glass is also made $\frac{3}{4}$ inch thick, which is No. 22, and 1 inch thick, which is No. 23.

The single pendant prism is sometimes desired by architects and contractors, and we manufacture this lens for the purpose of matching old work.

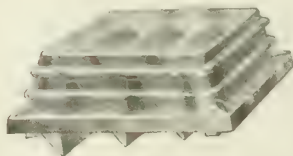


FIG. 4. NO. 20 PATENTED
"3-POINT" PRISM
GLASS

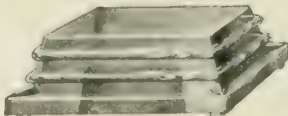


FIG. 5. NO. 21 ONE HALF
INCH THICK "ARCH
PLAIN" GLASS

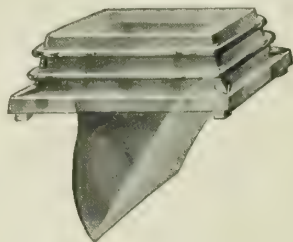


FIG. 6. SINGLE PENDANT
PRISM GLASS

SIDEWALK
LIGHT
TESTS.

The accompanying cut illustrates a test made of our "Bar-Lock" Construction, using a completed section with "3-Point Prism Glass, 4' 0" wide, covering a span of 6' 0" clear of supports. This slab was subjected to a distributed load of 46,120 pounds of pig-iron and stone at a temperature of 46° Fahr., showing an approximate load of 1900 pounds per square foot, with a deflection of $\frac{51}{64}$ ".

The "Bar-Lock" Construction in this test showed only a temporary deflection of $\frac{51}{64}$ ", and on observation taken after removal of entire load it was found that there were three short longitudinal cracks over the bearing with no glass cracked.

It was the intention that results of these tests should show the ultimate or breaking strength; and it is noteworthy that it was impossible, not only to attain the primary object of the tests, but also that in no case was a yielding point found similar to that shown on competitive constructions under similar tests.

Specimen was unattached to bearings, and deflection was measured at center of span.



FIG. 7. TEST OF A SECTION OF "BAR-LOCK" SIDEWALK LIGHT
Recently made by a firm of prominent and reliable Testing Engineers, whose names will be furnished upon application

Span in Feet	Width in Feet	Area of Section	Total Applied Load	Load per sq. ft.	Temperature	Temporary Deflection
6' 0"	4' 0"	24 sq. ft.	46,120 lbs.	1900 lbs.	46° Fahr.	$\frac{51}{64}$ "

INSTALLATION.

"Bar-Lock" Sidewalk Light or Skylight Construction can be installed by any competent cement man, under our printed directions which accompany each order. Where "3-Point" Prisms are used it will be noticed that there are three separate prisms of different lengths. The shortest prism should be set with the vertical side toward the direction in which the light is to be thrown.

Catalogues and blue-prints, giving full-sized details of both "Bar-Lock" Sidewalk Lights and Skylight Construction, with "3-Point" Prisms and "Arch Plain" Lights, will be sent upon request.

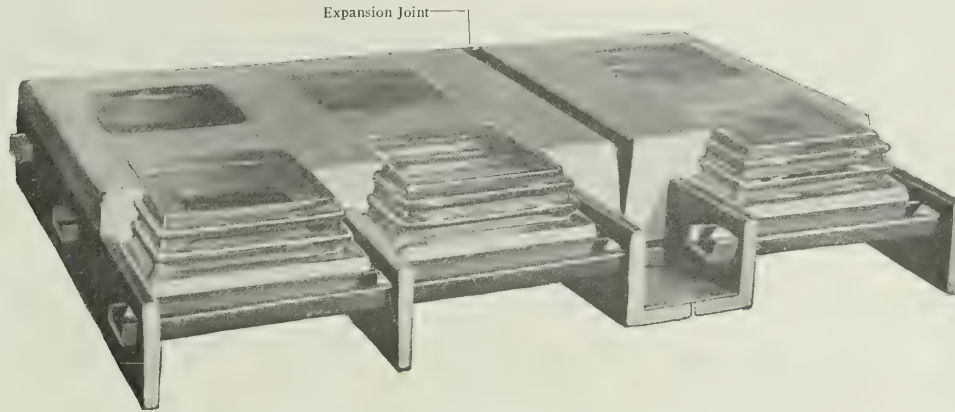


FIG. 8. PERSPECTIVE OF "BAR-LOCK" WROUGHT-STEEL CONSTRUCTION

ARCHITECTS' SPECIFICATIONS.

The sidewalk lights and floor lights shown on plans shall be "Bar-Lock" Wrought-Steel Construction, with porcelite enamel frames and "3-Point" Prism Lights (or "Arch Plain" lights), as manufactured by the AMERICAN BAR-LOCK COMPANY, 26th Street and Pennsylvania Avenue, Philadelphia, Pa., all to be installed according to their printed directions with expansion joints between each section and over area walls—these joints to be waterproofed with "Bar-Lock" compound.

CAULKING COMPOUND.

"Bar-Lock" Caulking Compound is furnished at slight cost for the purpose of caulking expansion joints. This makes these joints absolutely water-tight, and prevents cracking and shaling of glass and cement caused by expansion and contraction. (See Fig. 8.)

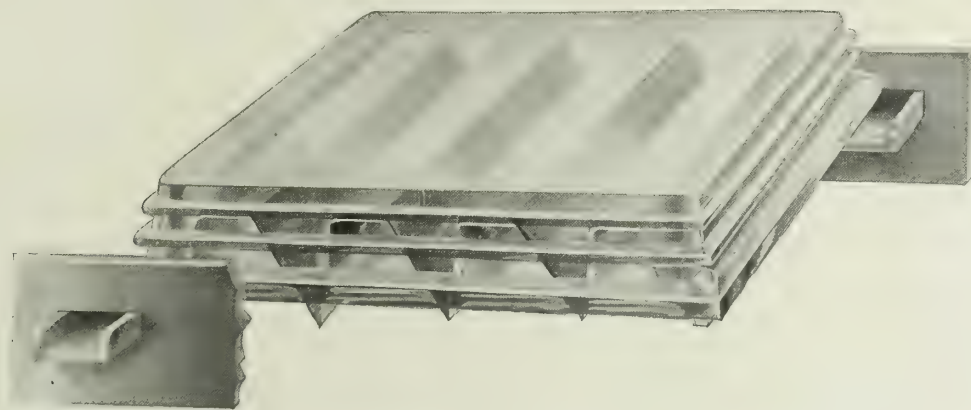


FIG. 9. "BAR-LOCK" SKYLIGHT CONSTRUCTION, WITH 7" x 7" "3-POINT" PRISM GLASS

SKYLIGHTS.

Porcelite "Bar-Lock" Construction, with 7" square "3-Point" Prism or "Arch Plain" Light, is the most effective for skylights, furnishing about 95 per cent glass area and giving greater strength, durability and security than any other skylight known. The glass is of the finest quality, being pure crystal, thoroughly annealed, clear, tough and strong, and made with two ribs encircling the four sides to furnish an additional bearing in the concrete.

Special attention is called to our patented pitched or hipped skylight, which can be used for very wide spans without structural framing of any kind other than the "Bar-Lock" frames themselves and the bearings at the sides of the opening. This skylight has the advantage of being water-tight, burglar-proof and fireproof.

SIDEWALK DOORS.

This is a new departure in illuminated Sidewalk Doors, the result of years of experimenting which has brought these doors to their present state of perfection. Note the heavy wrought-iron frame and concealed hinges; also, the heavy gutter for draining off any possible seepage of water between the doors proper and the frame.

"Bar-Lock" Doors are the lightest, strongest, most durable, as well as the neatest in appearance of any doors that have heretofore been placed on the market. They can be operated without the use of worm-gear operating device, in sizes 5' 0" x 5' 0" or less.

"Bar-Lock" Flush Doors are made with plain or prismatic glass, as desired, or with plain steel plate or diamond-top steel plate, painted or galvanized.

We are making extremely low prices on these doors, a list of which will be mailed you on request.

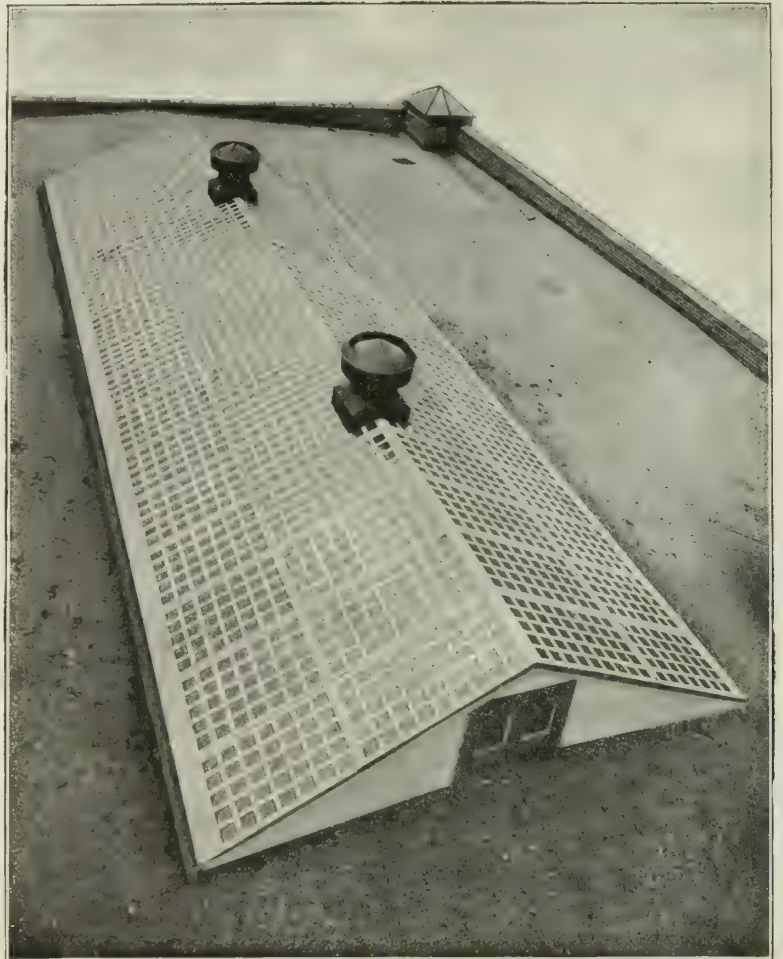


FIG. 10. HIPPED SKYLIGHT OVER GYMNASIUM OF Y. M. C. A. BUILDING, INDIANAPOLIS, IND.

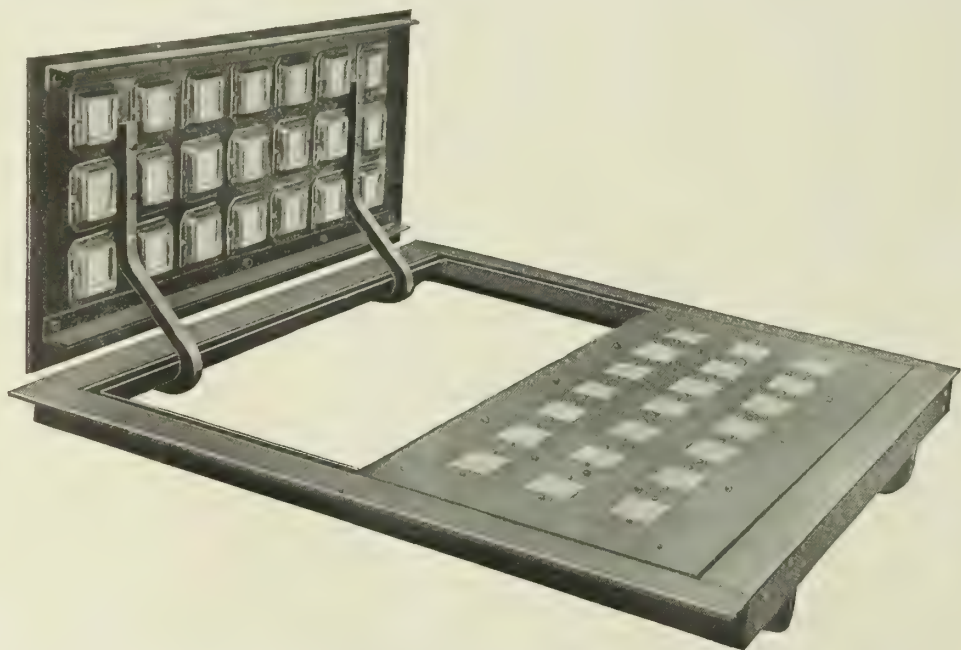


FIG. 11. "BAR-LOCK" ILLUMINATED STEEL PLATE, ABSOLUTELY FLUSH, WATER-TIGHT SIDEWALK DOORS

AMERICAN LUXFER PRISM COMPANY

MANUFACTURERS OF

"Luxfer" Prisms for Lighting Buildings with Daylight

Heyworth Building, Wabash Avenue and Madison Street

CHICAGO, ILL.

FACTORY
37TH AND MORGAN STREETS
CHICAGO, ILL.

BRANCH OFFICES

BALTIMORE, MD., 25 Old Builders' Exchange
BOSTON, MASS., 49 Federal Street
CINCINNATI, OHIO, 37 Thoms Building
CLEVELAND, OHIO, 405 Garfield Bldg.
DULUTH, MINN., 106 West Michigan St.
DALLAS, TEXAS, Builders' Exchange

KANSAS CITY, MO., 948 New York Life Bldg.
LOS ANGELES, CAL., 232 Bradbury Bldg.
MILWAUKEE, WIS., 1112 Railway Exchange Bldg.
NEW ORLEANS, LA., 904 Hennen Building
NEW YORK, N. Y., 507 West Broadway
ROCHESTER, N. Y., 38 Exchange St.

HOUSTON, TEXAS, 204 Commercial
Bank Building
PHILADELPHIA, PA., 807 Chestnut St.
PITTSBURG, PA., 1022 Fulton Bldg.
SAN FRANCISCO, CAL., 151 Tehama St.
ST. PAUL, MINN., 615 Ryan Bldg.

PRODUCTS AND SERVICES.

We are the manufacturers of the original "LUXFER" PRISMS for LIGHTING BUILDINGS with DAYLIGHT, in accordance with the "LUXFER" SYSTEM, including "LUXFER" TRANSOM and WINDOW PRISMS, "LUXFER" CANOPY and SKYLIGHT PRISMS, "LUXFER" FLOOR-LIGHT PRISMS, "LUXFER" CEILING-LIGHT PRISMS, "LUXFER" SHEET PRISMS, "LUXFER" SIDEWALK TILE and PRISMS, "LUXFER" VAULT LIGHTS and "LUXFER" REINFORCED - CONCRETE SIDEWALK LIGHTS.

Expert and advisory services will be gladly furnished.

ADAPTABILITY.

The "Luxfer" System is designed to cover every conceivable case where it is desired to flood buildings with daylight. Every product manufactured under the "Luxfer" System has its basis on scientific calculation, and is productive of predetermined results.

STORE FRONTS.

Modern Store Fronts should be equipped with "Luxfer" Prisms in the form of Transom Panels, as shown by Fig. 1, extending across the full width of store, as shown by Figs. 2, 3, and 4. Great economy in the cost of artificial lighting can be effected by also equipping the windows in the rear of the room.

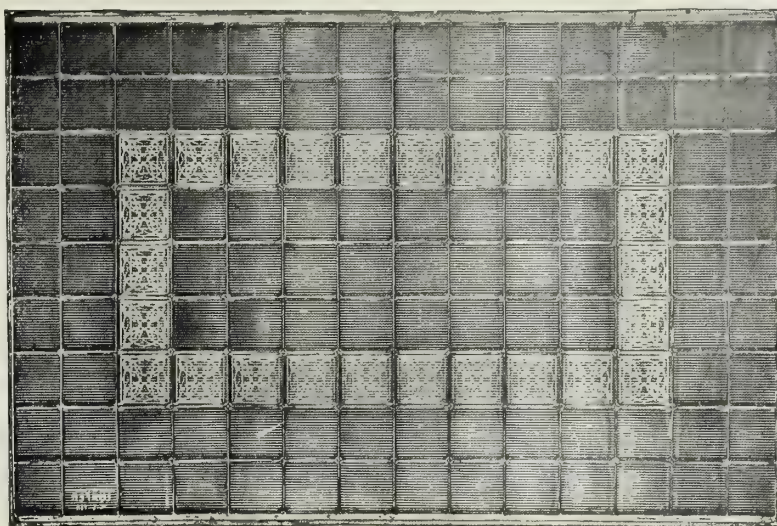


FIG. 1. "LUXFER" PRISM TRANSOM PANEL
With 4" Squares, Copper-Plated Metal Glazing, Ornamental Border



FIG. 2. UNITED CIGAR STORES CO., SHOWING
"LUXFER" PRISM TRANSOM PANELS



FIG. 3. SOLID "LUXFER" TRANSM FRONT WITH PIVOTED VENTILATORS

INSTALLATION.

The arrangement of sash or frames for "Luxfer" Prism Panels is the same as for plate glass, and the panels are set in the same manner as plate glass, and do not require the services of skilled mechanics.

CANOPIES.

Canopies in courts or narrow streets are set at an angle to the vertical wall, and supported in revolving, folding, or stationary iron frames, as exhibited by Figs. 6, 7, and 8.

SPECIFICATIONS.

Form of specification for "Luxfer" Prisms:

"Glaze all transoms and top-lights on floors as shown, front, side, and rear elevations, with "Luxfer" Prism, four-inch pressed squares (see Fig. 5), electro copper-plated glazing and ornamental borders."

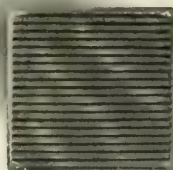


FIG. 5. TRANSM TILE

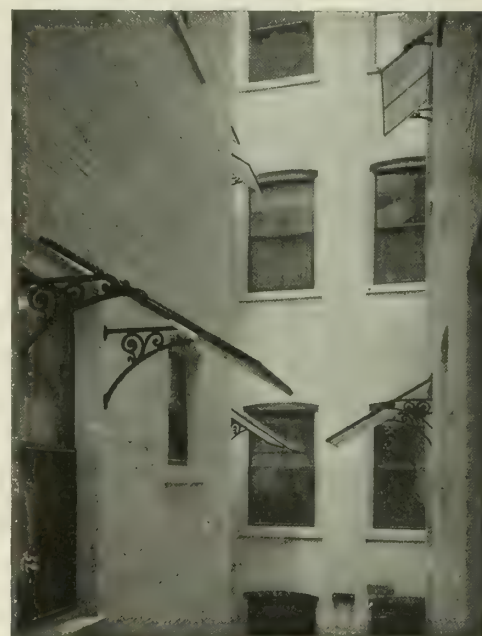


FIG. 6. COURT OF FLAT BUILDING WITH PRISM CANOPIES OVER WINDOWS

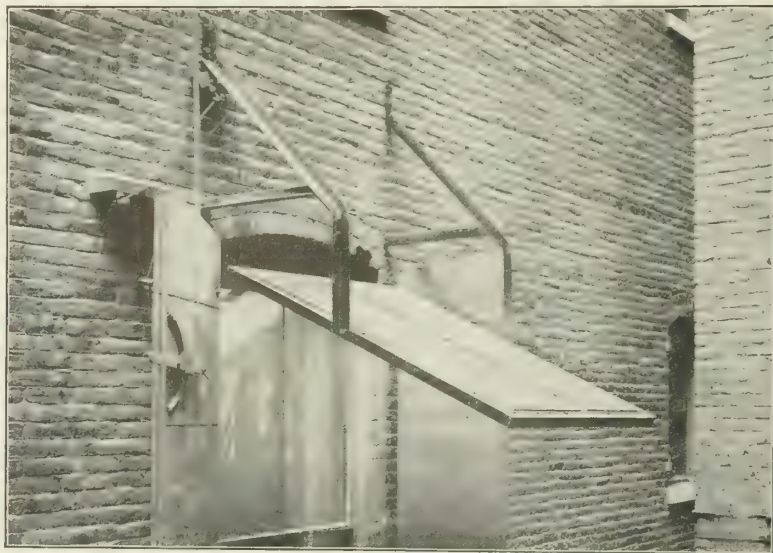


FIG. 7. REVOLVING CANOPY IN POSITION



FIG. 8. FOLDING CANOPY IN POSITION

**"LUXFER"
SHEET
PRISMS FOR
MILLS,
FACTORIES,
WAREHOUSES.**

"Luxfer" Sheet Prisms are cut to any size and comprise various angles of prisms required to bring about definite results under varying conditions. The lighting results obtained from any prism glass depend upon the angle of prisms used, and these therefore should be scientifically prescribed in every case.

The proper daylight illumination of mills, factories, and warehouses is a matter of importance, which can readily be accomplished by equipping the windows with "Luxfer" Sheet Prisms.

**REINFORCED-
CONCRETE
SIDEWALK
LIGHTS.**

The "Luxfer" System of Reinforced-Concrete Sidewalk Lights and Vault Lights is recognized by architects and engineers as the standard of excellence for efficiency, durability, and construction.

Installation made by our own skilled workmen at the building, or they can be made up in slabs and shipped completed ready to place over openings.

DESCRIPTION.

The Reinforced-Concrete Panels, with Prisms or Lenses, are made up with glass embedded in $1\frac{7}{8}$ inches of concrete, reinforced by longitudinal and transverse $\frac{1}{4}$ -inch twisted-steel tension-rods placed between the glass units, thus forming a mesh of great rigidity. Types of these Panels are shown by Figs. 13 and 14. Blue-prints showing details of this construction will be mailed upon request. These panels of glass and concrete are supported upon retaining walls and beam at the building and have stiffeners of steel I-beams or concrete trusses placed at proper intervals, as shown by Fig. 15. To provide for expansion, joints properly caulked and made water-tight are placed at requisite intervals.

ADVANTAGES.

The "Luxfer" System of Reinforced-Concrete Sidewalk Lights and Vault Lights has many advantages over the ordinary forms of sidewalk and vault lights. The iron plates or frames usually used in sidewalk lights are entirely omitted in this system; thereby doing away with leaking joints, rusting, condensation, etc., and eliminating the danger of slipping on exposed metal surfaces. In this system all steel is embedded in the concrete.



FIG. 9. NO. 60 "LUXFER"
PENDANT PRISM

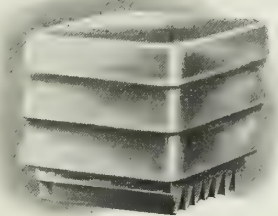


FIG. 10. NO. 76 MULTI-
PRISM

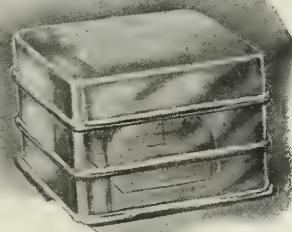


FIG. 11. NO. 70 SQUARE LENS



FIG. 12. NO. 65 ROUND LENS

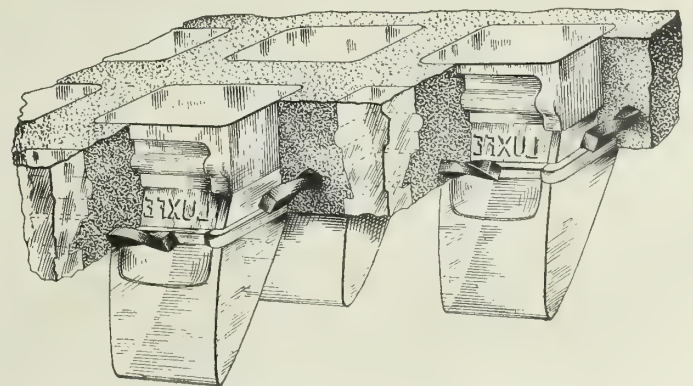


FIG. 13. PRISMS IN REINFORCED-CONCRETE SETTING

The top surface is rubbed down, presents a fine appearance, and makes an excellent wearing pavement.

The under surface may be plastered flush with the bottoms of the lenses. No other system permits a finish in this manner.

This system is particularly desirable for quick setting. The materials are always ready and can be assembled without the delay necessitated in making patterns and castings.

The installing of this system is done by our own skilled workmen at the building, or shipped in ready-to-set slabs.

TYPES OF "LUXFER" SIDEWALK TILES.

No. 60 "Luxfer" Pendant Prism, $2\frac{1}{2}$ inches square, has a single drop lens projecting 2 inches below the under surface of the concrete.

No. 76 Multi-Prism, $2\frac{3}{4}$ inches square, has a number of scientifically formed prisms on the under surface.

These Prisms are highly efficient and have the greatest reflecting power of any Sidewalk Prisms on the market.

No. 78 Lens, $2\frac{3}{4}$ inches square, Fig. 11, and No. 65 Round Lens, $2\frac{3}{4}$ inches in diameter, Fig. 12, are without prisms, but are hollow underneath, with properly formed reflecting surfaces, showing a marked increase of light over any other make of vault light.

A combination of No. 78 Lens with either No. 76 or No. 60 Prism is advisable in many cases, particularly where piers and wall surfaces would obstruct the light from the prisms.

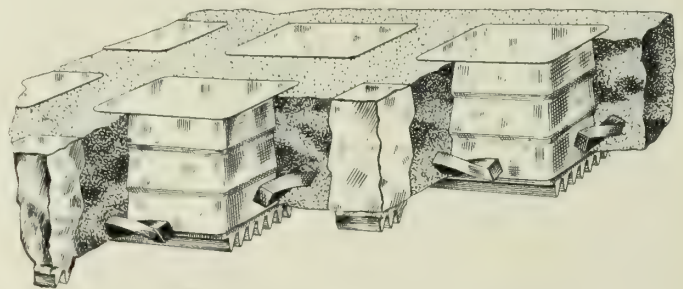


FIG. 14. REINFORCED-CONCRETE PANEL WITH LENSES



FIG. 15. VIEW OF REINFORCED-CONCRETE SIDEWALK LIGHTS FROM BELOW

ADAPTABILITY.

The "Luxfer" System of Reinforced-Concrete Sidewalk Lights can with equal facility be used for roofs, skylights, ceiling lights, floor lights, and for filling vertical window openings in fireproof buildings. The flexibility of this product makes it possible to be used in innumerable ways.

COST.

The "Luxfer" System of Reinforced-Concrete Sidewalk Lights is not more expensive than the ordinary form of Prismatic Lights, or Prism Sidewalk Lights with usual cast-iron setting.

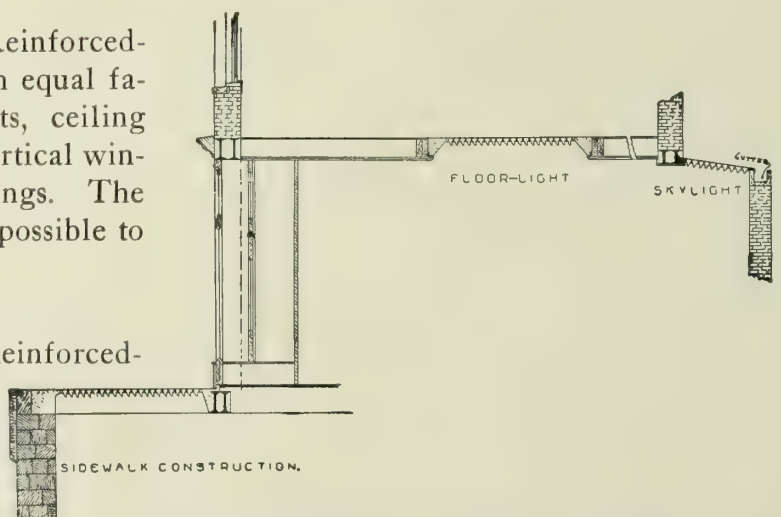


FIG. 16. EFFECTUAL USES FOR "LUXFER" REINFORCED CONCRETE CONSTRUCTION

SPECIFICA-
TION.

A proper form of specification is as follows:

"Prismatic Sidewalk Lights should be the AMERICAN LUXFER PRISM COMPANY's make of Reinforced Concrete. The body of concrete to be reinforced by cold twisted-steel tension-rods separating glass and running longitudinally and transversely across the opening. Glass to be 'Luxfer' No. This work to be executed by the AMERICAN LUXFER PRISM COMPANY's own skilled mechanics."

CAST-IRON SETTING SKYLIGHTS.

Some architects prefer cast-iron setting for sidewalk lights, and “Luxfer” Sidewalk Prism Tile Nos. 32 and 46 are designed for setting in the usual cast-iron frames.

SKYLIGHT
PRISMS.

"Luxfer" Skylight Prisms No. 525 are 13 inches square and $\frac{5}{8}$ inch thick, perfectly smooth on top, and are equipped with water-guards at sides to keep water from joints at bars, as shown by Figs. 17 and 18. This "Luxfer" Skylight is the only skylight prism that will successfully distribute light throughout a large room. It can be made and kept water-tight without repairs.



FIG. 17. "LUXFER" SKYLIGHT

INSTALLATION.

The pitch of Extension Skylights should be from 57 to 60 degrees to the vertical, and the top edge of the skylight should be as near the ceiling line as possible, as shown by Fig. 18.

“Luxfer” Skylight Prisms No. 525 are designed to be set in ordinary galvanized-iron or copper skylight frames. These skylights conform to the requirements of the Board of Fire Underwriters.

SPECIFICA-
TION.

Form of specification for Skylight:

"Contractors are to furnish 'Luxfer' No. 525 Skylight Prisms in skylight where shown on the plans. The construction to be in accordance with the AMERICAN LUXFER PRISM COMPANY's details for the same, and to be of galvanized-iron (copper)."

FACILITIES.

Our facilities are ample for contracts of any size, which we will accept anywhere in the United States.

HOW TO
DISTINGUISH
"LUXFER"
PRODUCTS
FROM
INFERIOR
IMITATIONS.

In order to distinguish "Luxfer" System Prism Products from inferior imitations all plates made up of 4-inch units have a trade-mark unit glazed in the lower left-hand corner, with the words "Luxfer" and "Patented" in raised letters on the smooth surface. All top-lights for store fronts of greater depths than 36 inches will also have an ornamental border of 4-inch units, the backs of which are ornamented with raised geometrical design. Sidewalk Prisms and Sky-light Prisms have trade-mark imprints upon them.

“LUXFER” INSTALLA- TION.

Upward of 26,000 buildings have been successfully equipped under the "Luxfer" System, and every installation bears tetsimony to our assurances of satisfaction.

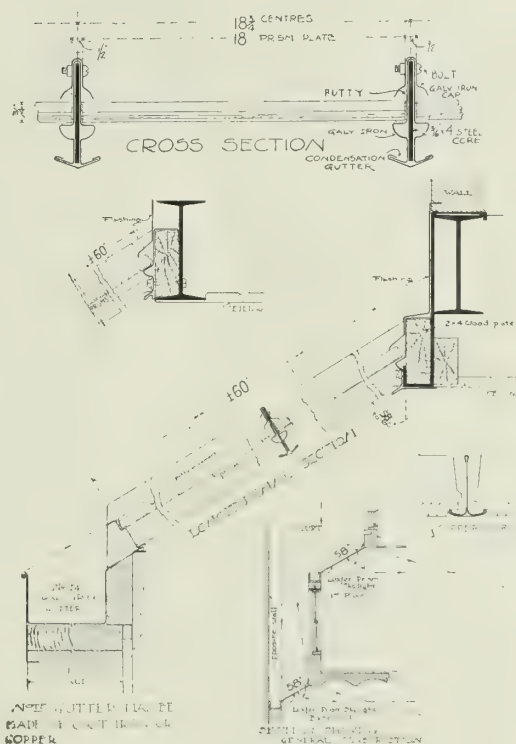


FIG. 18. DETAIL OF "LUXFER" PRISM SKYLIGHT CONSTRUCTION

AMERICAN 3-WAY PRISM COMPANY

Manufacturers of Prismatic Products

MAIN OFFICE AND WAREHOUSE
CHICAGO, ILL.

EASTERN OFFICE AND WAREHOUSE
NEW YORK, N. Y.

BRANCH OFFICES AND REPRESENTATIVES IN ALL LARGE CITIES

PRODUCTS.

We are manufacturers of "3-WAY" PRISM GLASS, "3-WAY" PRISMATIC WIRE-GLASS and VAULT LIGHTS. PRESSED PRISM GLASS TILES in 4 and 5 inch squares, glazed in hard white metal, copper-plated or solid copper bars, and made to fit any size opening. CANOPY PRISM TILES in 4 and 5½ inch squares for narrow streets, courts and alleys. SHEET PRISM GLASS, glazed in design as per our design sheets, or any other design that may be desired. SHEET PRISM GLASS, pressed in sheets. "DEWDROP" DESIGN TILES, made in 4 to 5 inch squares, which conform to our lens and are used in connection with our other tiles for ornamental purposes in lights of any size. VAULT-LIGHT CONSTRUCTIONS, including the "PASCHALL" INTERLOCKING SYSTEM of STEEL I-BAR VAULT LIGHTS, FLOOR LIGHTS and SKY-LIGHTS, white enameled, galvanized, painted or natural iron frames, with plain lens lights or "3-Way" Prism Lights. REINFORCED-CONCRETE CONSTRUCTION, with round or square glass, as per cuts shown on following pages. COAL-HOLE COVERS and VAULT-LIGHT and SIDEWALK DOORS. We also manufacture the "STAR" SAFETY-TREAD, to be used in conjunction with vault or sidewalk lights; also, METAL WATERPROOF EXPANSION JOINT.



MEDAL AWARDED BY THE
CITY OF PHILADELPHIA

"3-WAY" PRISMS.

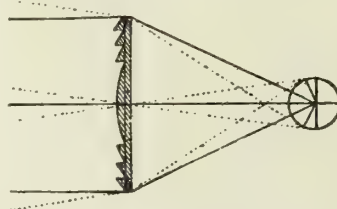
"3-Way" Prisms are a form of window glass scientifically arranged to gather the light from the sky and project it into all parts of dark interiors. Briefly speaking, they consist of carefully arranged lenticular surfaces running in a vertical direction on the outside, and at right angles to parallel prismatic projections in the inner side. They are manufactured in various forms to suit all existing conditions. They will increase the light from 50 to 100 per cent. The above medal was awarded for this invention.

PRISMATIC WIRE-GLASS.

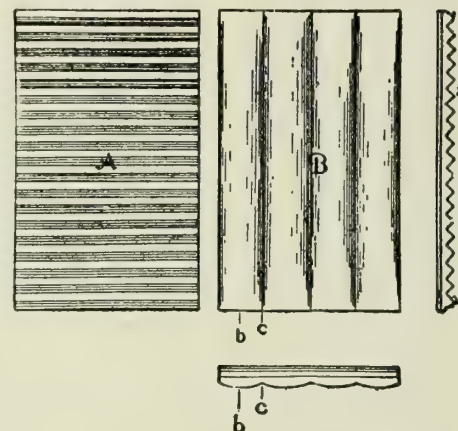
"3-Way" Prismatic Wire-Glass is the only wire-glass made in the United States that combines fire protection and prismatic light.

ADVANTAGES.

The amount of light obtained by its use is increased many times. Windows and skylights of Prismatic Wire-Glass offer a positive resistance to the spread of flames. It is made in accordance with the rules and requirements of the National Board of Underwriters, and in many instances greatly reduced insurance premiums can be obtained by its use.



Fresnel Lens, conceded to be the most powerful Projecting Glass known to science for artificial light



"3-Way" Prisms, conceded to be the most powerful combination of glasses known to science for projecting and diffusing natural light

FIGS. 1 AND 2. SIMILARITY OF CONSTRUCTION OF LIGHT-HOUSE LENS TO "3-WAY" PRISMS

"3-WAY" PRISMATIC WIRE-GLASS.

"3-Way" Prismatic Wire-Glass is made in lights of any size up to 100 inches wide by 54 inches high, for fire-retarding purposes (Fig. 3), thus embodying the features of the ordinary wire-glass with the advantages of prismatic glass.

PRISMATIC
WIRE-GLASS
SKYLIGHTS.

WIRE
PRISMATIC
GLASS SPEC-
IFICATIONS.

PRISMATIC
CEILING
LIGHTS.

PRISMATIC
SHEET
GLASS.

Prismatic Wire-Glass for skylights possesses the combined benefits of wire and prismatic glass. Pitch of skylights should be from 60 to 65 degrees to the vertical and below the plane of the ceiling (see Fig. 4).

"3-Way" Wire Prism Glass shall be installed as shown on plans as manufactured by the AMERICAN 3-WAY PRISM COMPANY of Chicago, Ill., and New York, N. Y.

We can also furnish our prisms of such an angle that they can be used as ceiling lights; thus, instead of having a patch of daylight under a skylight, a uniform white light is thrown into every corner (Fig. 5).

Sheet Prism Glass is made in lights and can be cut to any size up to 60 inches high by 100 inches wide. It is specially adapted for use in warehouses, factories, school buildings, mills, and in other places where an ornamental appearance is not required but light is of basic importance. We recommend that only the upper sash be glazed with Sheet Prism Glass, the bottom sash being

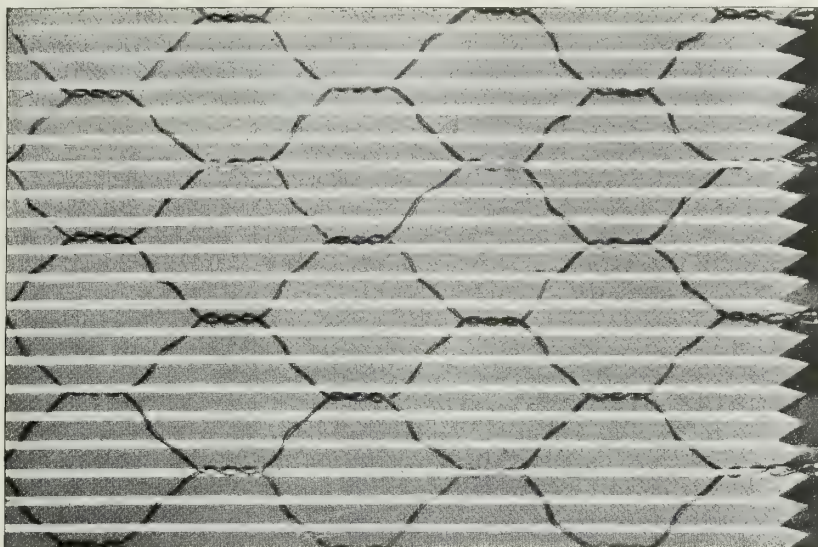


FIG. 3. WIRE SHEET PRISM

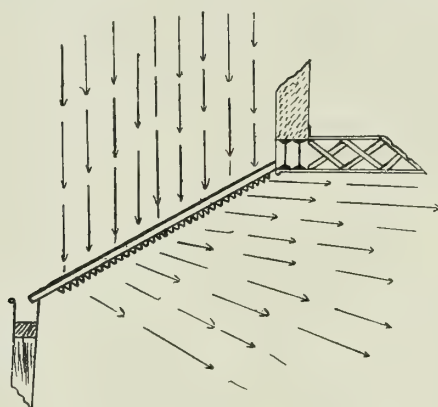


FIG. 4. "3-WAY" PRISM SKYLIGHT

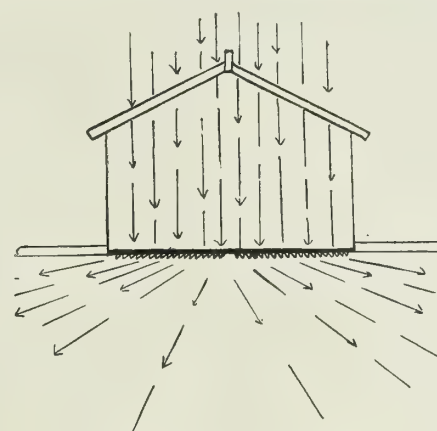


FIG. 5. "3-WAY" PRISM CEILING LIGHT UNDER SKYLIGHT

glazed with ordinary glass, so that when windows are open for ventilation there will be no interference with the rays of light from the prisms. While being much cheaper than tile, its wonderful efficient lighting qualities will pay for itself many times over in the cost of the artificial light.

SHEET PRISM
GUARANTEE.

SHEET PRISM
SPECIFICA-
TIONS.

SHEET PRISM
IN DESIGN.

We guarantee that our Sheet Prism will not turn pink like some other makes.

"3-Way" Sheet Prism (or flat-back if preferred) shall be furnished as shown on plans as manufactured by the AMERICAN 3-WAY PRISM COMPANY of Chicago, Ill., and New York, N. Y. The color of which shall be guaranteed not to turn pink.

While we do not recommend the use of Sheet Prism Glass in design, tiles being superior (note page 4), we shall furnish any suitable design glazed in metal, the same as superior tiles, at moderate cost; or any of our standard designs (page 3).



FIG. 6. REGULAR SHEET PRISM

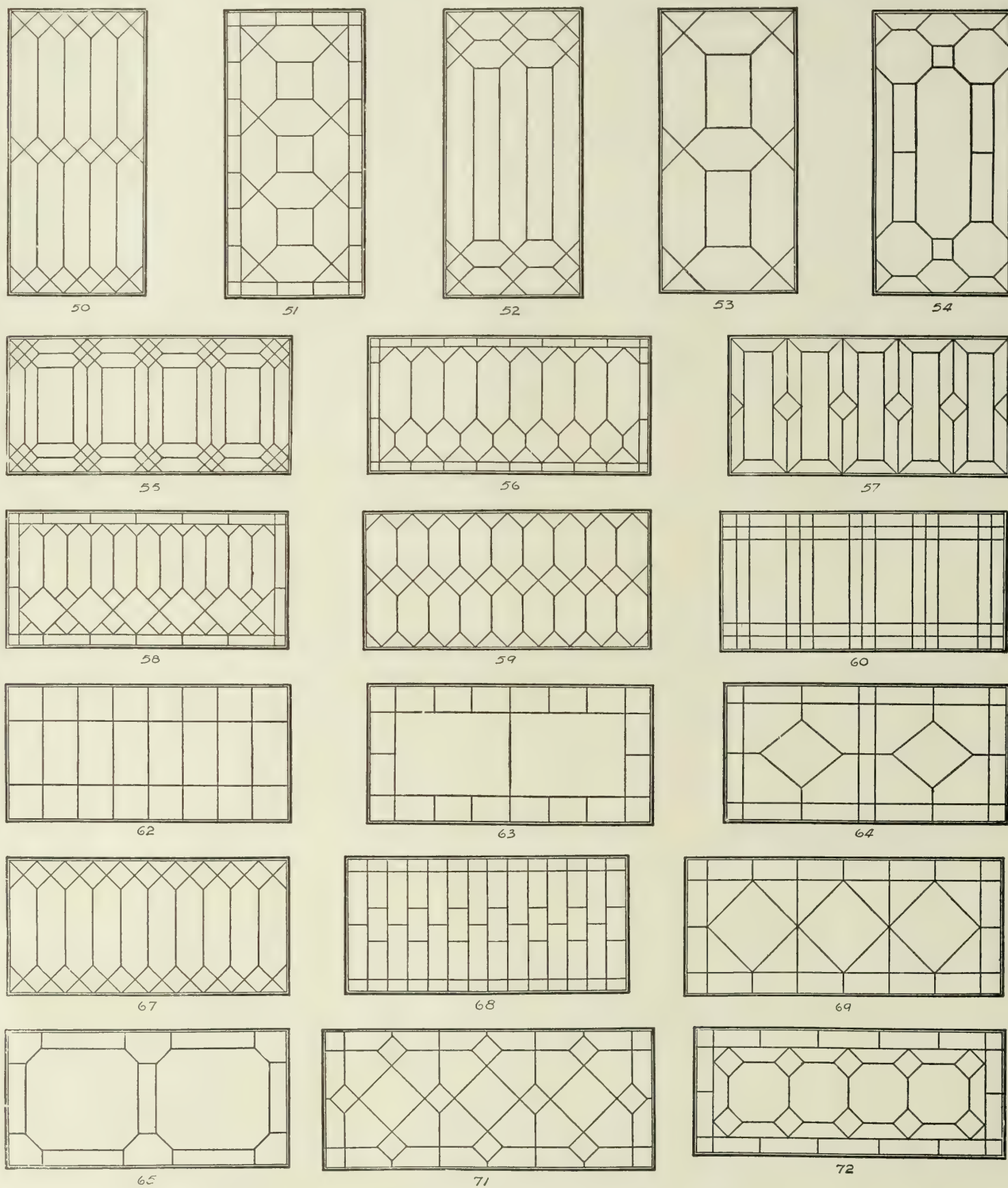


FIG. 7. DESIGNS OF ORNAMENTAL SHEET PRISM GLASS
In specifying, give Design Number

PRISMATIC
TILES.

Our Superior "3-Way" Tiles are made in both 4 and 5 inch squares. They are pressed from the best quality of glass, and made in a great many angles.

While the cost is greater than Sheet Prism, they have the advantage, if the proper information is furnished, of being more efficient and of giving an ornamental appearance when installed in transoms and upper sash. All ornamental glazing is done in hard metal, coppered and sufficiently reinforced with invisible steel-cored bars to make them rigid, which is an advantage over ordinary art-leaded glass, while the cost is no greater. Solid copper bar will be used when specified.

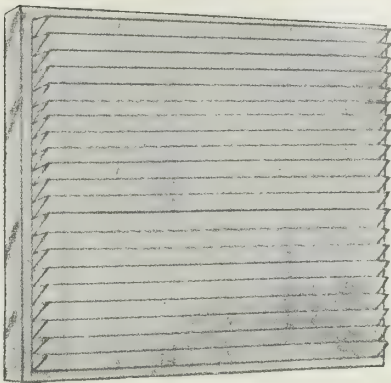


FIG. 8. PRISMATIC TILE

SPECIFICA-
TIONS.

For Glazed Tiles and Sheet Prism—The Prismatic windows or transoms shown on the plans shall be "3-Way" Tiles in copper-plated bar (or design No. —, if design sheet prism is desired), as manufactured by the AMERICAN 3-WAY PRISM COMPANY of Chicago, Ill., and New York, N. Y.



FIG. 9. CITY DINING-ROOM, WITH
ARTIFICIAL LIGHT



FIG. 10. SAME DINING-ROOM BRILLIANTLY
LIGHTED WITH "3-WAY" PRISMS

PRISMATIC
CANOPY.

When existing conditions will not allow the use of Prismatic Glass directly in the sash, then the Prismatic Canopy should be used, which can not fail to give highly efficient results. Canopies are hung as shown in cut, or can be pivoted on brackets so as to revolve.

Figs. 9 and 10 illustrate the same dining-room lighted respectively by artificial light and by "3-Way" Prisms. The "3-Way" Prisms are placed outside the window in such a way that the light from the sky is diffused throughout the room as shown in Fig. 11. To close at night, the rods are simply released, if shutters are used. The illustrations were made from photographs of actual conditions.

ESTIMATES.

When writing for estimates as to the cost and efficiency of prismatic lights, time can be saved by supplying the following information. "3-Way" Prisms are manufactured in various angles, each to meet a different condition. In order that we may know which angle of prism to use, we must have the data as outlined below:

No. of Lights	Width	Height	Width of street to buildings opposite	Height of building opposite opening in which prisms are to be installed	Distance from top of window to ground	Distance from top of window to floor	Exposure, Does opening face North, South, East or West?	Width of Room	Length of Room	Height of Ceiling.	Reveal. If glass is not flush with face of Building. Note distance from glass to face of building

All lights glazed with ornamental border unless otherwise ordered. Bent and tilted prism lights quoted special.

Measurements—Always give width first, then height, which is very important in prism glass.

Mail orders will be glazed with the right angle of prisms necessary to obtain the best results.

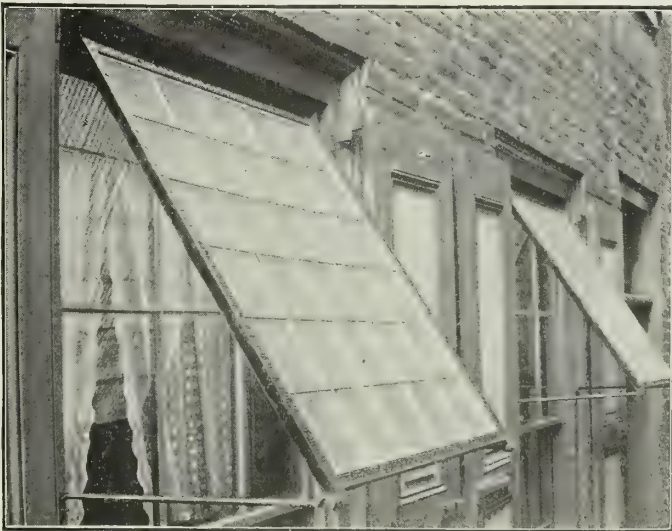


FIG. 11. "3-WAY" PRISMS PLACED OUTSIDE OF WINDOW,
DIFFUSING LIGHT THROUGHOUT THE ROOM

"PASCHALL"
STEEL-BAR
CONSTRUCTION.

The "Paschall Interlocking System" of Steel-Bar Construction for vault lights is of wrought-steel beam, either white enameled, galvanized, painted or natural iron.

IMPORTANT
NOTICE.

It is a well-known fact that cement will not bind to an enameled, galvanized or painted surface. We provide for the binding together of cement and iron by the groove in the bar, which is continuous from end to

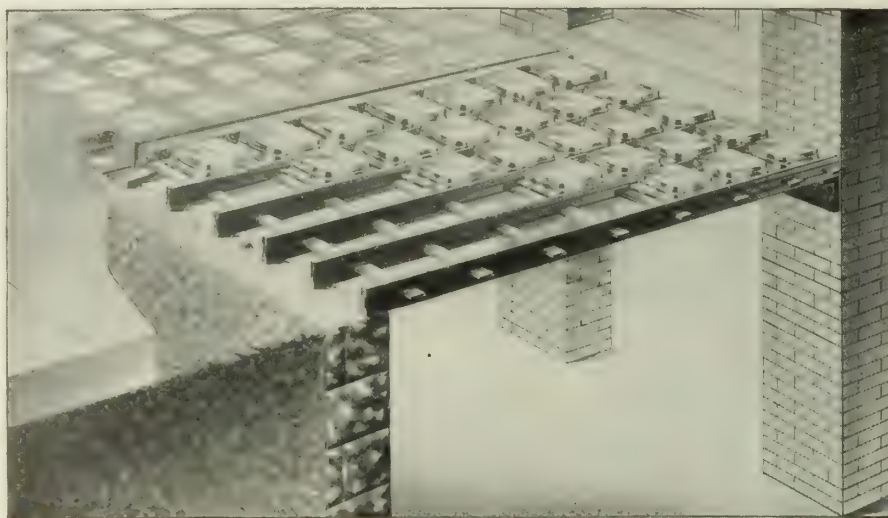


FIG. 12. THE "PASCHALL" VAULT-LIGHT CONSTRUCTION

end. No other construction takes care of this point. (See Figs 18 and 20.) In making this construction, we have eliminated the objectionable features of other constructions by the use of our patented "I"-Beam. On account of its structural formation (see Figs. 12 and 18), it has greater strength than any other vault-light construction. The groove bar and the glass, owing to the web around its side (see cut of glass) and cement, interlock in such a manner that any separation of iron, glass or cement is impossible, making it absolutely water-tight and practically a reinforced-concrete construction.

STYLES OF
GLASS.

The glasses in the "Paschall" System of Construction are furnished in "3-Way" Prisms or our plain lens lights.

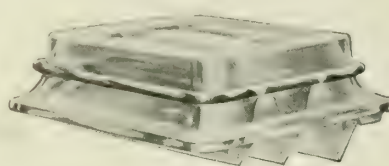


FIG. 13. NO. 14 VAULT LIGHT

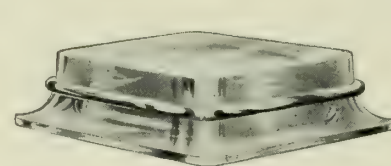


FIG. 14. NO. 15 PLAIN LENS VAULT LIGHT

JACKETED
TILES.

We furnish vault-light glass with a lead Jacket, which makes a complete safety-tread and, owing to lead forming cushion between the cement and glass, it will reduce the possibility of the shaling of glass from compression.

PENDANT
PRISMS.

For those who prefer the old style of Pendant we are furnishing our new Pendant No. 114, which can be used in our regular "Paschall" Interlocking Vault - Light Frames (see Fig. 15).

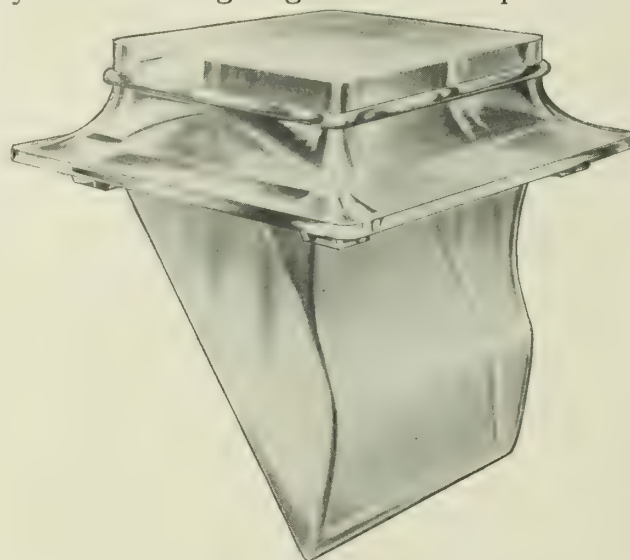


FIG. 15. NO. 114 PENDANT

ADVANTAGES.

One of the great advantages the "Paschall" Interlocking Vault-Light Construction has over all others, besides its great strength, is its *glass area*, which gives about 77 per cent on the underside and 50 per cent on the surface. Other forms of construction average from 25 to 40 per cent. The "Paschall" Interlocking Construction is not only economical in the first cost, but it saves its total cost in a short time by the elimination of artificial-light bills.

BEARINGS
FOR FRAMES.

Bearings must be two and a quarter inches below the finished level; and where beams have been set too low, they should be boxed in and filled up to the desired height with concrete.

Note Fig. 16 for making bearing on house line. These cuts are only suggestions and may be followed or not, as the contractor may see fit.

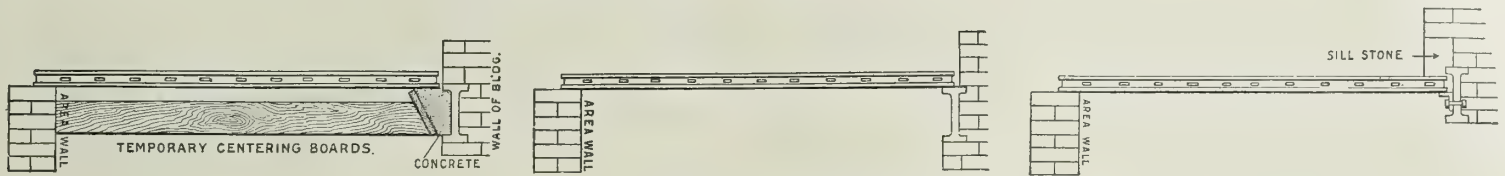


FIG. 16. SUGGESTIONS FOR MAKING BEARINGS ON HOUSE LINE

INSTALLATION.

When work is not required to be set by us, the simplicity of our System of Vault Lights is such that it can be laid by any ordinary cement man, and guaranteed water-tight. This makes it possible for its use in small towns without paying exorbitant charges for setting of same, as, after bearings are prepared, frames are set over openings. Where there is more than one frame to an opening there will be angles on one or both sides; these angles should come together within about one quarter inch, so as to allow for our Zinc Joint Strip, which is placed in each of our joints and makes same absolutely waterproof and also helps to prevent the shaling of glass. The side of the frame that has no angle is meant to come over end of area. The frame should be lined up so that the glass will show a straight line. Where the cement finishes against brick or stone at face of building it is advisable to cut a joint, same as between sections, to prevent leakage between building and cement. If there is more than one section there will always be angles between them.



FIG. 17. WINE CELLAR

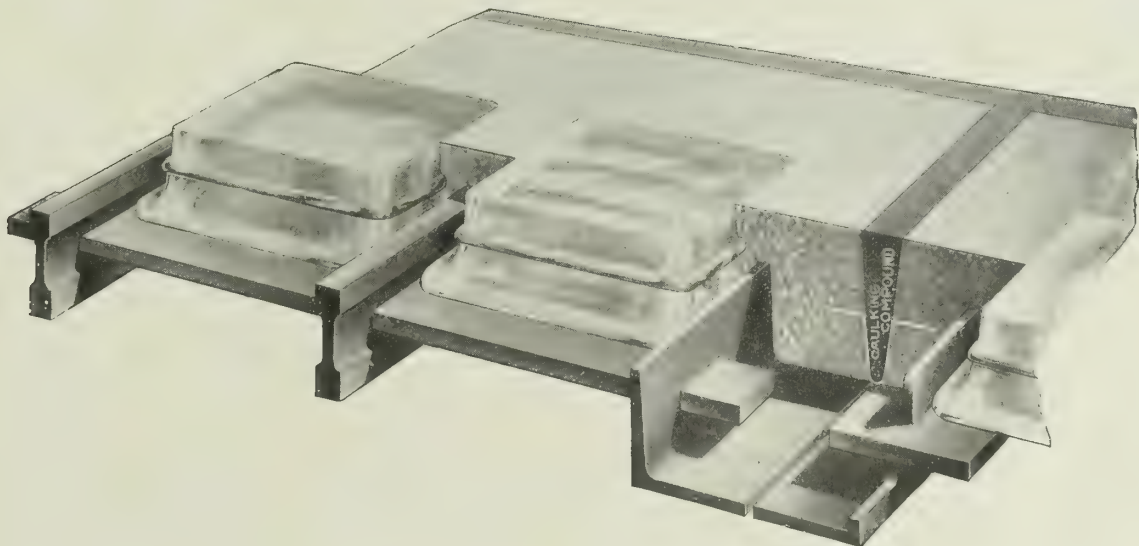


FIG. 18. PERSPECTIVE OF "PASCHALL" INTERLOCKING VAULT-LIGHT CONSTRUCTION

EXPANSION JOINTS.

Make Expansion Joint by first placing our Zinc Expansion-Joint Strip in position where joint is desired (see cut Fig. 19); then insert wedge-shaped wood strip in same to the level of the glass, leave in position while cementing, and allow it to remain until the cement is thoroughly dry; then remove, and caulk the opening with oakum and "3-Way" Caulking Compound, or some other good compound, poured in *hot* (see Fig. 18).

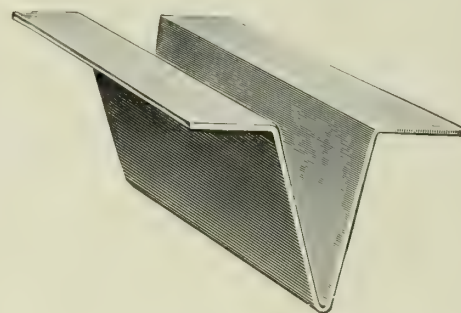


FIG. 19. ZINC EXPANSION JOINT

"3-WAY" CAULKING COMPOUND.

We furnish at slight expense the "3-Way" Caulking Compound for making these expansion joints absolutely water-tight.

SPECIAL CAUTION.

To prevent cracking and shaling of glass and cement from expansion and contraction, joints must be provided and caulked, as shown.

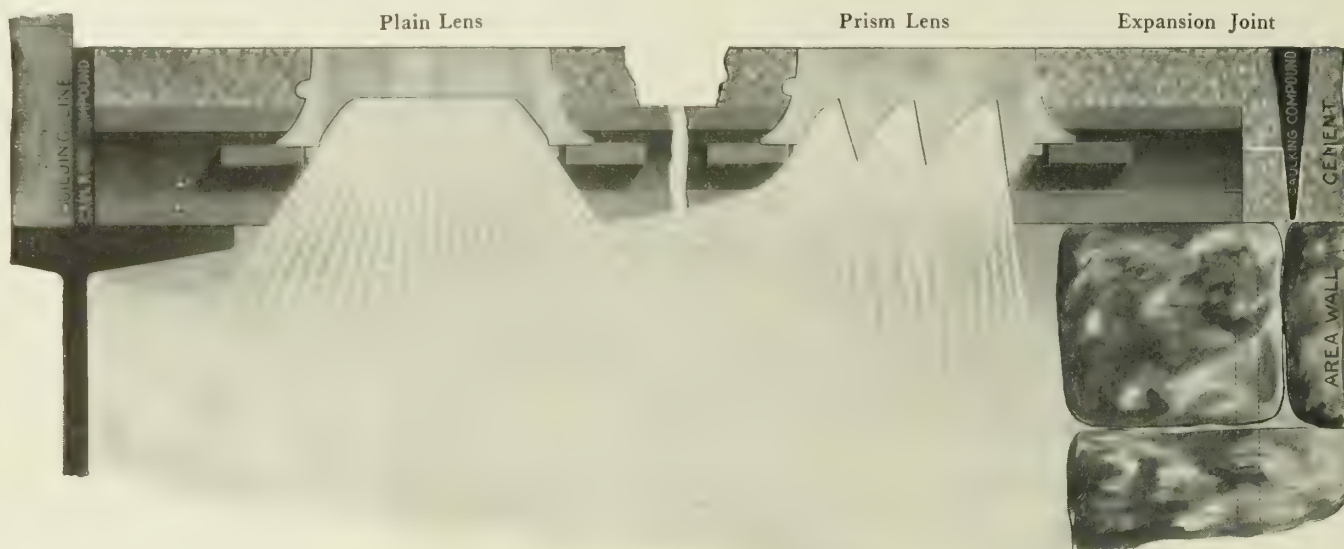


FIG. 20. CROSS-SECTION OF "PASCHALL" INTERLOCKING VAULT-LIGHT CONSTRUCTION

INSTRUCTION SHEET.

A detail Instruction Sheet is sent with each order. Where "3-Way" Prisms are to be used there are three prisms of different sizes; the shortest one should be set toward the building or in the direction in which the light is to be thrown. These prisms are scientifically arranged so that each diffuses without interfering with the rays of the other.

SIDEWALK OR FLOOR LIGHT SPECIFICATIONS.

The Vault Lights shall be the "Paschall" Interlocking Wrought Steel Construction with white enameled frames (galvanized, painted or natural iron frames if desired), and with "3-Way" Prism Lights (or plain lens lights, if prisms are not wanted) manufactured by the AMERICAN 3-WAY PRISM COMPANY of Chicago, Ill., and New York, N. Y., and shall be installed according to their instructions, with expansion joints, said joints to be waterproofed with their metal expansion strip and waterproofing compound.

BUILDING LAWS.

Our products conform to the building laws and municipal regulations of all cities.

ADAPTABILITY.

It is adapted for and can be used to great advantage in all kinds of buildings, including residences, office buildings, schools, factories, churches, stores, etc., and for all skylighting, sidewalk and floor lighting.

SKYLIGHT CONSTRUCTION.

"Paschall" Interlocking Skylight Construction is made with 7-inch square "3-Way" Prism Lights and Arch Plain Lights; also, with 4-inch square prism lights for those who prefer them. We specially recommend the 7 inch square lights, owing to their large glass area. The great strength and durability of our Skylight Construction make it superior to

any other skylight construction known. Frames can be finished in white enamel, galvanized, painted or the natural iron, as desired.

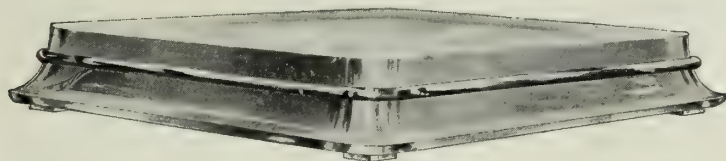


FIG. 21. NO. 135 PLAIN LENS, 7 x 7-INCH SKYLIGHT TILE
6 x 6-inch top

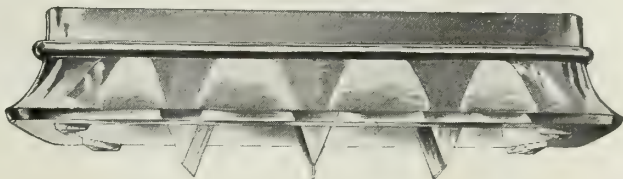


FIG. 22. NO. 136 7 x 7-INCH SKYLIGHT PRISM
6 x 6-inch top

SPECIFICATIONS OF SKYLIGHTS.

The Skylights shall be the "Paschall" Interlocking Skylight Construction with white enamel frames (galvanized, painted or natural iron frames, if desired) and with "3-Way" Prism Lights (or plain lens lights, if prisms are not wanted) manufactured by the AMERICAN 3-WAY PRISM COMPANY of Chicago, Ill., and New York, N. Y., and shall be installed according to their instructions, with expansion joints, said joints to be water-proofed with their zinc expansion strip and waterproofing compound.

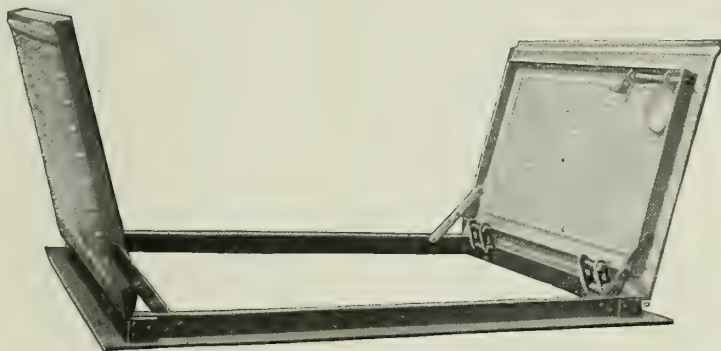


FIG. 23. PLAIN IRON SIDEWALK DOOR

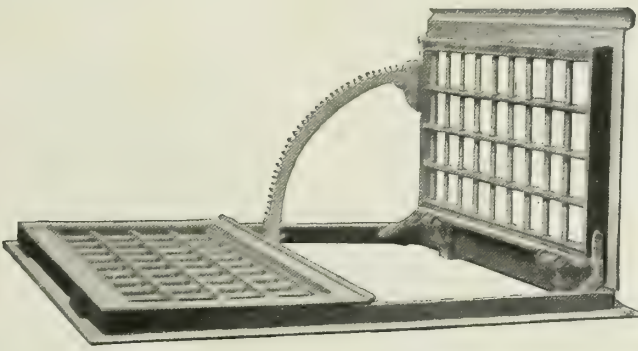


FIG. 24. VAULT-LIGHT SIDEWALK DOOR

VAULT-LIGHT DOORS.

Our Doors, shown herewith, are made with and without glass, with wrought-steel frame and our *new hinge* which is *invisible* when door is closed. Brass box hinges are used where opening device is required.

COAL-HOLE COVER.

Our new Coal-Hole Covers are flush with the pavement and are made with or without glass in stock sizes mostly used.

VENT DOORS.

Our new Vent Doors are flush with the sidewalk and are made in and form part of our regular Vault-Light Construction.

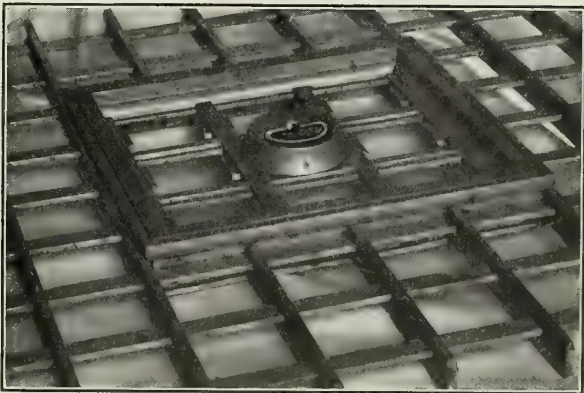


FIG. 25. COAL-HOLE COVER

GUARANTEE.

We guarantee all the workmanship and material in our products.

FACILITIES OF MANUFACTURING, AND SCOPE OF MARKET. CO-OPERATIVE SERVICE.

With a thoroughly up-to-date plant, completely equipped with modern machinery, we are in a position to fill the largest orders and ship them to any part of the United States, Canada or Mexico.

THE AMERICAN 3-WAY PRISM COMPANY is at all times pleased to forward to architects, contractors and others, upon request, complete catalogues, testimonials, price-lists, samples, etc., of its products, or to give them any assistance in the way of other information that they desire.

SAFETY-
TREAD.

We also furnish a lead Safety-Tread in the form of a star, to be set at intersections. (See Fig. 26.)

SIDEWALK
TESTS.

Following are the results of tests made of our "Paschall" Interlocking Vault-Light Construction. Further particulars will be furnished upon request. These tests bear out our claim of their great strength.

PHILADELPHIA, April 18, 1906.

From the results of the tests conducted on the sample sections of your Vault-Light System, the following approximate ultimate breaking loads have been deduced for a slab width of 4' 0".

In the actual practice, however, when all four sides of the section are held rigidly, *about 50 per cent can probably be added* to the following total tabular load:

Span	Total Load	Load per sq. ft.
3' 0"	37,333	3,111
4' 0"	28,000	1,750
5' 0"	22,500	1,125
6' 0"	18,666	777
7' 0"	16,000	571
8' 0"	14,000	438
9' 0"	12,444	346
10' 0"	11,250	281

Very truly yours,

(Signed)

W. NELSON MAYHEW.

Copy of Engineer's Test sent upon request.

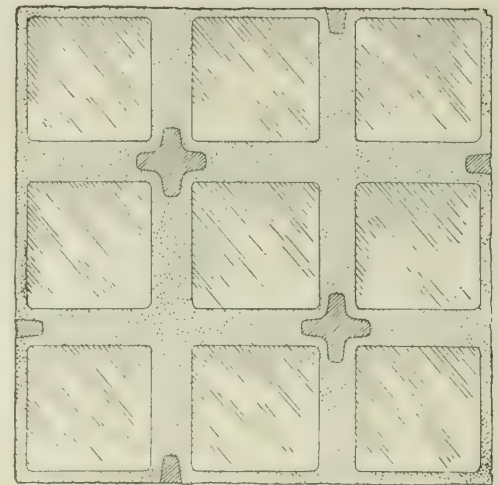


FIG. 26. "PASCHALL" INTERLOCKING VAULT-LIGHT CONSTRUCTION WITH SAFETY-TREAD



FIG. 28. NO. 344 PRISM
2 7/8-inch top

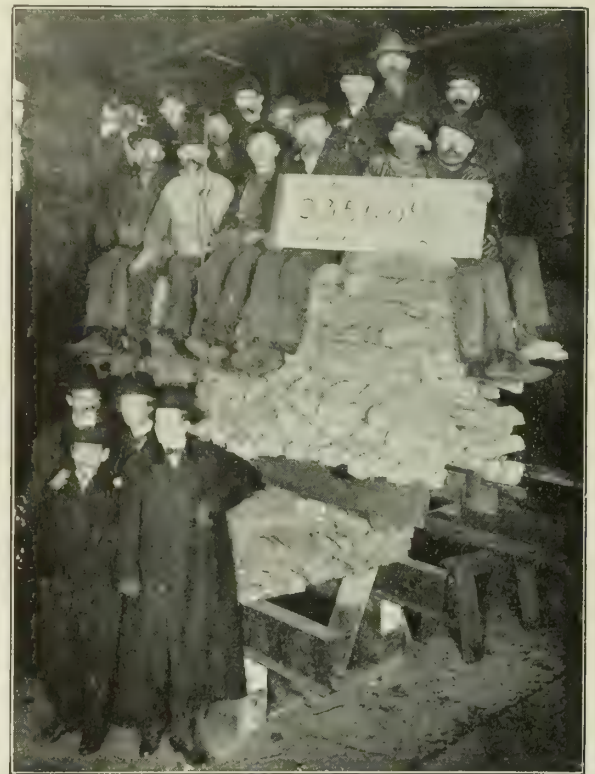


FIG. 27. CUT SHOWS AN INTERESTING TEST OF THE "PASCHALL" INTERLOCKING SYSTEM OF VAULT LIGHTS OVER A 4-FOOT SPAN

WARNING.

"Paschall" Interlocking Vault-Light Construction is covered with the United States Patents; and we hereby warn all persons to beware of imitations or substitutions, as they will be promptly prosecuted.

REINFORCED-
CONCRETE
VAULT LIGHTS.

In our Reinforced-Concrete Construction we use various forms of lenses. Plain Lens Lights are made both round and square; and in the prisms we make them with a round pendant prism, a square pendant prism, and a square multi-prism (see Figs. 28 to 30). We are prepared to figure on this class of work set complete in any part of the country.

REINFORCED-
CONCRETE
SLABS.

We also manufacture Reinforced-Concrete Vault Light in slabs, with square plain lens glasses Nos. 151 and 153 and round lens Nos. 343; also, with prism glass No. 152. These are made up in suitable sized sections and shipped ready to set over openings. It is necessary to furnish blue-prints or sketches showing bearings and exact sizes in which the slabs are to be made. This form of vault-light construction is particularly adapted to work that is at a distance from the source of supplies.

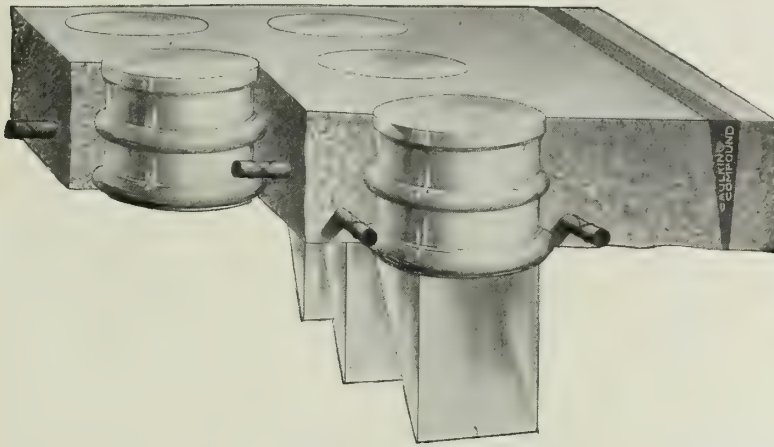


FIG. 29. Round Glass

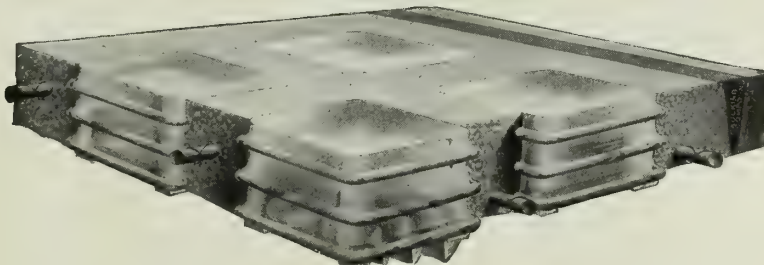
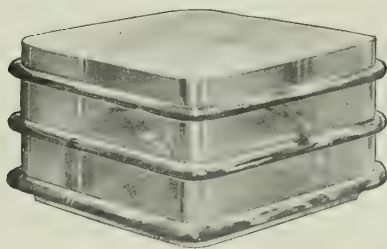
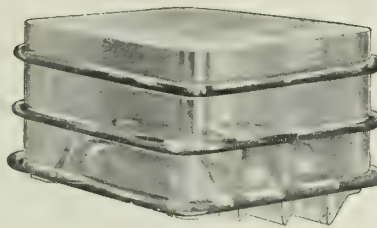
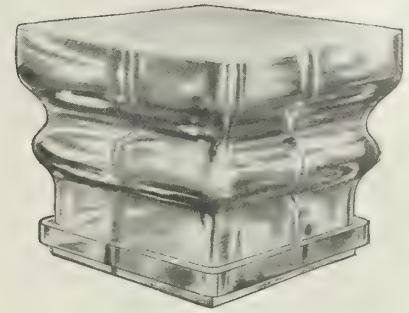
FIG. 30. Square Glass
REINFORCED-CONCRETE CONSTRUCTIONFIG. 32. NO. 151 PLAIN LENS
2 7/8 x 2 7/8-inch topFIG. 33. NO. 152 PRISM
2 7/8 x 2 7/8-inch top

FIG. 34. No. 153

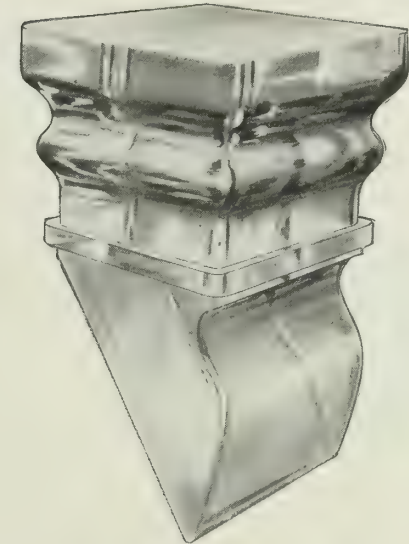
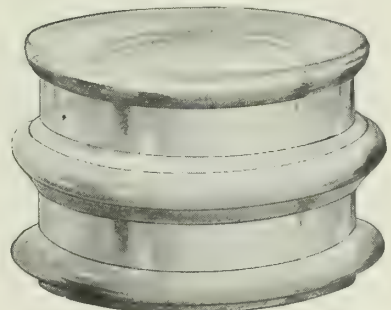


FIG. 35. No. 154

FIG. 31. NO. 343 PLAIN LENS
2 7/8-inch top

SPECIFICATIONS FOR REINFORCED CONCRETE VAULT LIGHTS. TESTIMONIALS.

Reinforced-Concrete Vault Lights, as shown on the plans, shall be No. as manufactured by the AMERICAN 3-WAY PRISM COMPANY of Chicago, Ill., and New York, N. Y., and installed according to their instructions, with expansion joints, and the joints to be waterproofed with their zinc expansion strip and waterproofing compound.

In reply to your favor we are pleased to state that the result obtained from the installation of your 3-Way Prisms over our show-windows has been very satisfactory in giving us daylight in our store, which is far preferable to artificial illumination, fifty per cent of which we have dispensed with, and the saving in three months has more than paid us for the cost of your work.

Yours very truly, (Signed) OPPENHEIM, COLLINS & Co.

PHILADELPHIA, November 19, 1906.

We are very much pleased with the installation of your Prisms in this building. As you are aware we were very skeptical concerning their merits, and before installing them subjected them to the most severe tests, and we are pleased to say that they have overcome all the objections that were raised against them. The natural light in our store is a revelation to our customers, and it is frequently remarked how beautifully bright everything seems with the abundance of daylight.

The rear of our building is equipped with wire prism glass, which has met the approval of the Fire Insurance Underwriters, while in the front of the building we have used the prism tiles.

Yours very truly, (Signed) SULLIVAN & COMPANY.

BIRMINGHAM, ALA., December 27, 1904.

Referring to the Prismatic Transoms which you recently shipped us, we won't state how well pleased we are with them. As it was before, it was necessary to use a portable electric light to read the labels on even the lower shelves, whereas now the labels on the top shelf can be read with ease from the floor, and nearly every architect in the city has noted and inquired regarding these prisms.

Wishing you the compliments of the season, we remain,

Very truly, (Signed) WIMBERLY & THOMAS HARDWARE CO.
(D. E. Dean)

LITTLE ROCK, ARK., July 10, 1909.

I have yours of the 7th, with account. This material was ordered for the Gus Blass Dry Goods Co. of this city, with whom I believe you have had some correspondence.

The material we purchased is in satisfactory use, and I am told by my clients that they believe it the best money expended on any improvements they have made in some time. I am,

Very truly, (Signed)

CHAS. L. THOMPSON.

BAKER SIDEWALK LIGHT CO.

Patent Safety Sidewalk Lights

1719 Perrysville Avenue, N. S.

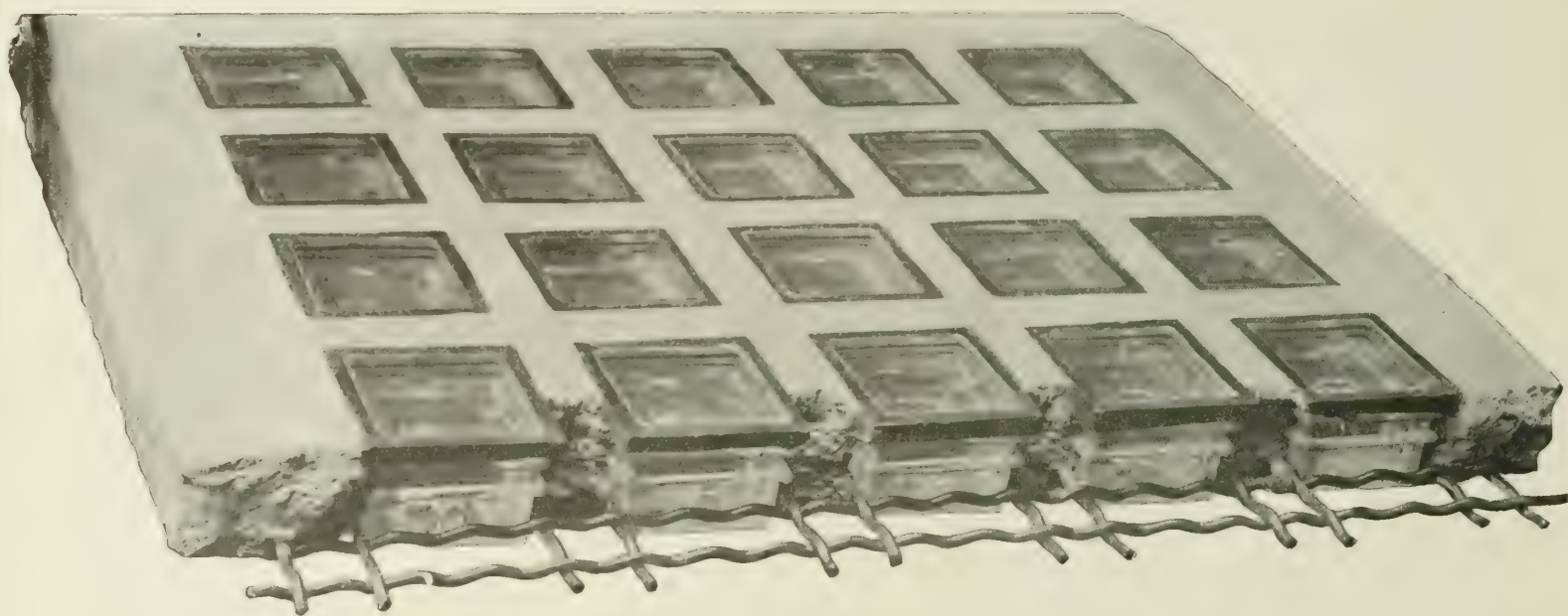
PITTSBURGH, PA.

PRODUCTS.

We manufacture PATENT SAFETY SIDEWALK LIGHTS.

UTILITY.

The "Baker" Patent Safety Sidewalk Lights contain all the elements that science and experience have found necessary in the production of a perfect pavement light. These lights are the product of years of careful experiment and scientific study of the conditions to which sidewalk lights must be subjected. Every possible contingency has been provided for and every possible advantage has been developed. The result is a sidewalk which more than any other combines the elements of perfect safety and perfect lighting.



FINISHED SIDEWALK AND METHOD OF CONSTRUCTION

CONSTRUCTION.

Our sidewalk is water-tight and is a safety light, leaving a smooth surface pleasant and easy for the pedestrian, with all danger of slipping entirely removed. One of a city's great dangers is smooth sidewalks, which become slippery when wet, and are productive of many a fall with attendant expensive damage suits. In some instances this danger is overcome by a series of iron pegs, but these speedily wear down perfectly smooth and are quite as dangerous as other smooth surfaces, while they are extremely unpleasant and difficult to walk upon. We overcome this by having a rim of lead cast around each piece of glass, making a sure foothold under all conditions, and at the same time constituting a permanent safeguard against slipping. The lead is cast between the glass and the cement, making it impossible to wear it off. This method of setting prevents the edges of the glass from clipping or breaking.

DURABILITY.

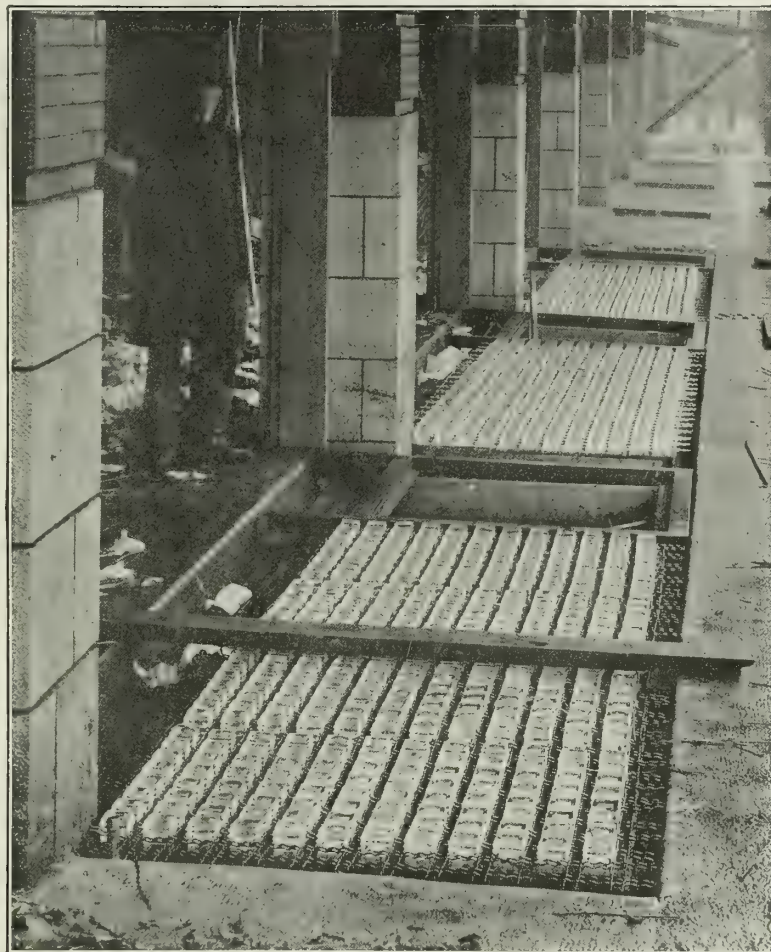
This construction obviously insures permanency, where clipping or breaking is made impossible by this system of protection; the sidewalk is indestructible and must literally wear out before it can be destroyed. Being made of the best materials the life of our sidewalk is practically endless.

FACILITIES.

We have the materials always on hand which can be assembled and set without delay. We do not have to wait to make patterns and castings. We can put down your sidewalk as soon as we receive the contract.

LAYING THE WALK.

In laying our sidewalk a double steel wire mesh is used, composed of a double-wire mesh $\frac{3}{16}$ -inch steel crimped wire woven together for the purpose of reinforcement and for holding the glass in place. The mesh and glass are embedded in the concrete, filling the space between the glass, binding the mass and making a solid slab of great strength and permanent lasting qualities. The top surface is rubbed down smooth leaving a walk of good appearance and one that will wear perfectly smooth.



"BAKER" SIDEWALK LIGHTS UNDER CONSTRUCTION

COST.

Our walk costs no more at first than other makes and its wearing capacity makes it a profitable walk to lay. The expense of any work of this character is proportionate to its wearing qualities and on this basis our walk is cheap.

THE BERGER MANUFACTURING CO.

MANUFACTURERS OF

"Berger's Raydiant" Sidewalk Light Construction

CANTON, OHIO

BRANCHES

NEW YORK, N. Y., 154 Eleventh Avenue
 PHILADELPHIA, PA., 1034 Washington Avenue
 BOSTON, MASS., 286 Devonshire Street
 ST. LOUIS, MO., 1007-1009 Market Street

ATLANTA, GA., 207 Prudential Building
 CHICAGO, ILL., 33 Dearborn Street
 MINNEAPOLIS, MINN., 307 Fifth Street, South
 SAN FRANCISCO, CAL., 1120 Mission Street

AGENTS IN ALL PRINCIPAL CITIES

PRODUCTS.

"BERGER'S RAYDIANT" SIDEWALK and VAULT-LIGHT CONSTRUCTION.

Also STEEL OFFICE FURNITURE and FILING EQUIPMENT, METAL CEILINGS, FIRE-PROOFING SPECIALTIES, METAL LATH, and a General Line of ARCHITECTURAL SHEET-METAL PRODUCTS as described elsewhere in this Catalogue, for which see our name in General Index.

"BERGER'S RAYDIANT" SIDEWALK LIGHT CONSTRUCTION.

"Berger's Raydiant" Sidewalk Light Construction consists of a series of permanent forms of heavy galvanized steel, scientifically designed glass, steel reinforcing-rods, and concrete; all combined as indicated by the detail illustration of the construction shown on this page.

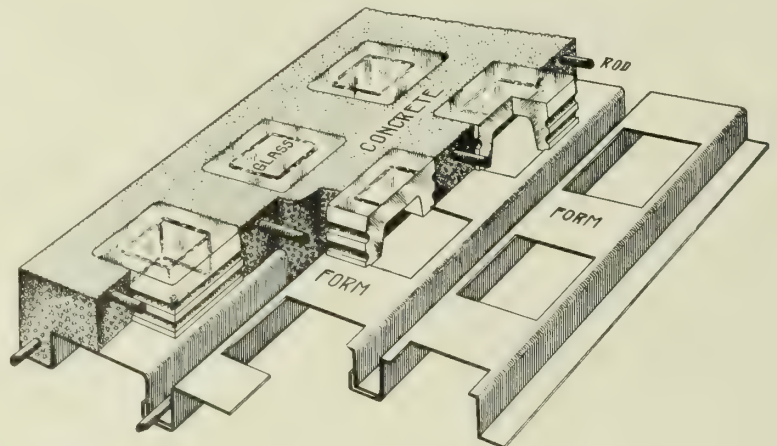
The heavy steel forms are set four inches on centers and interlock with each other, thus forming a rigid base for receiving the glass and concrete, not only serving the purpose of centering, but at the same time bracing and stiffening the concrete construction to a remarkable degree; therefore, the completed job is twice strengthened, first by the rods and second by the forms, so that "Berger's" Lights are doubly secure and strong.

The under sides of the steel forms also make a neat, attractive surface which may be decorated without danger of becoming discolored by the action of the concrete; and the small ribs, four inches on centers on the under side of the construction, break up the surface just enough to make a strong and pleasing effect. These small ribs or beams, while adding to the appearance of the construction, do not in any way interfere with the diffusion or refraction of the light.

The lower part of the glass fits down into the opening in the forms and has a supporting shoulder which rests on top of the form and extends entirely around the bottom of the glass; hence each glass has bearing on all sides, thus equalizing and distributing the strain, and preventing its being cracked and broken on account of unequal bearing.

Splendid alignment of glass can be maintained, because each form, containing a single row of glass, may be shifted or moved at any time before the concrete is placed. Due to this fact, it is possible to complete the job with all glass laid true and straight both ways—a very important consideration.

After the bearings are in place, any mason or concrete finisher can lay the forms, drop in the glass, and put in the concrete and reinforcing-rods. The construction is very simple, and the installation can be made easily and in much less time than that required for systems using false work or wooden centering.



DETAILS OF "BERGER'S RAYDIANT" SYSTEM OF SIDEWALK AND VAULT LIGHT CONSTRUCTION

ADVANTAGES.

The advantages secured from these special features of the "Berger Raydiant" System are readily apparent, and their value will be thoroughly appreciated by practical men, as it so distinctly fulfils the essential requirements of a satisfactory job with maximum economy and efficiency.

MATERIALS OF CONSTRUCTION.

"Berger's No. 5" is the standard plain square glass used for diffusing the light directly below and to space immediately adjacent thereto. Being square it presents most light area and gives greatest diffusion, and is the most popular glass for general service. It is 2 $\frac{3}{4}$ inches square and 1 $\frac{1}{2}$ inches deep.

"Berger's No. 6" is the standard plain, round glass for the same purpose as No. 5, but being round it presents less surface. It is 2 $\frac{3}{4}$ inches in diameter and 1 $\frac{1}{2}$ inches deep.

"Berger's No. 9" is the standard plain square glass for floor, roof, and skylight construction. It is 5 $\frac{1}{2}$ inches square and 1 $\frac{1}{2}$ inches deep, and is designed especially for the purposes stated, where the loads are not so heavy and the light area must be of the greatest percentage possible.

"Berger's No. 7" is the standard square pendant prism glass for refracting the light downward and back into deep basements. It is 2 $\frac{3}{4}$ inches square, 1 $\frac{1}{2}$ inches deep, and has a pendant 2 $\frac{1}{2}$ inches long.

"Berger's No. 8" is the standard square three-point prism glass for refracting the light downward and back into shallow basements. It is scientifically designed on the multiprism principle, with a series of three prisms set at different angles so as to give the best results.

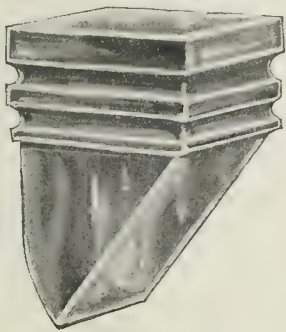
MODEL SPECIFICATION.

A good specification for sidewalk lights reads as follows:

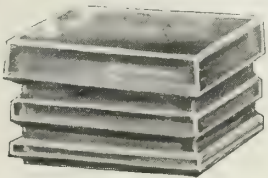
Sidewalk lights shall be of the "Raydiant" Reinforced System manufactured by THE BERGER MANUFACTURING CO. of Canton, Ohio. They shall consist of permanent galvanized steel forms, ... deep, Berger's No. glass, and $\frac{1}{4}$ " reinforcing-rods of design (or make) concreted together with a first-class Portland cement concrete, of one part cement and two parts clean, sharp sand. The work shall be completed in a workmanlike and satisfactory manner and substantially as per manufacturers' directions.

SPECIAL CATALOGUE.

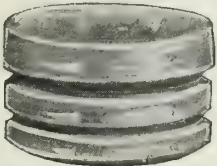
A Special Catalogue, giving further details of "Berger's Raydiant" Vault and Sidewalk Lighting, will be sent to any architect on request. Ask for No. 85-S.



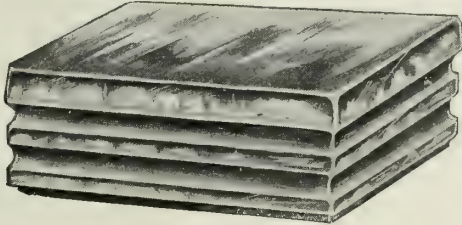
NO. 7. STANDARD SQUARE PENDANT PRISM



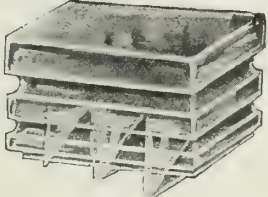
No. 5. STANDARD PLAIN SQUARE GLASS



No. 6. STANDARD PLAIN ROUND GLASS



NO. 9. STANDARD PLAIN SQUARE FLOOR GLASS



NO. 8. STANDARD SQUARE THREE-POINT PRISM



"BERGER RAYDIANT" SIDEWALK LIGHTS IN DIME SAVINGS BANK, BROOKLYN, N. Y.

so as to give the best results.

P. M. BRUNER GRANITOID CO. ALBERT GRAUER & CO.

Frisco Building
ST. LOUIS, MO.

PITTSBURG, PA.

DETROIT
COLUMBUSCLEVELAND
CINCINNATI

CONSTRUCTORS OF

The "Bruner" System of Reinforced Concrete Sidewalk Lights

PRODUCTS.

THE "BRUNER" SYSTEM OF REINFORCED CONCRETE SIDEWALK LIGHTS, known as ILLUMINATING TILE, VAULT LIGHTS, PRISMATIC LIGHTS, and used as FLOOR LIGHTS, ROOF LIGHTS, FIREPROOF PORCH LIGHTS, TUNNEL and SUBWAY LIGHTS.

METHOD OF
CONSTRUCTION.

Fig. 1 shows a cross section of this system. The Construction is built on Cast-Iron Forms, which are afterwards removed when the concrete has set, leaving no exposed iron work.

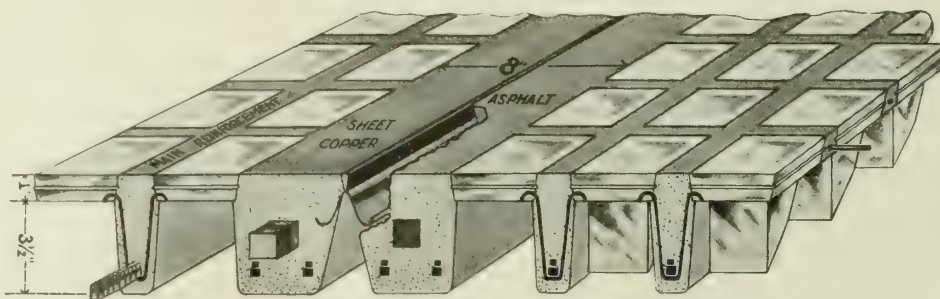


FIG. 1. ILLUMINATING TILE CONSTRUCTION

The Concrete Ribs run in the direction in which the light is to be thrown, and are on four and one half inch centers. These form the main carrying members of the construction. Wire hangers hold the reinforcing rods one half inch from the bottom of the rib, making it impossible for these reinforcements to be exposed and keeping them where they will give the greatest strength. Each rib is tied to the slab by these wire hangers, and cross-tie rods distribute the strain in case of a concentrated load.

Fig. 2 shows a longitudinal view of a rib.

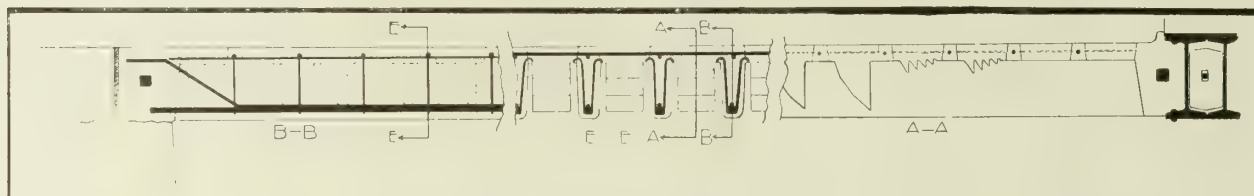


FIG. 2. LONGITUDINAL VIEW OF CONCRETE RIB SHOWING BEARING NECESSARY AT BUILDING AND AREA WALL

EXPANSION
JOINT.

The style of joint shown in Fig. 1 is found only in the "Bruner" System. The sheet copper connects sections otherwise entirely separate. As the panels expand the copper closes, and as they contract, the copper pulls apart. The two ends being bent up and embedded in the concrete provide absolutely against leakage. The joints are eight inches in width and are placed as far apart as conditions at the building will permit—up to eighteen or twenty feet.

This feature is patented.

GLASS.

Three styles of glass are used in this system. All glass is made exclusively for us by one well-known manufacturer, and is of a special tough composition and thoroughly annealed.

The plain glass (Fig. 3), No. 47, admits light into the area without being deflected and is not hollowed out in the center.

The prisms of style No. 52 (Fig. 4) are each made at a different angle and allow the widest diffusion of light without throwing it into the next prism in front.

The triple angle prism No. 46 (Fig. 5) is the result of many years experimenting. It deflects the light far back into the basement with great brilliancy, and has been pronounced by many architects to meet every requirement. In case of accidental breakage the glass can

be quickly and easily replaced because of its convergent shape, and where such repairs are made they can not be noticed. This method is patented also.

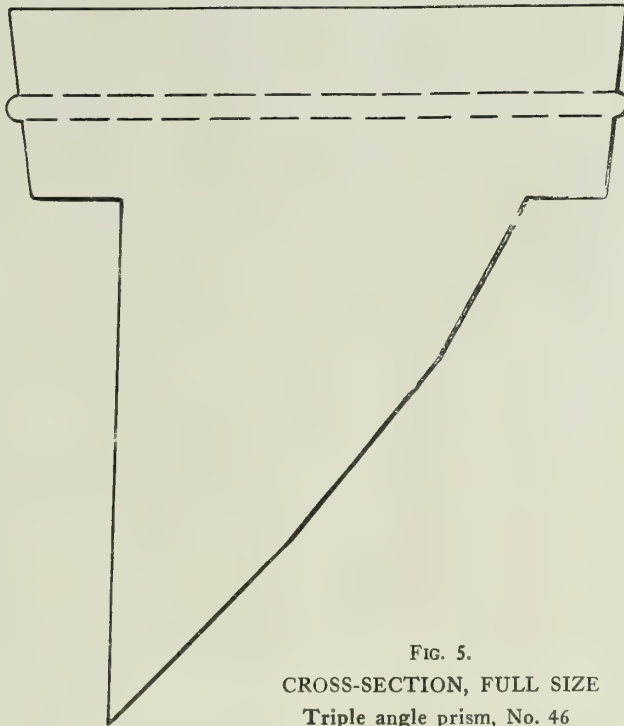


FIG. 5.
CROSS-SECTION, FULL SIZE
Triple angle prism, No. 46

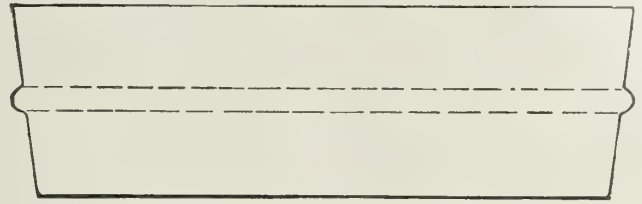


FIG. 3. CROSS-SECTION, FULL SIZE
Plain Glass, No. 47

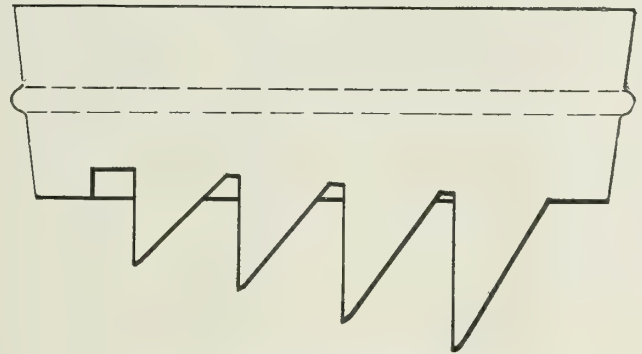


FIG. 4. CROSS-SECTION, FULL SIZE
Multiprism, No. 52

ELIMINATION
OF IRON OR
CONCRETE
BEAMS.
LARGE
SPANS.

Because of the concrete ribs, the "Bruner" System can make clear spans up to sixteen feet, requiring no iron beams, and entirely eliminating the large unsightly concrete beams necessary to support concrete slab constructions. Also the lights and arch may be made in one span as shown by Fig. 6. This eliminates the beams needed in every other system, making a very uniform ceiling and reducing the cost of the installation, thereby greatly increasing the lighting efficiency.

BEARING.

The flange of a beam at the building and three or four inches on the area wall is ample support. The approximate weight per square foot is 40 pounds.

CONDENSA-
TION.
BUCKLING
OR SAGGING.
LOADS.

The condensation in the "Bruner" System, even in the most extreme cases, amounts only to a slight mist on the glass.

On account of the depth of the concrete ribs, buckling or sagging is avoided.

The "Bruner" System is constructed to carry a uniformly distributed load of 200 pounds per square foot, with a factor of safety of four.

DURABILITY.

The durability in this system means that it remains absolutely water-tight and in first-class condition as long as the building stands.

GUARANTEE.
ADVANTAGES.

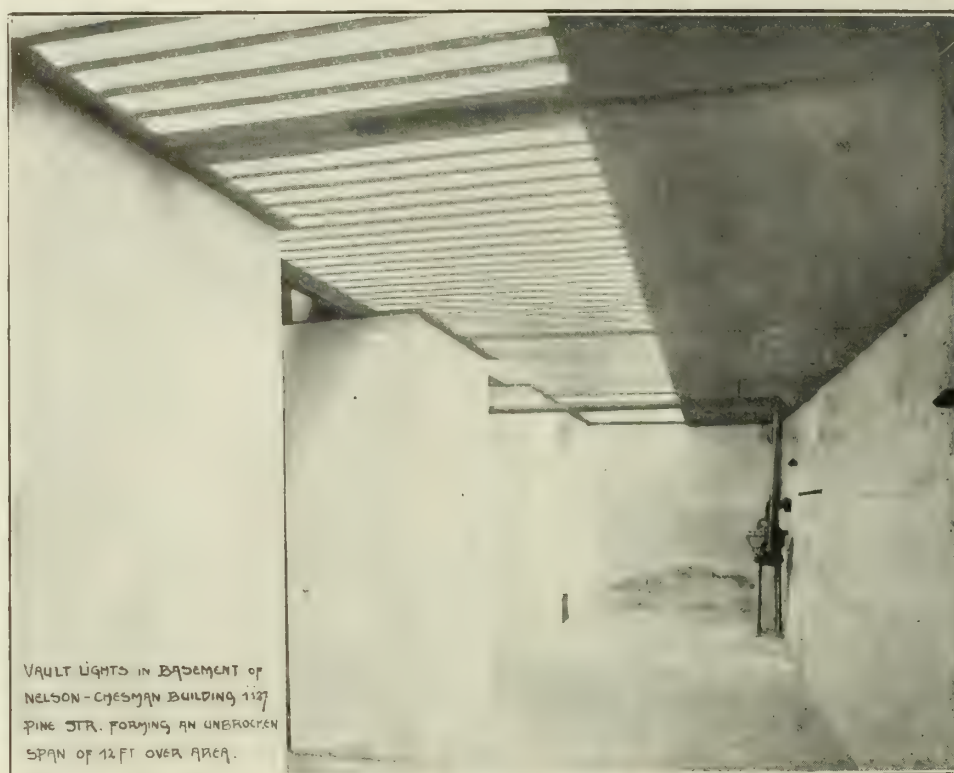
Every installation is guaranteed to remain in first-class condition three years.

That this system has no exposed ironwork; the largest possible glass area; requires no intermediate iron or concrete beams for support; no special bearings; has large spans; lights and arch in one section; impossibility of buckling or sagging; the special glass used; special expansion joints; the exclusive repairing feature; strength; no condensation; durability and guarantee; these points altogether make this system the most desirable to be used at any building. The present method of construction is the result of fifteen years' experience in which we have made a specialty of Sidewalk Lights.

TERRITORY.
PRICES.

Installations of this system are made by our own men in all parts of the United States.

Prices of installations depend upon the style of glass used, the number of square feet, the span and location of work. All installations are put in place by our own men, making the first cost final. Our prices are scheduled, do not fluctuate and are practically the same as those of other systems.



VAULT LIGHTS IN BASEMENT OF
NELSON-CHESEMAN BUILDING 1127
PINE STR. FORMING AN UNBROKEN
SPAN OF 12 FT OVER AREA.

FIG. 6. VAULT LIGHTS IN BASEMENT OF BUILDING

Span 12 feet. Six-foot lights. Six-foot Concrete Arch. No iron or concrete beams required.
Three expansion joints (shown by dark lines)

SPECIFICATIONS.

In taking the item of Sidewalk Lights into consideration we would suggest that this part of architects' specifications be placed under a separate heading, using the first form where the system can be definitely named and the second form where for any reason the system can not be referred to by name.

If the words "or equal" are used other constructions can be legally substituted, and we again suggest that this wording be eliminated. Architects and owners can assure themselves beforehand that no advantage is allowed by this apparent lack of competition.

(1) The vault lights shall be constructed according to the "Bruner" System. The glass shall not be less than one inch thick nor indented at the underside, but shall be solid and the full depth of slab part of the construction. (In case of reflecting lights.) The prism shall be entirely below bottom of concrete slab. In this job the glass shall be plain No. B47, multiprism No. B52, or double-angle reflecting No. B46. The paving shall be capable of carrying a uniform load of 200 pounds per square foot, without injury to the pavement. The glass shall be guaranteed for three years and the construction shall be guaranteed against leakage or any defects of workmanship and material.

(2) The vault lights shall be constructed of reinforced concrete and no reinforcing metal shall be exposed. The construction shall consist of a flat slab with ribs below, between every row of glass in one direction. The glass shall be one inch thick and never less than full thickness of slab. The glass shall not be indented; the reflecting part of prisms shall be entirely below bottom of slab. The ribs shall not be less than three and one-half inches deep, and shall run in the direction in which the light is to be thrown. The main reinforcement shall be held in suspended wire yokes, one to each glass, the reinforcement perpendicular to ribs shall be round rods, placed between each row of glass. The concrete shall consist of one part of first-class Portland cement and one and one-half parts of sharp and clean sand. The paving shall be divided into suitable sections, and then shall have patent copper expansion joints to enable the panels to expand and contract without leakage or strain.

FACILITIES.

Our facilities for installing work in any part of the United States are unequalled, and we can safely rest upon the high reputation we have already gained for the prompt and satisfactory execution of all contracts.

We have interesting information at our offices illustrating the varied uses of the "Bruner" System which we will be pleased to send upon request. Also our booklets fully describing this system will be mailed to interested parties.

ROOF CONSTRUCTION.

Fig. 7 is a design which meets every requirement for roof lights. This construction can well be adapted to any building where abundance of light is wanted beneath, and where the roof can be used as an open-air retreat during warm weather. The ironwork for a space

of 1200 sq. ft. consists of but three 20" I-beams, 31' 0" long. The light below is practically as great as above and the installation is water-tight, strong, and durable.

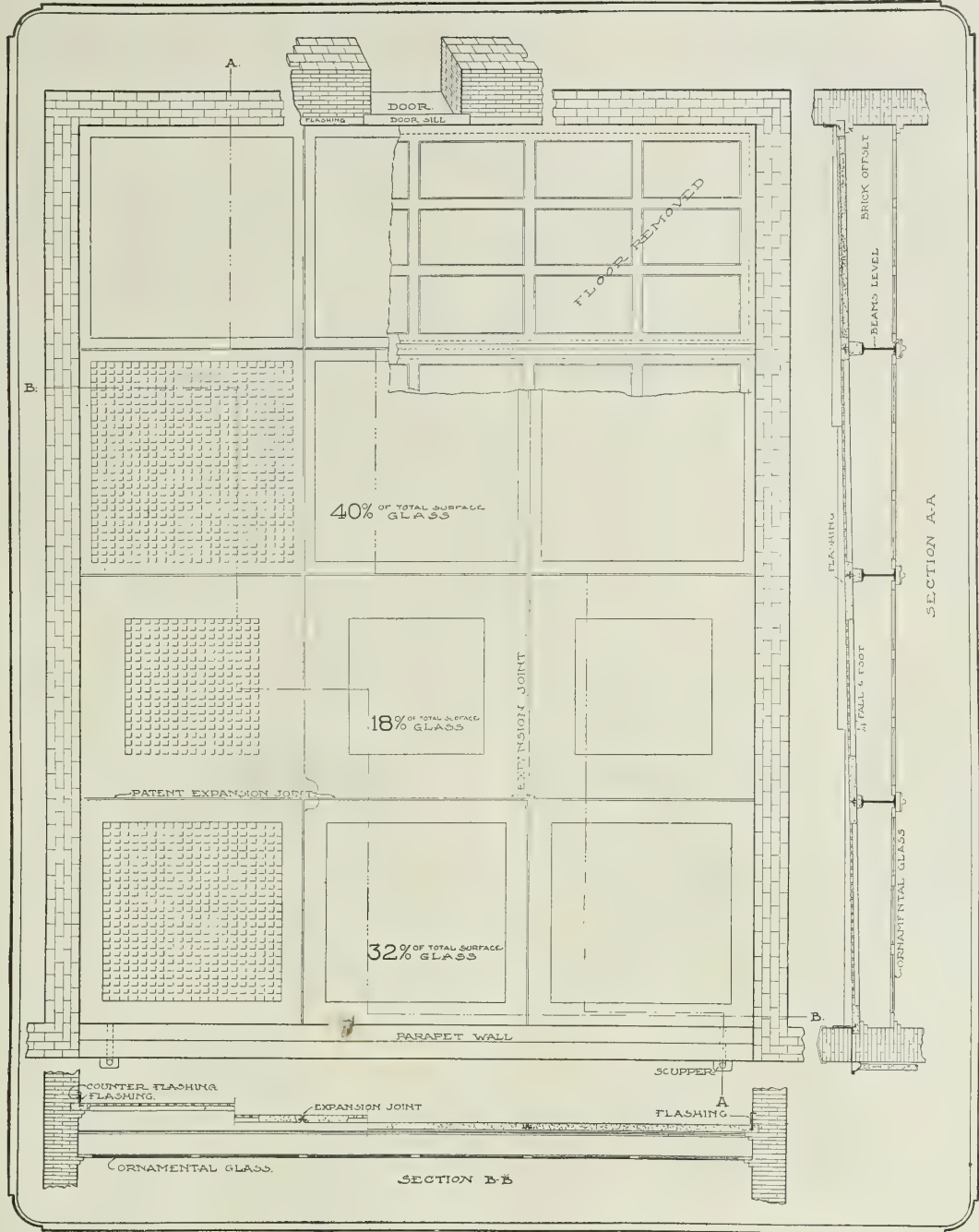


FIG. 7. DETAILS FOR ROOF CONSTRUCTION

CO-OPERATIVE SERVICE.

From the experience gained by fifteen years' service, we, being the originators of Reinforced Concrete Sidewalk Lights, can offer our assistance as experts. There is no charge for these services, which are daily being taken advantage of by many of the foremost architects and builders.

REFERENCES.

During the last fifteen years we have installed the "Bruner" System at many buildings in all parts of the country, a few of which are as follows:

BUILDING	LOCATION	ARCHITECT	BUILDING	LOCATION	ARCHITECT
Fort Pitt Hotel Addition	Pittsburg, Pa.	Janssen & Abbott	May Building	Denver, Colo.	William Levy
Burnham, Stoepel & Co.	Detroit, Mich.	Donaldson & Meier	Alaska Building	Seattle, Wash.	Eames & Young
National Bank of Commerce	Kansas City, Mo.	Jarvis Hunt	Y. M. C. A.	St. Louis, Mo.	Tully & Clark
Business Men's Club	Memphis, Tenn.	Shaw & Pfeil	Joplin Hotel	Joplin, Mo.	Barnett, Haynes & Barnett
Peck Williamson Building	Cincinnati, Ohio	Samuel Hannaford & Sons	Washington and Lee University	Lexington, Va.	Theodore Link
Terminal Hotel	St. Louis, Mo.	Theodore Link	Free Press Building	Fort Wayne, Ind.	J. M. E. Riedel
Frankfort Capitol	Frankfort, Ky.	F. M. Andrews & Co.	Third National Bank Building	St. Louis, Mo.	Eames & Young
New England Bank Building	Kansas City, Mo.	Wilder & Wight	Wright Building	St. Louis, Mo.	Eames & Young
Kansas City Y. M. C. A. Bldg.	Kansas City, Mo.	Chas. A. Smith	La Salle Building	St. Louis, Mo.	I. S. Taylor

NEW YORK PRISM COMPANY

497 West Broadway
NEW YORK, N. Y.

145 La Salle Street
CHICAGO, ILL.

N. Y. TELEPHONE, 2126 SPRING

PRODUCTS.

Manufacturers of "ACME" 4" by 4" PRESSED PRISMS, "ACME" SKYLIGHT PRISMS, "ACME" VAULT-LIGHT PRISMS, "ACME" SHEET PRISM GLASS, "ACME" VAULT LIGHTS, "ACME" IRON CANOPY FRAMES.

VALUE OF NATURAL LIGHT.

Prism lights have come into such universal use that their value and light-diffusing qualities need not be dwelt upon. Modern buildings, owing to the enormous value that real estate has attained, have a dearth of light that has to be overcome, either by the use of artificial light or the use of prisms. The latter is, of course, the cheaper, as after the initial expense of setting the prisms no further disbursement is needed, whereas artificial light is a continual source of expense from month to month. Prisms, supplying as they do natural light, do not tire the eyes as all artificial light does. So long as there is a window from which natural light can be obtained, glass prisms of various angles will change the direction of the light, so that it enters freely into dark places.

METHOD OF USE.

When the glass is to be used in an ordinary window it must be borne in mind that if the glass is shadowed by a reveal or projection greater than 12 inches the prisms must be set in a separate frame, flush with the walls. 4" by 4" Prisms or Sheet Prisms should be used. (See Fig. 1.)

When prisms are thus set vertically they will only operate when the sky angle between them and the building opposite exceeds 40 degrees; any less degree of sky angle compels the use of iron canopy frame (see Fig. 2), which in size should be the width between the brick window jambs by two thirds of the height of the window. Canopies are made stationary or revolving, as desired.

Prism Extension Skylights (see Fig. 3) are the most effective form of prism lighting. A skylight must have a pitch of approximately 30 degrees from horizontal; ribs $3\frac{1}{2}$ inches deep; copper or galvanized iron with steel cores; ribs set 12 inches on centers; caps and flashing; gutters must be made of cast-iron or riveted-steel plates; the glazing should be Acme Skylight Prism $\frac{3}{4}$ inch thick.

Sidewalk Prisms or Vault Lights (see Fig. 4) are composed of steel reinforced concrete 2" thick, having $\frac{1}{4}$ " twisted steel bars running both ways between each row of glass, and glazed with 2" square prisms or plain lenses with rounded corners, the whole built in place. We also make these up in slabs in our shop, not exceeding 25 square feet each, and ship to all parts of the country.

TRADE-MARK.

The word "Acme" is our trade-mark, and it is on all our products as a guarantee of excellence. Architects should specify "Acme" Prism Glass.

PLANS SUBMITTED.

We will be pleased at any time to aid architects and engineers to overcome any difficulty of prism lighting they may come in contact with. We will submit plans and estimates promptly at any time and without charge.

INSTALLA- TION.

Our goods are shipped carefully packed and can be set by any mechanic of ordinary intelligence. Particular attention is given to export orders, and full instructions are sent as a guide to their installation by foreign workmen.

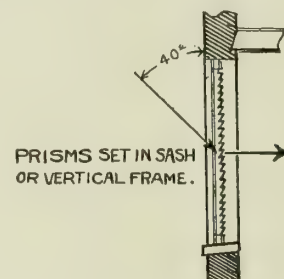


FIG. 1

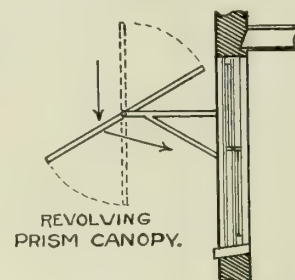


FIG. 2

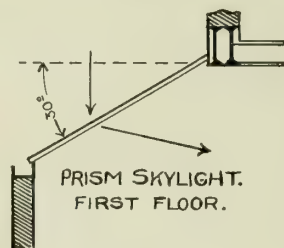


FIG. 3

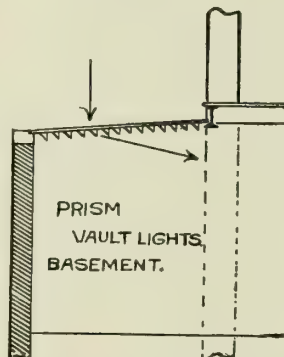


FIG. 4

DIAGRAMS SHOWING
METHOD OF APPLI-
CATION OF PRISM
LIGHTING

PRESSED PRISM PLATE GLASS COMPANY

"Imperial Plate Ornamental Glass," "Imperial Plate Prism Glass,"
"Imperial Skylight Prism Plates," and "Imperial Design Glass"

MORGANTOWN, W. VA.

BRANCH OFFICES

CHICAGO, ILL., 512 Monadnock Building

NEW YORK, N. Y., 44 East Twenty-Third Street

PRODUCTS.

We are manufacturers of large polished plates of PRISM GLASS for exterior use, and of ORNAMENTAL GLASS, both semiobscure and transparent, for interior use. These are as far superior in brilliancy of finish to Rolled Glass, either Prism or Ornamental, as Plate Glass is to Window Glass.

We also manufacture large plates (unpolished) of SKYLIGHT PRISM GLASS, 18" x 60" with $\frac{1}{2}$ inch backs.

In addition to our polished products, we manufacture and carry a full stock of ROUGH PLATE GLASS, from $\frac{3}{16}$ " to 1" in thickness. Some jobbers have preferred our Rough Plate Glass because of the superior smoothness of one side, and the facility with which it can therefore be cut with a diamond.

We also manufacture and carry a stock of ROLLED SHEET PRISM GLASS, in sheets up to 54" x 72" in size.

DESCRIPTION AND ADVANTAGES OF OUR PRISM GLASS.

Our large lights of Prism Glass, for windows and transoms, are ground and polished on one side like plate glass, and the prisms are sharp and smooth. This glass is supplied in all angles in cut sizes up to either 54" x 72" or 72" x 54"; large enough to fill most sash openings in one piece. Any glazier can set it. There are few corners to catch the dirt, and no wires to obstruct light, and it is easily cleaned. Its polished outside surface adds to the appearance of building. For these and other reasons it is far superior to Rolled Window Prism Glass, or small prism plates 4" or 5" square. (See Fig. 1.) This glass weighs 4 pounds to the square foot. Rabbets in sash should be made $\frac{1}{2}$ inch deep.

"IDEAL WINDOWS."

Our "Ideal Windows" are used in modern office buildings, having one light of "Imperial Plate Prism Glass" in their upper sash. (See Fig. 2.)

The new twenty-one story Fisher Building, Chicago, has just installed "Ideal Windows" in all of its office windows on both streets, and is one of the best-lighted office buildings in the United States. By beveling the edges of the prism side, or inside of the glass, the prisms can be cleaned almost as quickly as the polished glass.

MAT SURFACE.

We sometimes, upon request, put a "mat" or satin ground surface on the back of our Prism Plates, instead of the polished back. This softens the sunlight and still preserves a fine prismatic effect.



TRADE-MARK

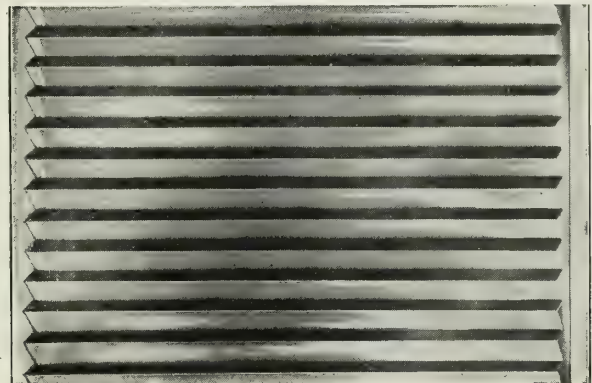


FIG. 1. "IMPERIAL PLATE PRISM GLASS"

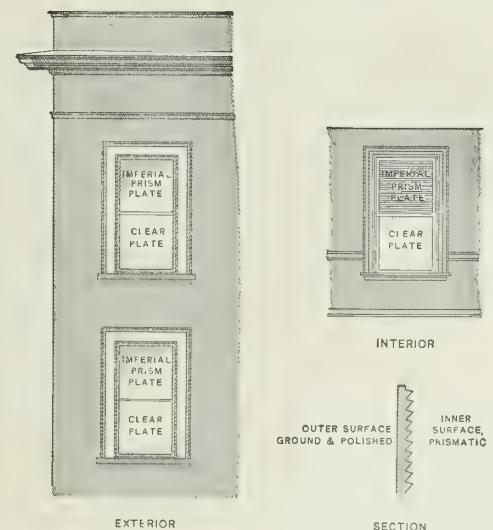


FIG. 2. PLAN FOR "IDEAL WINDOW"

LARGE
SKYLIGHT
PRISM
PLATES.

Our Skylight Prism Plates, not ground or polished, are made in units 18 in. wide and 60 in. high, with backs $\frac{1}{2}$ in. thick, and a smooth border around the prisms about $\frac{1}{2}$ in. wide. They can be cut to smaller sizes if desired. Owing to the small number of joints, the possibility of leakage in the use of these large plates and the cost of metal construction in which they are placed is reduced to a minimum. They are the best product on the market for lighting deep stores (see Fig. 3), for roofs of railway stations, sheds, factories, etc. Can be used horizontally, but give best effects when set at an angle of from 30 to 45 degrees. This glass weighs $8\frac{8}{10}$ pounds to the square foot.



FIG. 3. SKYLIGHT PRISM PLATES
18" x 60" units

LARGE
LIGHTS,
ORNAMENTAL
GLASS.

One of our new products is "Imperial Plate Ornamental Glass," made in five stock patterns in cut sizes up to 54" x 72", with ground and polished backs, and brilliant, sharp and clear patterns. (See Figs. 4, 5, 6, 7 and 8.) This plate glass product must not be confused with cheaper grades of Glass that is rolled.

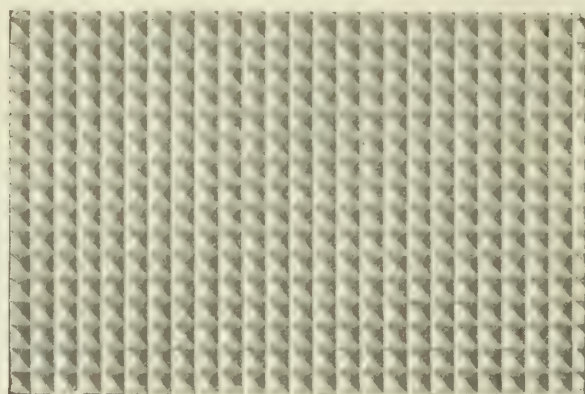


FIG. 4. (Semiobscure) Style O-1



FIG. 5. (Semiobscure) Style O-2

"IMPERIAL PLATE ORNAMENTAL GLASS"



FIG. 6. (Transparent) Style O-3

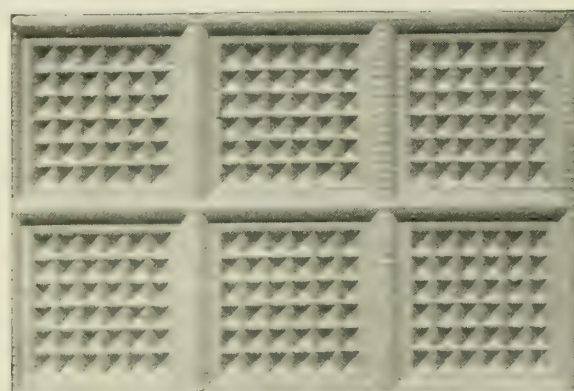


FIG. 7. (Semiobscure) Style O-4

"IMPERIAL PLATE ORNAMENTAL GLASS"

SPECIAL
DESIGNS.

Special and exclusive designs furnished, if order is large enough to justify expense. This glass is used for office partitions, door lights, vestibule doors, and ornamental ceiling lights; for bank and other street windows, where semiobscure is desired; and for any place where clear, white light is wanted, with ornamental design. It weighs $3\frac{1}{2}$ pounds to the square foot. The cuts show full size of patterns.

"IMPERIAL
DESIGN
GLASS."

"Imperial Design Glass" (Figs. 9 and 10) is made in patterns and to take the place of Leaded Glass for window and door lights, etc., and is either semiobscure or transparent.

This plate glass is ground and polished on one side, and can be furnished with raised border lines, monogram centers, crests, raised letters, trade-marks, emblematic figures, etc. It is desirable for any use where a large number of lights or plates of one size and design are required.

Imperial Design is a most beautiful glass, and the very latest product in plate-glass manufacture.

Prices and further information furnished upon application.

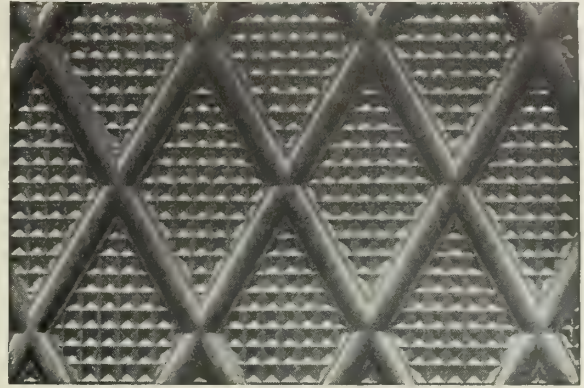


FIG. 8. (Semiobscure) Style O-5
"IMPERIAL PLATE ORNAMENTAL GLASS"

SPECIFICA-
TIONS.

To insure no imitation of our products, specify:

"Imperial Plate Prism Glass"

"Imperial Plate Ornamental Glass"

"Imperial Plate Skylight Prism Glass"

"Imperial Design Glass"

Made by the PRESSED PRISM PLATE GLASS COMPANY, of Morgantown, W. Va.

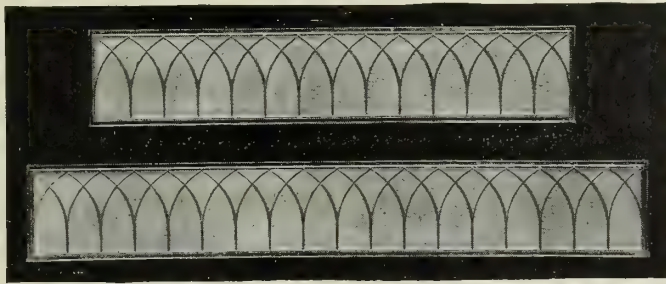


FIG. 9. "IMPERIAL DESIGN GLASS"—GOTHIC LIGHTS
Made for the Pullman Company



FIG. 10. "IMPERIAL DESIGN GLASS"—HIGH WINDOW
Made for the Pullman Company

PRICES.

Our Prism products cost slightly more than ordinary polished plate glass, and our Ornamental Glass is about the same price as chipped plate glass.

TERRITORY
AND
FACILITIES.

Our products are manufactured by patented methods and machinery, and are in use throughout the United States and Canada, and have been exported in large quantities to Europe. We carry a large stock of manufactured glass, and upon reasonable notice have facilities to fill orders of any size.

We solicit correspondence from architects, owners, and tenants. Send for our booklet, samples, and prices. Our glass can be procured from and is for sale by jobbers everywhere.

REFERENCES.

Among the many buildings where our glass has been recently installed and specified are:

BUILDING	LOCATION	ARCHITECT
American Bank Note Co., Building	New York, N. Y.	Kerby, Petit & Green
American News Co., Building	New York, N. Y.	Fay Kellogg
American Trust & Savings Bank	Chicago, Ill.	Jarvis Hunt
Boston Store	Chicago, Ill.	Holabird & Roche
Broadway Maiden Lane Building	New York, N. Y.	Clinton & Russell
Chicago Athletic Club	Chicago, Ill.	Richard & Schmidt
Fisher Building	Chicago, Ill.	P. J. Weber
Larkin Building	Buffalo, N. Y.	Frank Lloyd Wright
McCreery Company Building	Pittsburg, Pa.	D. H. Burnham & Co.
National Bank of Commerce Building	Kansas City, Mo.	Jarvis Hunt
People's Gas Building	Chicago, Ill.	D. H. Burnham & Co.
Scarritt Building	Kansas City, Mo.	Root & Siemens
Simpson & Company	New York, N. Y.	McKim, Mead & White
Smith, Gray Building	New York, N. Y.	James B. Baker
Studebaker Building	South Bend, Ind.	S. S. Beman
Trustee Building	Seattle, Wash.	C. L. Aldrich

THE SUNBURST PRISM LIGHT COMPANY

"Schwickart's Sunburst" Prisms

OFFICE AND FACTORY

Scholes and Waterbury Streets

BROOKLYN, N. Y.

NEW YORK OFFICE
78-80 BROAD STREET

PRODUCTS.

Manufacturers of "SCHWICKART'S SUNBURST" PRISMS; PRISM GLASS and VAULT LIGHTS for Vaults, Sidewalks, Floors, and Skylights; "SUNBURST" REFLECTORS for Windows.

"SUNBURST" PRISMS.

"Schwickart's Sunburst" Prisms (patented in the United States, Canada, Great Britain and Germany) are ornamental, have a higher artistic appearance than any other construction, and solve the problem of a really efficient sidewalk, vault or ceiling light.

ADVANTAGES.

The prismatic system does not tire the eyes like artificial light, and the cost of maintenance is practically nothing. The economy of the "Sunburst" Prism System, which we claim to be the best, is due to the superior efficiency of the prisms.

The vertical and quadrilateral diffusion of light is absolutely obtained with these prisms without the aid of crude or ugly devices. Each lens takes care of its own expansion and contraction, and if any prisms or settings should become injured, repairs can easily be made at a minimum of trouble and expense.

The lenses have great strength and beauty, and when used as a skylight the white cement obviates the black spots so noticeable in other systems.

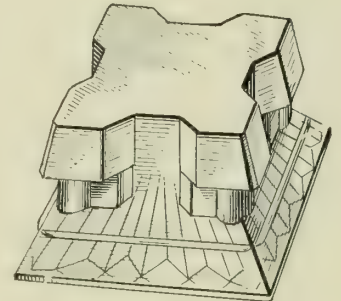
In the use of the "Sunburst" Vault Light the necessity of transparent doors is eliminated, insuring an additional saving in the cost of the doors.

One third of the space required by other systems is sufficient for "Sunburst" Prisms to transmit the same amount of light, and all the remaining space around the vault-light panel can be made of reinforced cement.

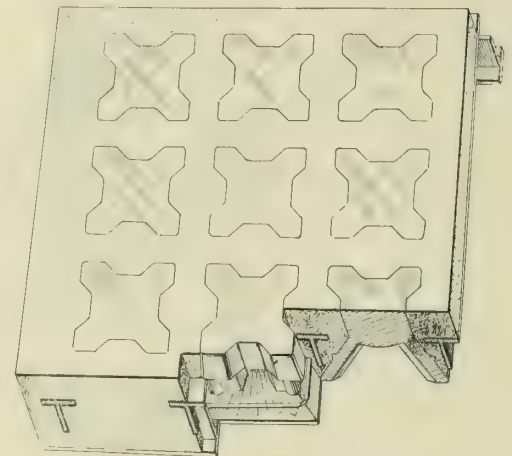
CONSTRUCTION.

The lenses have a plain top surface, set flush in cement, making a water and moisture proof building light. The square bottom portions of the lenses have the sides projecting below the cross-bars which are spaced so that the square bases of the adjacent lenses abut both in a transverse and longitudinal direction, forming an under surface of glass of an unbroken continuity.

The conical bottom portion of each lens has an angular bead which anchors it firmly in position, and the prisms in the lower part of the lens tend to refract

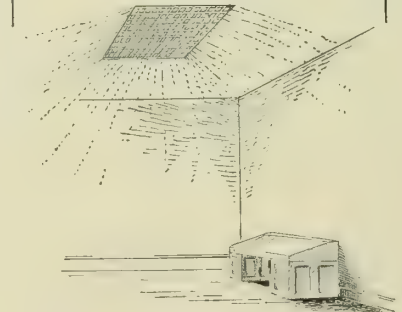
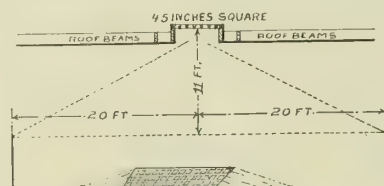


"SUNBURST" PRISM
(Patented)



"SUNBURST" PRISMS IMBEDDED IN CEMENT

Showing location of metallic members



"SUNBURST" PRISM SKYLIGHT

Showing lateral diffusion of light. A floor space of 1600 square feet illuminated by "Sunburst" Prism Light 45 x 45 inches

or bend the beams of light laterally, thus imprisoning more daylight than is possible by any other system.

ESTIMATES.

Samples and prices sent on application.

SPECIFICATION FORM.

All prisms for vaults, sidewalks, floors and skylights, where shown on plans, to be "Schwickart's Sunburst," as manufactured by THE SUNBURST PRISM LIGHT COMPANY, NEW YORK.

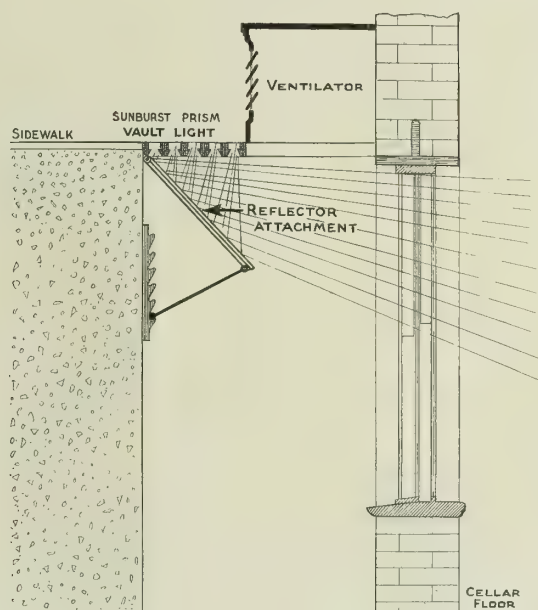
"SUNBURST" WINDOW REFLECTOR.

Our new "Sunburst" Prism Reflector Attachment is designed to illuminate dark and dismal offices and apartments, rooms in lower floors of high buildings, rooms lighted by shaft or court, and wherever direct side light can not be obtained.

The Reflector is very ornamental and is attached to the outside face of the wall at top of the window. It is made to fit any size window opening.

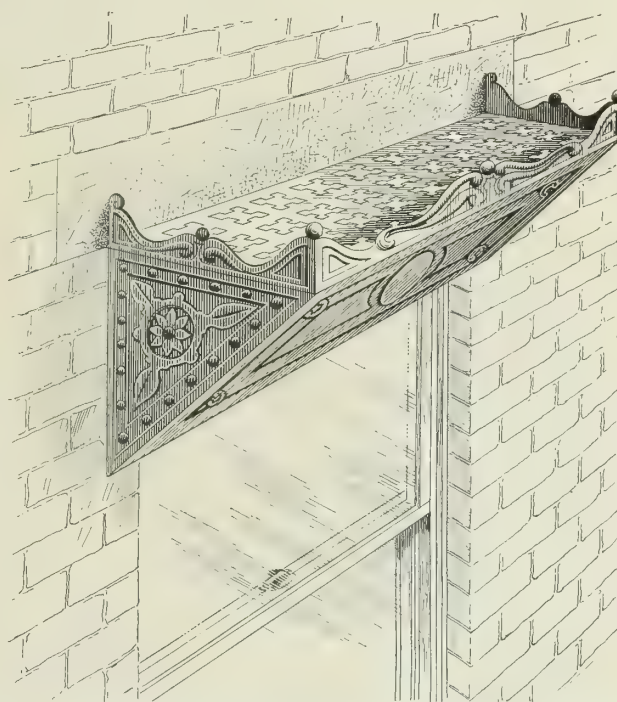
The Reflector is made slightly wider than the window, an inch or more on each side of the opening, to allow for fastening to the wall.

The top surface is made of "Sunburst" Prisms 12 inches wide and projecting at right angles to the face of the building. The light direct from above passes through and is then, by the aid of the mirror attachment, received as reflection from the prisms and distributed both vertically and laterally, and penetrates into the room a distance of 40 feet, with the regulation 12-inch top surface of "Sunburst" Prisms, containing four rows of lenses. If the depth of the room exceeds 40 feet an additional row of lenses on the top surface is required, which will cause the reflected light to penetrate 10 feet farther.



"SUNBURST" PRISMS WITH REFLECTOR ATTACHMENT

Showing method of lighting dark cellars



THE "SUNBURST" WINDOW REFLECTOR

"SUNBURST" VAULT LIGHT REFLECTOR.

The "Sunburst" Prism Vault Light with Reflector attachment is especially valuable for the purpose of lighting basement rooms or cellars. The transmission and diffusion of the light through our prismatic lenses is uniformly and equally effected in all directions. This fact in itself has made our "Sunburst" Reflector possible, and the same result could not be obtained from any other prism lacking this all important quality.

SPECIFICATION FORM.

Provide and set for all windows in the story of this building, where shown on plans, one "Sunburst" Prism Reflector Attachment, complete with prisms and reflector, as manufactured by THE SUNBURST PRISM LIGHT COMPANY, New York.

THOMAS M. VINTON, Assoc. M. Am. Soc. C. E., *President*PHILIP H. TROUT, *General Superintendent*DAVIS CARPENTER, *Secretary***TUCKER & VINTON**

Steel Concrete

Terminal Building, 41st Street and Park Avenue

NEW YORK, N. Y.

PRODUCTS.

We manufacture and install STEEL CONCRETE VAULT LIGHTS; we are also Engineers and Contractors for STEEL CONCRETE STRUCTURES of every description.

STEEL
CONCRETE
VAULT
LIGHTS.

Our Vault Lights have been used in the entire New York City Subway, more than 100,000 square feet; in the Railroad Terminal, Washington, D. C., more than 30,000 square feet; are installed in the Philadelphia Rapid Transit Tunnel; are being installed in the New York Central Railroad Improvement, more than 60,000 square feet, and in the Pennsylvania Railroad Terminal, New York City, more than 150,000 square feet.

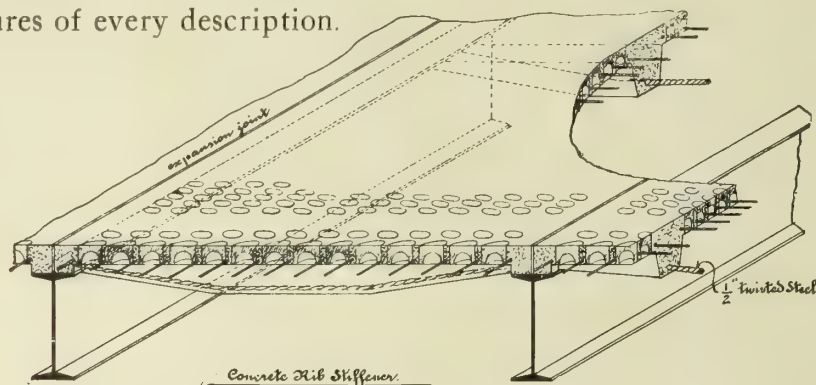
In addition to these our vault lights have been used in more than six hundred buildings.

STEEL
CONCRETE
STRUCTURES.

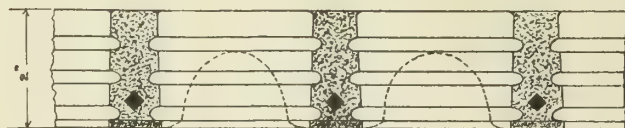
For more than ten years we have devoted ourselves to the erection of Steel Concrete Structures of every description.



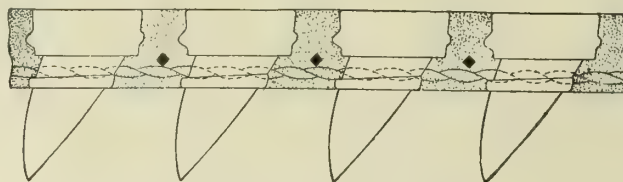
STEEL CONCRETE VAULT LIGHTS AT 59TH STREET
SUBWAY STATION, NEW YORK, N. Y.



Section—showing typical details



Section through Vault Light Slab. Bull's-eye Lens



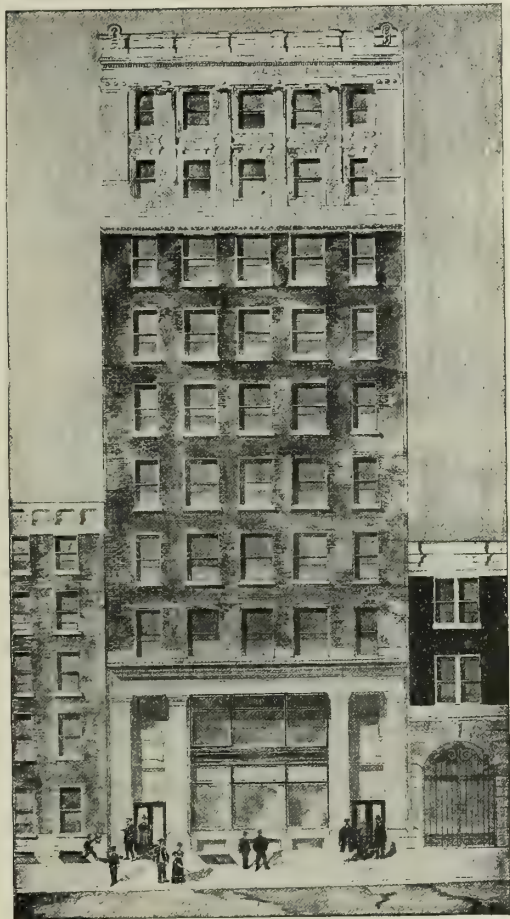
Section through Vault Light Slab. Luxfer Lens

STEEL CONCRETE VAULT LIGHTS

Showing method of Construction

Continued on next page

We construct from designs of Architects or Engineers, or, if desired, submit our own design for factories, warehouses, industrial buildings, bridges, dams, filtration plants, and, in fact, every form of Concrete Construction.



THE McNULTY BUILDING, 540-551 WEST 52D STREET, NEW YORK, N. Y.
The first 10-story concrete loft building on Manhattan Island



FACTORY, RUSHMORE DYNAMO WORKS, PLAINFIELD, N. J.



EXTERIOR OF STOLLWERCK FACTORY, STAMFORD, CONN.
Showing saw-tooth roof on fifty foot spans. The building is 500 feet long and 100 feet wide



BOWLING GREEN BUILDING, 246-248 WEST 65TH STREET, NEW YORK, N. Y.

REPRESENTATIVE WORK.

The Illustrations on this page show a few of the Steel Concrete buildings constructed by TUCKER & VINTON.

THE CONTINUOUS GLASS PRESS COMPANY

Manufacturers of Plate Wire Glass

915 Pennsylvania Building
PHILADELPHIA, PA.

WORKS
DUNBAR, PA.

PRODUCTS. We are manufacturers of ROUGH and RIBBED WIRE GLASS of $\frac{1}{8}$ inch and upward in thickness, and of POLISHED WIRE GLASS.

DESCRIPTION. Our Wire Glass is made by a patented single roll process, which process is the only one that can insure a plate of glass of perfectly homogeneous structure. The result is a greatly reduced liability to breakage from the uniformity with which expansion, contraction, and vibration from violent contact act upon the glass.

DISTINCTIVE MARK. Our standard glass is $\frac{1}{4}$ inch thick and over, as necessary for the various purposes to which it is applied, and as required by the National Board of Fire Underwriters. It has a distinctive mark, consisting of a Cabled Strand woven into the wire netting, running the entire length of the sheets and spaced about ten inches apart. The Cabled Strand is clearly shown, as it appears in the glass in the cut opposite.

APPROVAL. Our standard $\frac{1}{4}$ inch and thicker Wire Glass is made in accordance with the requirements of the National Board of Fire Underwriters, and with the Cabled Strand, which has been registered with and approved by them, has the full approval of the National Board of Fire Underwriters as a superior fire retardant, as is shown by their approval card, a copy of which is as follows.



STANDARD GLASS SHOWING
CABLED STRAND

GLASS

76—Feb. 13, 1907.

Continuous Wired Glass. Mfd. by Continuous Glass Press Company,
Philadelphia, Pa.

Wired glass protection is not equivalent to that furnished by standard fire doors and shutters, except for moderate exposures. Notice is called to the need of using standard frames, glazing and glass of the required thickness.

APPROVED for protection against moderate exposures, when used in sizes not exceeding 720 square inches, mounted in standard window frames and provided with distinctive marking consisting of a strand of the wire mesh made by twisting two No. 27 gage wires together, and spacing such distinctive cabled strand approximately 10 inches apart in each sheet of glass manufactured.

In the ribbed pattern the distinctive marking cannot be seen when the glass is inspected from the ribbed side but can be found quite easily from the opposite side. It can be observed from either side of the rough or polished pattern. It is incorporated in the glass, will serve to identify the glass made by this company, and will distinguish the glass made and sold for use as a fire retardant from that which does not comply with the requirements.

This card replaces 76, dated June 9, 1906.

APPROVAL CARD OF THE NATIONAL BOARD OF FIRE
UNDERWRITERS

This approval card, which is on file with the Underwriters' Bureaus in all the large cities of the country, is issued by the National Board of Fire Underwriters, and has the approval, as given above, printed on a cut of the glass showing the Cabled Strand, a portion of which cut is shown above.

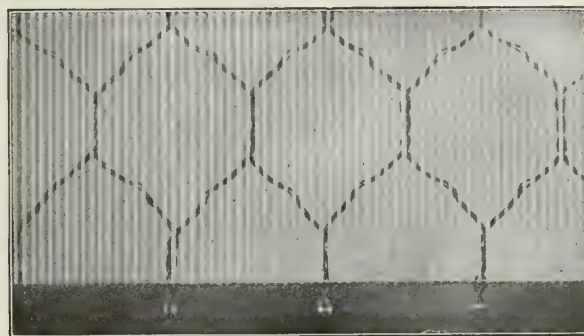
IDENTIFICATION.

As stated on the Approval Card, a copy of which is given above, the Cabled Strand, our distinctive mark, can not be clearly seen in the ribbed Wire Glass, when the glass is inspected from the ribbed side, but can be found quite easily when the smooth side is examined.

REGULAR
USES.

Our standard Wire Glass of $\frac{1}{4}$ inch thickness, and over, is adapted for all the various uses where strength, joined to full fire retardant qualities, is required, i. e., for sashes and doors in warehouses, office buildings, elevator enclosures, railroad and subway stations; for skylights, floorlights, lightshafts, external stairs, enclosures, etc.

The rough and ribbed style of glass is suitable where a partly obscured view is desirable or not objectionable; the polished clear glass for all locations where unobstructed view joined to fire resistance is the desideratum.



RIBBED WIRE GLASS

ONE EIGHTH
INCH THICK
WIRE GLASS.

By our improved process of manufacture we are enabled to make Wire Glass of $\frac{1}{8}$ inch in thickness. This Wire Glass is a special product of THE CONTINUOUS GLASS PRESS COMPANY and is the thinnest Wire Glass made. No other wire glass manufacturer can produce it. While this glass has positive fire-retardant qualities, it is not approved by the National Board of Fire Underwriters as a fire retardant, and is not sold as such, and it does not have the Cabled Strand.

ADAPTATION.

This $\frac{1}{8}$ -inch Wire Glass, in either ribbed or rough form, is admirably adapted for use in interior sashes, office partitions, transoms, cellar windows, sidewalk canopies, skylight vertical sashes, etc. In the ribbed form it is being extensively and successfully used for deck lights of trolley cars.

The ribbed Wire Glass is also well adapted for schoolroom partition sashes and sliding doors, as, in addition to its light diffusing qualities joined to semi-transparency, it possesses all the merits of the heavier kinds of Wire Glass in holding together when accidentally broken, or in case of fire.

The $\frac{1}{8}$ inch rough Wire Glass is especially suited for glazing hot-houses and conservatories as it affords the maximum protection against hail and windstorms. It has been successfully used for these and similar purposes.

DURABILITY.

By reason of the improved and unique method of manufacture of our Wire Glass, it is much less liable to breakage than wire glass made by the ordinary methods of manufacture. Our experience with our Wire Glass, so far as breakage is concerned, has been remarkable in the history of the wire glass business. We have no hesitation in saying that all Wire Glass made by THE CONTINUOUS GLASS PRESS COMPANY will stand any reasonable test of time or use with unequalled success.

CO-OPERATIVE
SERVICE.

We are at all times pleased to furnish architects and contractors with full information concerning our Wire Glass, and to send samples of the different kinds made by us, upon request.

WHERE
OBTAINABLE.

We do not sell our product direct. THE CONTINUOUS GLASS PRESS COMPANY'S Wire Glass can be bought through all the leading glass jobbers in the United States, most, if not all of whom carry it in stock. It is sold only through the jobbing houses.

SPECIFICA-
TION FORM.

Specifications should be made to read:

"All Wire Glass called for in this specification to be of THE CONTINUOUS GLASS PRESS COMPANY'S manufacture, of Philadelphia, Pa."

MISSISSIPPI GLASS CO.

115 Broadway
NEW YORK, N. Y.

BRANCH OFFICES

CHICAGO, ILL., 72 Madison Street.

ST. LOUIS, MO., Main and Angelica Streets.

PRODUCTS. FIGURED BUILDING GLASS and STANDARD ROUGH and RIBBED GLASS for skylights.

ADAPTABILITY. Mississippi styles are particularly suitable for interior and exterior glazing of all classes of buildings, as well as steam and electric passenger cars, ferry boats, yachts, etc., and especially where greatest distribution of light together with exclusion of vision is demanded.

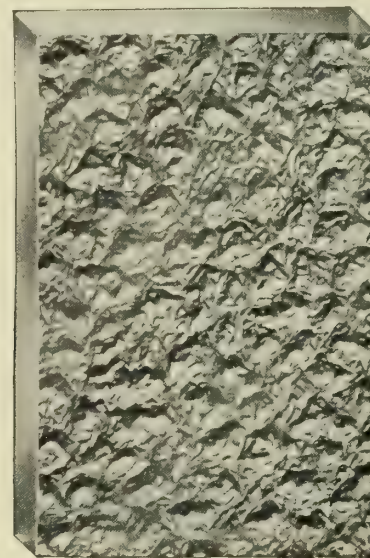
PATTERNS. Maze, Florentine, and Syenite patterns shown in details. These patterns are made $\frac{1}{8}$ or $\frac{3}{16}$ inches in thickness and in sizes up to 42 inches wide. Other patterns and descriptions furnished on request.



MAZE



FLORENTINE



SYENITE

SPECIAL
ADVANTAGES.

Brilliance, strength, true cutting surface, power of light-diffusion, uniformity of color, richness in design, and general excellence of manufacture, combined with efficiency and moderate cost.

LIGHT
DIFFUSION.

The experiments conducted by Prof. Charles L. Norton of the Massachusetts Institute of Technology, on behalf of the Associated Factory Mutual Insurance Companies of New England, demonstrated that a proper combination of glass surfaces insures for a given floor area a vastly increased efficiency of light over that to be had by plain glass. The Ribbed, Maze, and other figured surfaces of glass as manufactured by this Company are designed in accordance with the basic requirements developed by Professor Norton's experiments, and will be found to give results closely approximating the ideal surfaces recommended by him.

MISSISSIPPI WIRE GLASS CO.

115 Broadway
NEW YORK, N. Y.

BRANCH OFFICES

CHICAGO, ILL., 72 Madison Street

ST. LOUIS, MO., Main and Angelica Streets

PRODUCTS.

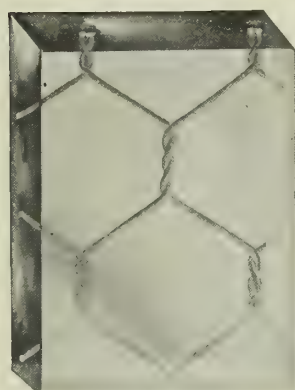
"WIRE GLASS."

DESCRIPTION.

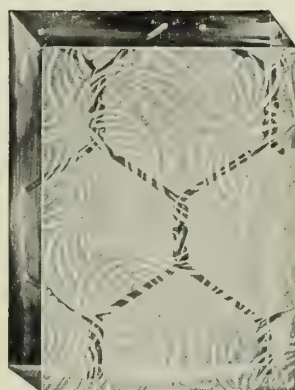
"Wire Glass" is rolled plate glass having a wire netting embedded in its center. The combination being affected while the glass is in a molten state insures perfect cohesion between the two materials, so that when the sheet is cracked, either by heat or impact, the wire holds the glass fragments tightly together.

ADAPTABILITY.

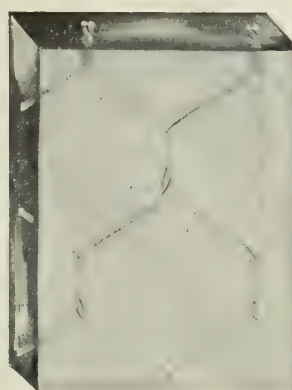
"Wire Glass" is particularly suitable for employment in windows, doors, transoms, monitors, skylights, and all places where fire and breakage are to be guarded against. It is a fire retardant of wonderful efficiency, and when properly framed prevents the invasion of fire or its egress to the peril of adjoining buildings.



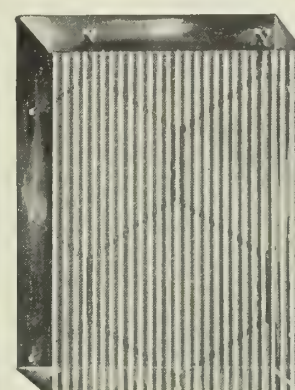
Polished



Maze



Rough



Ribbed

FULL-SIZED DETAILS OF "WIRE GLASS"

PATTERNS.

Polished "Wire Glass" is a product equal in strength with respect to the fire and break hazards to the better known Ribbed, Maze, and Rough or Hammered "Wire Glass," and possessing at the same time complete transparency, and is adaptable for all purposes where "Wire Glass" is required, together with an unobstructed vision.

Maze "Wire Glass" is patterned in accordance with Edward Atkinson's specifications for the maximum diffusion of daylight. It is the ideal surface for high-class mercantile structures, office buildings, hotels, apartment houses, colleges, and schools, and all places where greatest distribution of daylight is desired, together with exclusion of vision.

Rough "Wire Glass" is a semi-transparent, fire-retardant glass for use where complete vision or decorative effect is not particularly essential, but protection against fire and breakage are demanded. Used in skylights, windows, and doors of all classes of buildings, and most extensively employed in factories, mills, warehouses, train-sheds, and power buildings.

Ribbed "Wire Glass" is also intended for skylight and window service in factories, warehouses, piers, power plants, etc. It is patterned in accordance with Edward Atkinson's specifications for maximum diffusion of light, and the Massachusetts Institute of Technology honors it by recommending its use instead of plain glass in upper sashes to increase and diffuse the light of a given area.

ADVANTAGES.

"Wire Glass" adopted for skylights eliminates the perils incident to the employment of heavy glass for this use. The cost and weight of the frames are correspondingly reduced and the employment of protective netting entirely obviated. It eliminates the breakage hazard and consequent suits for damages due to injuries resulting from falling glass.

RELIABILITY.

"Wire Glass," the product of the MISSISSIPPI WIRE GLASS CO., is standard the world over. It forms the basis of Fire Underwriters' requirements. It commands the highest price because of its higher value. Its capacity to withstand the assault of flames is known and acknowledged by all authorities.

THE OPALITE TILE COMPANY

MANUFACTURERS OF

"Opalite," a Pure White Opaque Glass
MONACA, PA.

PRODUCTS.

"OPALITE" (White Glass) for Wainscoting, Wall Tiles, Floor Tiles, Refrigerator Linings, Counter Tops, Operating-Tables, Hospital Fixtures, Sink Backs, Low-Down Tank Tops, and Shelves, Glass and Glazing Structural Glass, Interior and Exterior Refrigerator Finish and Interior Decoration.

ADVANTAGES.

"Opalite" is absolutely sanitary, non-crazing, non-porous, germ-proof, light-reflecting and weather-proof.

ADAPTABILITY

It is peculiarly adapted for use in public institutions, operating-rooms, kitchens, bathrooms, toilet-rooms, engine rooms, light-shafts, fire-engine houses, subways, mortuaries, vaults, natatoriums, breweries, etc.

WAINSCOTING.

"Opalite" Wainscoting, including setting, costs less than one half the price of marble, can be used in any climate and will not discolor. Made in $\frac{1}{4}$ ", $\frac{5}{16}$ ", $\frac{3}{8}$ ", $\frac{7}{16}$ ", $\frac{1}{2}$ ", $\frac{9}{16}$ ", $\frac{5}{8}$ ", and $\frac{3}{4}$ " thicknesses, in any width up to 40", and in any lengths up to 84". We manufacture Cap and Base for the above in all widths from 2" to 24" and in lengths to suit.

"OPALITE" TILE.

"Opalite" Tile is a pure white glass $\frac{3}{16}$ " thick, has a corrugated back surface ground and slightly chamfered edges, and a polished front surface. It never crazes, thus affording no lodging-place for dirt or impurities. Leading architects, physicians and sanitary experts indorse it unqualifiedly for use in all places where a sanitary tile is indispensable.

SETTING.

To assure proper setting of this Tile, specify Plastic Cement, preferably ours.

"OPALITE"
WAINSCOTING



UNBACKED TILE

No. 1 White Standard Sizes:
6 x 3" 3 x 5" 9 x 3" 12 x 12"
3 x 3" 4½ x 4½" 9 x 4½"
3 x 4" 6 x 6" 9 x 6"



No. 520. O. G. CAP
Size 6 x 2½"
No. 521, 9 x 2½"



No. 523. INSIDE CORNER
Made right and left hand
To fit Cap No. 520
Size 2½ x 8"



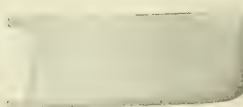
No. 524. RIGHT-HAND STOP
To fit Cap No. 520
Also made left hand
Size 2½ x 8"



No. 560. WAINSCOT CAP
Size 6 x 3", 2" wide
No. 561. Size 9 x 3", 2" wide
No. 562. Size 9 x 6", 5" wide



No. 570. CORNER
PIECE
2" wide
Size 2 x 7½"



No. 580. EXTERNAL
CORNER
2" wide
No. 581. 5" wide
7" long



No. 501. PLAIN CAP
No. 501, Size 3 x 6" Radius ¾" or 1½"
No. 502, Size 4½ x 6" Radius ¾" or 1½"
No. 503, Size 3 x 9" Radius ¾" or 1½"
No. 504, Size 4½ x 9" Radius ¾" or 1½"
No. 505, Size 4½ x 12" Radius ¾" or 1½"



No. 508. STOP
Left hand or right hand
to fit 501
Size 3 x 7½"

COVE BASE

No.	Size	Radius	No.	Size	Radius
404	6 x 3 "	$\frac{7}{8}$ "	408	6 x 12"	$\frac{7}{8}$ "
405	6 x 4 $\frac{1}{2}$ "	$\frac{7}{8}$ "	409	4 $\frac{1}{2}$ x 9"	$\frac{7}{8}$ "
405-A	6 x 4 $\frac{1}{2}$ "	1 $\frac{1}{2}$ "	410	4 $\frac{1}{2}$ x 12"	$\frac{7}{8}$ "
406	6 x 6 "	$\frac{7}{8}$ "	411	6 x 9"	2 "
407	6 x 9 "	$\frac{7}{8}$ "	412	6 x 9"	3 "

Corner Piece, new style, No. 414-A for 405 Cove Base can be made to match any $\frac{7}{8}$ " radius cove base.

OUTSIDE CORNER OR BULL-NOSE TILE

No.	Width	Radius
No. 601	3 "	$\frac{3}{4}$ ", 1", 1 $\frac{1}{2}$ ", 2"
" 602	4 $\frac{1}{2}$ "	" $\frac{3}{4}$ ", 1", 1 $\frac{1}{2}$ ", 2"
" 603	6 "	" $\frac{3}{4}$ ", 1", 1 $\frac{1}{2}$ ", 2"

Outside Base Corner, No. 413, $\frac{3}{4}$ " Radius, used with above sizes.
 3 x 7", 3" Radius interchangeable
 3 x 9", 4" " "
 3 x 12", 6" " "

INSIDE CORNER COVE BASE

No. 414. Radius $\frac{7}{8}$ ", also 1 $\frac{1}{2}$ " x 1 $\frac{1}{2}$ ", and 2 x 2" can be made to fit any cove tile or any $\frac{7}{8}$ " cove base.

OUTSIDE CORNER COVE BASE

No. 413. Radius $\frac{3}{4}$ " or 1 $\frac{1}{2}$ " x 1 $\frac{1}{2}$ ". Can be made to fit any bead tile or $\frac{7}{8}$ " cove base. When using 3 x 9" or 3 x 12" interchangeable use 1 $\frac{1}{2}$ " cove base.

COVE TILE

No.	Size	Radius	No.	Size	Radius
301	1 $\frac{5}{16}$ x 6"	$\frac{7}{8}$ "	304	2 $\frac{5}{16}$ x 9"	1 $\frac{1}{2}$ "
302	1 $\frac{5}{16}$ x 9"	$\frac{7}{8}$ "	305	2 $\frac{11}{16}$ x 6"	2 "
303	2 $\frac{3}{16}$ x 6"	1 $\frac{1}{2}$ "	306	4 $\frac{1}{4}$ x 6"	3 "

BEAD TILE

No.	Size	Radius	No.	Size	Radius
201	1 $\frac{3}{16}$ x 6"	$\frac{3}{4}$ "	207	2 $\frac{13}{16}$ x 6"	2 "
202	1 $\frac{3}{16}$ x 9"	$\frac{3}{4}$ "	208	4 $\frac{3}{8}$ x 6"	3 "
203	1 $\frac{13}{32}$ x 6"	1 "	209	6 $\frac{7}{8}$ x 6"	4 $\frac{1}{2}$ "
204	1 $\frac{13}{32}$ x 9"	1 "	210	3 x 12 $\frac{1}{2}$ "	8 "
205	2 $\frac{0}{32}$ x 6"	1 $\frac{1}{2}$ "	211	4 $\frac{1}{2}$ x 12 $\frac{1}{2}$ "	8 "
206	2 $\frac{9}{32}$ x 9"	1 $\frac{1}{2}$ "	212	6 x 12 $\frac{1}{2}$ "	8 "



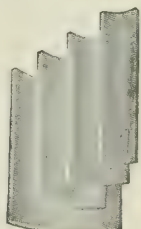
No. 405. COVE BASE



No. 601. OUTSIDE CORNER OR BULL-NOSE TILE



No. 414. INSIDE CORNER COVE BASE



COVE TILE



No. 414-A. CORNER PIECE



No. 413. OUTSIDE CORNER COVE BASE

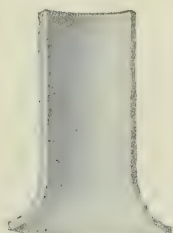


BEAD TILE



No. 506. OUTSIDE CORNER PLAIN CAP

Radius $\frac{3}{4}$ ". To fit any Bead Tile except 4" or 6" radius.

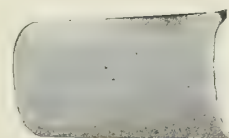


No. 507. INSIDE CORNER PLAIN CAP

Radius $\frac{7}{8}$ ". To fit any cove corner except 4" or 6" radius.

OVAL CAP

No.	Size	Radius
No. 530	3 $\frac{1}{2}$ x 6"	$\frac{3}{4}$ "
" 531	3 $\frac{1}{2}$ x 9"	" $\frac{3}{4}$ "
" 532	3 $\frac{1}{2}$ x 12"	" $\frac{3}{4}$ "

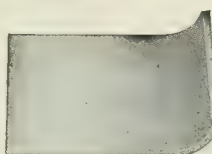


OVAL CAP

INSIDE CORNER COVE TILE

No.	Width	Radius
No. 701	3 "	$\frac{7}{8}$ ", 1 $\frac{1}{2}$ ", 2"
" 702	4 $\frac{1}{2}$ "	" $\frac{7}{8}$ ", 1 $\frac{1}{2}$ ", 2"
" 703	6 "	" $\frac{7}{8}$ ", 1 $\frac{1}{2}$ ", 2"

Inside Corner No. 414, $\frac{7}{8}$ " Radius used with above.
 Size 3 x 7", 3" Radius interchangeable
 Size 3 x 9", 4" " "
 Size 3 x 12", 6" " "



INSIDE CORNER COVE TILE

INSIDE CORNER OR COVE CEILING TILE

No.	Size	Radius
No. 704	3 x 3 "	$\frac{7}{8}$ "
" 705	4 $\frac{1}{2}$ x 4 $\frac{1}{2}$ "	" $\frac{7}{8}$ "
" 706	6 x 6 "	" $\frac{7}{8}$ "

SANITARY BASE No. 401
 Size 6 $\frac{3}{8}$ x 6", Radius $\frac{3}{4}$ "

CORNER SANITARY BASE

No. 402, Outside, Radius 1 $\frac{1}{2}$ "
 No. 403, Inside, Radius $\frac{7}{8}$ "

To be used with No. 401.



COVE CEILING TILE



CORNER SANITARY BASE



SANITARY BASE

OUTSIDE AND INSIDE CORNER TILES

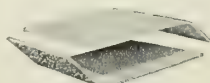
No.	Outside Corner Angle	3" wide, Degree of Angle	40° and 45°
" 801	"	"	"
" 802	"	4 $\frac{1}{2}$ "	"
" 803	"	6"	"
" 804	Inside	3"	"
" 805	"	4 $\frac{1}{2}$ "	"
" 806	"	6"	"

1 $\frac{1}{2}$ " Cove Base to go with above tiles.

"OPALITE" TABLE TOPS (White Glass)

For Hospital Supplies, Drug Stores, Ice-Cream Parlors, etc. Edges ground or polished.

$\frac{5}{16}$ " to $\frac{9}{16}$ " thick. Any size up to 30" x 60"



Nos. 801 TO 806



TABLE TOP

CATALOGUES.

Detailed Catalogues will be forwarded upon application.

STANDARD PLATE GLASS COMPANY

Manufacturers, Importers, Jobbers

26-30 Sudbury Street, 61-63 Portland Street

BOSTON, MASS.

PRODUCTS.

POLISHED PLATE GLASS in all thicknesses; BEVELED PLATES; PLATE-GLASS SHELVES; ALL-GLASS STORE FRONTS.

SKYLIGHT and FLOOR GLASS; ROUGH and RIBBED PLATE in all thicknesses; WIRE-GLASS, ROUGH, RIBBED, MAZE or POLISHED.

MIRRORS in FRENCH PLATE, AMERICAN BEAUTY PLATE; GERMAN LOOKING-GLASSES; AMERICAN SHOCKS.

WINDOW GLASS; AMERICAN and FRENCH SHEET-GLASS; CRYSTAL SHEET and CRYSTAL PLATE.

ORNAMENTAL GLASS in CHIPPED and GROUND SHEET or PLATE, FLORENTINE, MAZE, COLONIAL, MOSS, ONDOYANT, SILVER RIPPLE, FIGURED NOS. 1, 2 and 3, PLAIN and VARIEGATED CATHEDRAL, PLAIN, POT and FLASHED COLORS; OPAL, ENAMELED, and LEADED GLASS; BENT GLASS of all kinds, and PRISMATIC GLASS.

POLISHED PLATE GLASS.

We furnish large buildings with a superior quality of Polished Plate Glass in all sizes for street and all outside windows and for interior work. We also supply Chipped Plate, White Rolled Figured and Polished Wire-Glass for interior sash or partitions. For skylights, our leading glass in the Rough Plate measures $\frac{1}{2}$ inch in thickness while that in the Rough or Ribbed Wire is about $\frac{1}{4}$ inch in thickness. We specialize in thick Plate Glass for shelves and counter-tops in banking offices. This is in $\frac{1}{2}$, $\frac{3}{4}$, and 1 inch thicknesses.

FOR MILLS.

For use in Mills we furnish American Double A quality window glass, Sheet Prism, Ribbed and Ornamental Glass, each being a superior grade for its special use.

MIRRORS.

We manufacture Mirrors for show-windows and interior work in stores; also, for dwellings, from the large pier glass to the smallest bathroom mirror.

PATENT FRAMELESS MIRRORS.

For bathrooms and other purposes we have a special Patented Frameless Mirror of rich and unique design, as shown by accompanying cuts.

PATENT FASTENERS.

For All-Glass Store Fronts we manufacture and use our Patented Fasteners, adapted to either so-called "mitered" or "lap" joints, as preferred. They are illustrated on these pages.

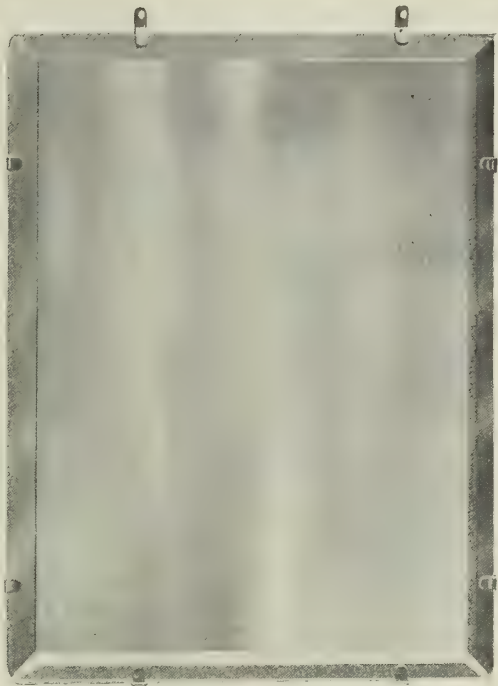
ESTIMATES.

Estimates on large or small contracts cheerfully furnished. Call on us when you desire an estimate for the better grades of glass.



BOSTON SAFE DEPOSIT AND TRUST COMPANY
BUILDING, BOSTON, MASS.

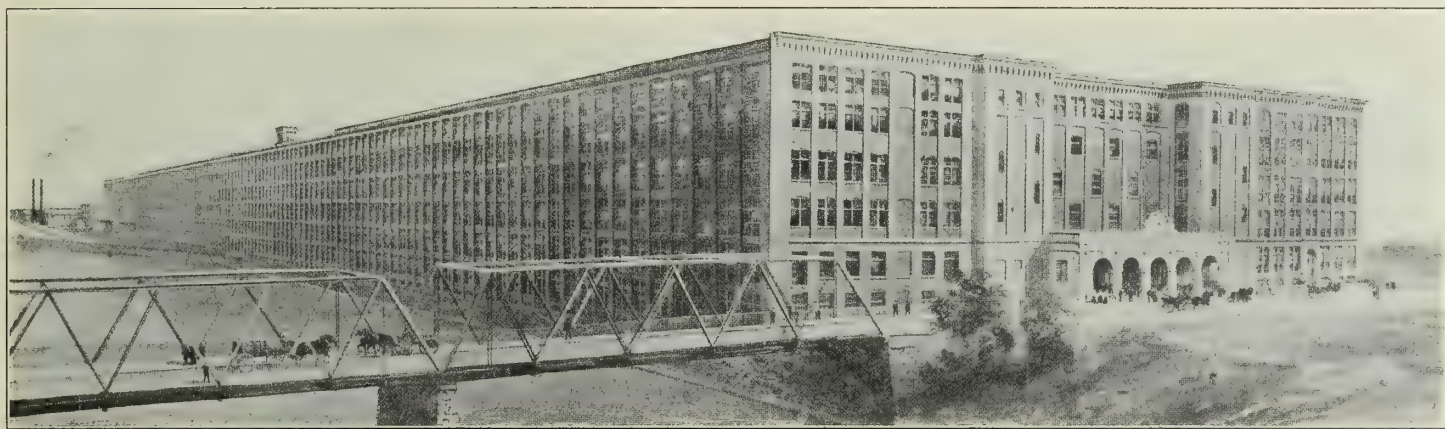
Glazed by STANDARD PLATE GLASS COMPANY



FACE OF STANDARD PATENTED FRAME-
LESS MIRROR



REVERSE SIDE OF STANDARD PATENTED
FRAMELESS MIRROR

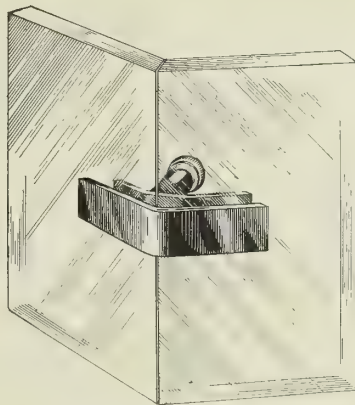


NEW WOOD WORSTED MILL, LAWRENCE, MASS.
All glass furnished by STANDARD PLATE GLASS COMPANY

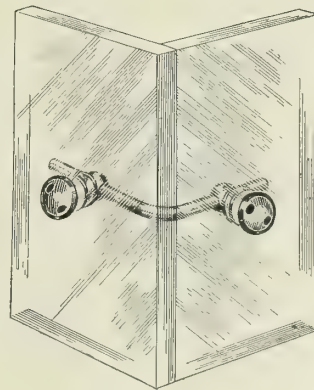
REFERENCES.

We have furnished all the glass
for numerous large buildings and
refer to the following:

- India Building, Boston, Mass.
- State Mutual Building, Boston, Mass.
- Simmons College Building, Boston, Mass.
- Lawrence Estate Building, Boston, Mass.
- Demmon Building, Boston, Mass.
- John Hancock Building, Boston, Mass.
- Boston Safe Deposit and Trust Co. Building, Bos-
ton, Mass.
- Wood Worsted Mills, Lawrence, Mass.
- Oneida County Court House, Utica, N. Y.



ALL-GLASS STORE FRONT
PATENT FASTENER
MITERED JOINT



ALL-GLASS STORE FRONT
PATENT FASTENER
LAP JOINT

THE HENRY BIRKENSTOCK STUDIOS

Leaded Art Glass; Memorial Windows

135 North Street

MT. VERNON, N. Y.

TELEPHONE, 1452 MT. VERNON

NEW YORK OFFICE, 1 Madison Avenue
TELEPHONE, 2470 GRAMERCY

PRODUCTS.

ART GLASS WINDOWS of the English, German, and Italian Schools of Design, for Churches, Chapels, Memorial Buildings, and Hospitals. STAINED GLASS set in lead, hard metal or copper, for Private Residences.



Christ among the Doctors

WINDOW IN ALL SAINTS' EPISCOPAL CHURCH, GREAT NECK, LONG ISLAND, N. Y.

DESCRIPTION.

The glass used is all selected antique or pot metal imported from England and Germany. As the character of the design is highly important I have made a special study of the old French, English, and Italian windows and follow as much as possible the methods of the Thirteenth and Fourteenth Century craftsmen.

PRODUCTION.

My productions are intended to satisfy the wants of those wishing to place memorial windows in churches, chapels, asylums, and other public buildings, or those wishing to beautify their residences with the highest grade of stained glass windows.

FACILITIES.

My Studios and Shops have the capacity to enable me to execute promptly commissions of the largest size and to deliver them to any part of the United States and foreign countries. Unless otherwise specified in the contract, orders will be carefully packed and shipped f. o. b. New York, N. Y.

SPECIFICATION.

In ordering designs, architects will kindly send blue-prints or tracings showing exact size and shape of windows; also, if possible, an approximate of the amount wished to be expended.

CO-OPERATION.

I shall be glad to figure on any and all work, and submit designs with estimates.

Continued on next page



WINDOW IN ST. JACOBI CHURCH,
BROOKLYN, N. Y.



WINDOW IN SECOND REFORMED CHURCH,
JERSEY CITY, N. J.

REFERENCES.

Our work has been set in all parts of the country as well as abroad and may be seen in any of the following buildings:

BUILDING
First Baptist Church
St. Thomas Aquinas Church
Second Reformed Church
First Baptist Church
Arion Hall (Jubilee Gift)
St. Jacobi Church
German Evangelical Lutheran Trinity Church
The Church of the Sacred Heart
The Dutch Reformed Church (Old Colonial Church)
Looram Residence
Mausoleums
Wartburg Orphan Asylum

LOCATION
Allentown, Pa.
Cleveland, Ohio
Jersey City, N. J.
Paterson, N. J.
New York, N. Y.
Brooklyn, N. Y.
New York, N. Y.
Mount Vernon, N. Y.
Mount Vernon, N. Y.
New Rochelle, N. Y.
In Woodlawn and other Cemeteries
Westchester County, N. Y.

ARCHITECT
George P. Pearson
Schickel & Ditmars
A. F. Leicht
A. F. Leicht
Ferdinand Prochazka
Michel & Murphy
Upjohn & Conable
Henry Rapeleye
Rev. Dr. Tyndale
Paul Hertwig
Schickel & Ditmars

THE D'ASCENZO STUDIOS

Stained and Leaded Glass, Venetian Glass Mosaic and Mural Decorations

1608-1618 Ludlow Street

PHILADELPHIA, PA.

NEW YORK REPRESENTATIVE: FRED E. MAYER, 160 Fifth Avenue, New York, N. Y.

PRODUCTS.

Designers and makers of STAINED and LEADED GLASS WINDOWS in the American and English schools. MURAL DECORATIONS and VENETIAN GLASS MOSAICS for Churches and Public Buildings.

FACILITIES.

Our facilities for the execution of this work are of the best, and we invite inspection of our studios and shops.

CO-OPERATIVE SERVICE.

We especially solicit work from architects, and furnish designs and estimates free of cost.

INFORMATION.

When consulting us, kindly send set of blue-prints or drawings and specify full information as to kind of work required and approximate amount to be expended.

REFERENCES.

Examples of our work may be seen in the following buildings:



WINDOW IN ST. JOHN'S CHURCH, WILLIAMSPORT, PA.

Designed and Executed by us in English Antique Glass

BUILDING	ARCHITECT	BUILDING	ARCHITECT
St. George's Church, Sea Bright, N. J.	Walker & Gillette	People's Trust Company, Brooklyn, N. Y.	Mowbray & Uffinger
Wharton Street Memorial M. E. Church, Philadelphia, Pa.	W. L. Blithe	Metropolitan Savings Bank, Baltimore, Md.	Parker & Thomas
Watson Memorial Church, Allegheny, Pa.	Allison & Allison	Harlem Savings Bank, New York, N. Y.	Bannister & Schell
Central Presbyterian Church, Norristown, Pa.	E. T. Boggs	Baltimore & Ohio Office Building, Baltimore, Md.	Parker & Thomas
St. Mark's Church, Frankford, Pa.	Watson & Huckel	Wyoming Valley Trust Company, Wilkesbarre, Pa.	Mowbray & Uffinger
St. John's Church, Huntington, L. I.	Henry M. Congdon & Son	Medico-Chirurgical Hospital, Philadelphia, Pa.	Frank Miles Day
Camden County Court House, Camden, N. J.	Rankin, Kellogg & Crane	St. John's Church, Williamsport, Pa.	Duhring, Okie & Ziegler
Cleveland Trust Company, Cleveland, Ohio	Geo. B. Post & Sons	St. Paul's Church, Overbrook, Pa.	Prof. Warren P. Laird
Essex County Court House, Newark, N. J.	Cass Gilbert	International Bureau of American Republics, Washington, D. C.	Kelsey & Cret
Great Hall, College of the City of New York, New York, N. Y.	Geo. B. Post & Sons	P. M. Sharpless, Residence, West Chester, Pa.	Charles Barton Keen
Marlborough-Blenheim Hotel, Atlantic City, N. J.	Price & McLanahan	H. P. Eells, Residence, Cleveland, Ohio	Frank B. Meade

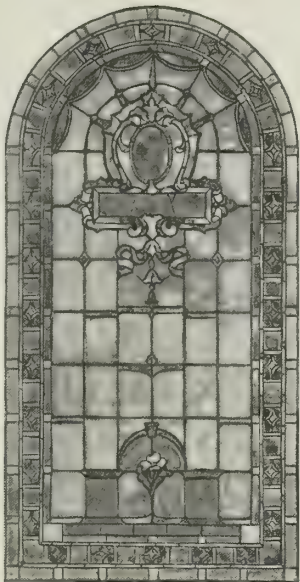
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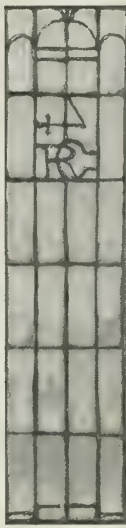
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No. 64



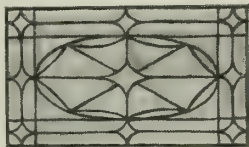
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No. 83



No. 92



No. 59



No. 73



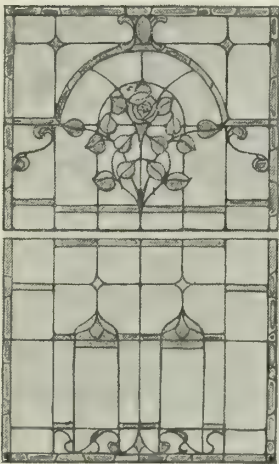
No. 95



No. 115



No. 68



No. 70



No. 110

STOCK DESIGNS IN STAINED AND LEADED GLASS WINDOWS

HOW TO ORDER.

To meet the demand for good leaded glass at medium prices we issue a catalogue of stock designs from which the above are taken. These may be ordered by style and color number. Catalogue and prices upon application.

BRANDENBERGER & COMPANY

ORIGINATORS AND PATENTEES OF

Improved Metallic Store-Front Construction

MAIN OFFICE AND PLANT

BALTIMORE, MD.

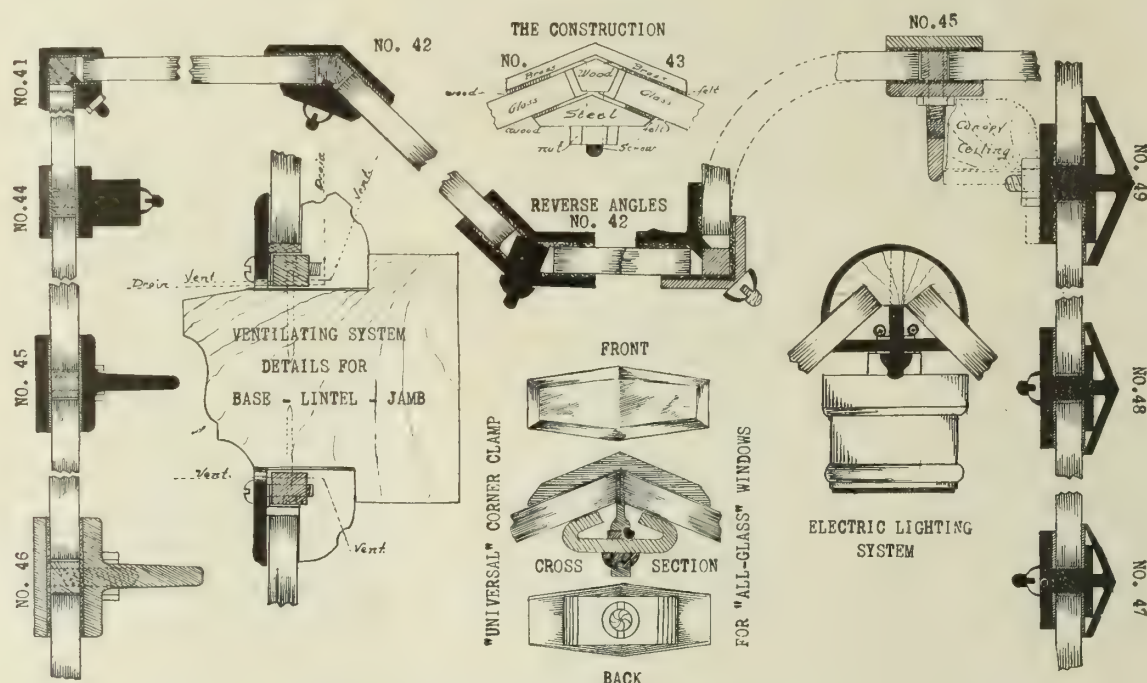
PRODUCTS.

IMPROVED METALLIC STORE-FRONT and SHOW-CASE CONSTRUCTION, comprising CORNER-POSTS, TRANSOM and DIVISION BARS.

Also, VENTILATING and ELECTRIC-LIGHTING ATTACHMENTS, and the "UNIVERSAL" CLAMP for ALL-GLASS SHOW-WINDOWS and SHOW-CASES.

DESCRIPTION.

In the "Brandenberger" Construction the facing is of solid brass, to be had finished in either polished brass, nickel-plated, coppered copper-oxidized, bronzed, or gun-metal. To the inside of this facing brass bolts, fitted with nuts, are brazed at intervals of 16 inches. This brass facing is joined to a steel reinforcement by means of these bolts, which pass through a wood strip to prevent contact with the glass. The entire framing is fastened to sill, lintel and jamb by screws that engage the lugs formed on the steel reinforcement. The bearing surfaces of both the brass facing and steel reinforcement are lined with heavy felt (or a veneer of select white pine, if desired), which acts as a cushion and keeps the glass free from the hard surfaces of the metal. This method has been found superior, the glass being held firmly yet with perfect freedom to settle, as is usually the case with new fronts, and it also allows for contraction or expansion.



DETAILS OF THE "BRANDENBERGER" CONSTRUCTION, HALF FULL SIZE

REPRESENTATIVES.

Plate Glass Jobbers and Glass Dealers in the United States and Canada are users and representatives of the "Brandenberger" Construction.

FEATURES.

Simplicity, durability, and ease of installation are the salient features of the "Brandenberger" Construction. Scientifically and mechanically correct, this construction has the approval of and is used by the most discriminating architects. It is designed to meet the modern demand for the greatest possible amount of light, combined with neatness, and does this without sacrificing strength and rigidity. Practical demonstration has proved the superiority of glass joints for store fronts as embodied in the "Brandenberger" Construction. (For those desiring the regular all-glass fronts, we recommend our "Universal" Clamp.) Our framing is thoroughly waterproof, and will not rust. Special preparation of glass is unnecessary in the "Brandenberger" Construction, thus obviating all cutting or drilling, which has a tendency to weaken the glass. In case of breakage, new glass, therefore, can be easily and safely reinstalled.

SPECIFICATIONS.

Corner Posts, Nos. 41, 42, 43

Division Bars, Nos. 44, 45, 46

Transom Bars, Nos. 47, 48, 49

For Glass, 7' 0" high, use Nos. 41, 44, 47

For Glass 10' 0" high, use Nos. 42, 45, 48

For Glass over 10' 0" high, use Nos. 43, 46, 49

When ordering, be sure to furnish glass sizes and angle; also, state whether polished brass, nickel-plated, coppered, copper-oxidized, bronzed, or gun-metal finish is desired on facing.

PRICES.

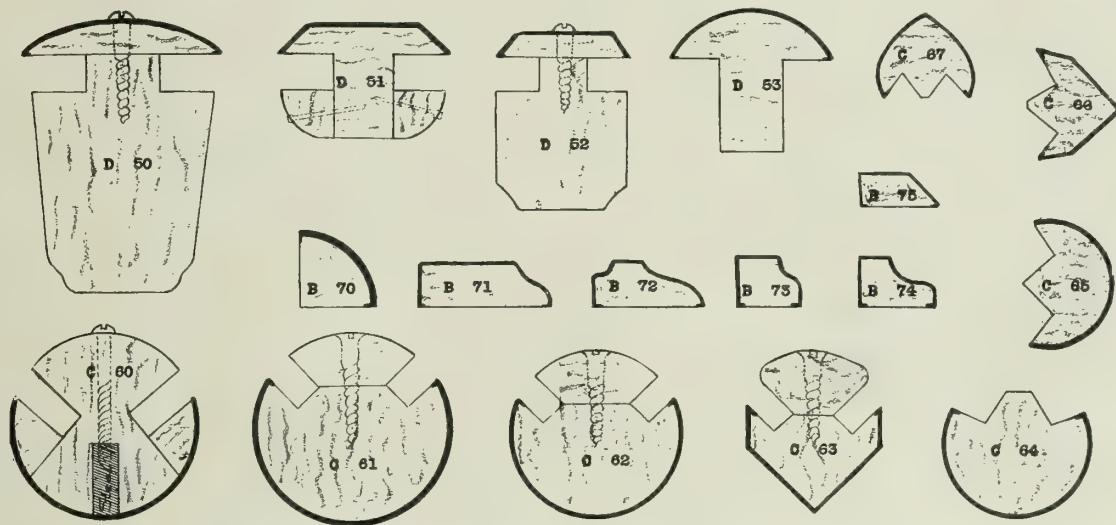
Nos. 41, 44, 47, per lineal foot \$1.00

Nos. 42, 45, 48, per lineal foot 1.25

Nos. 43, 46, 49, per lineal foot 1.50

These prices are f. o. b. Baltimore

Goods are shipped complete ready for installation, and by freight, unless otherwise ordered.



DETAILS OF METAL-COVERED WOOD MOULDINGS, HALF FULL SIZE

Corner Posts, Transom and Division Bars, and Metal-Covered Beads or Stops

CO-OPERATION.

Whatever your requirements, let us have your inquiries. It is a part of our service to cheerfully submit models, detailed blue-prints, estimates, or whatever other data you may require.

GUARANTEE.

Architects designing the "Brandenberger" Construction in their specifications are fully protected by our unconditional guarantee that it will meet the most exacting requirements.

REFERENCES.

A list of satisfied users of our installations throughout the country will be mailed upon request.

JOHN PETZ, *Pres. and Supt.*HERBERT MALOTT, *Sec'y-Treas.*

DETROIT SHOW CASE CO.

Corner Posts and Transom Bars
DETROIT, MICH.

PRODUCT.

Manufacturers of the "PETZ" PATENT CORNER POST and TRANSOM BAR for setting plate glass (John Petz, Patentee); SHOW-CASES and STORE FIXTURES.

ADAPTABILITY.

For store fronts and for all conditions where the strongest, most compact and attractive corner posts and transom bars are desired, specify the "Petz." Samples of any style or finish are sent free on request. Send for illustrations.

CONSTRUCTION.

The outer core is made of cypress with a heavy metal cover tightly drawn over and clinched at both sides. (Figs. 1, 2, 3). The inner core is reinforced by a heavy steel bar extending the full length and turned over at each end so that it may be screwed to the framework of the building.

The outer or metal-covered core may be easily removed by taking out the screws and the glass may be set from the outside.

SIZES AND FINISHES.

The "Petz" Corner Posts (Figs. 1 and 3) and Transom Bar (Fig. 2) are made in many styles and finishes, to cover every possible need of contractor or builder. Copper, brass, bronze, German silver, nickel-plated, oxidized copper, antique brass and gun-metal are the regular finishes.

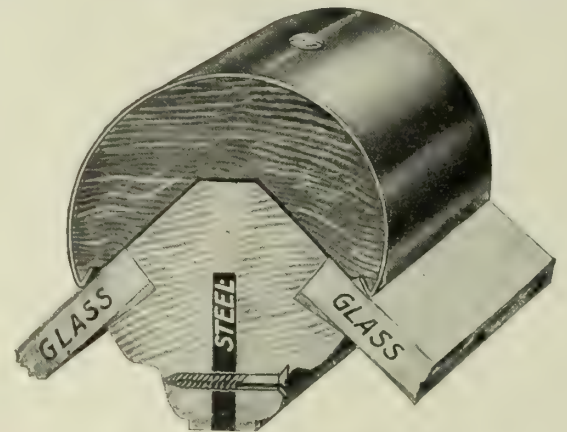


FIG. 1. NO. 32 CORNER POST

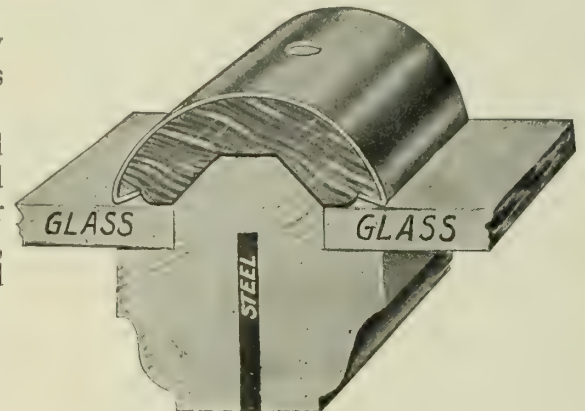


FIG. 2. NO. 34 TRANSOM BAR

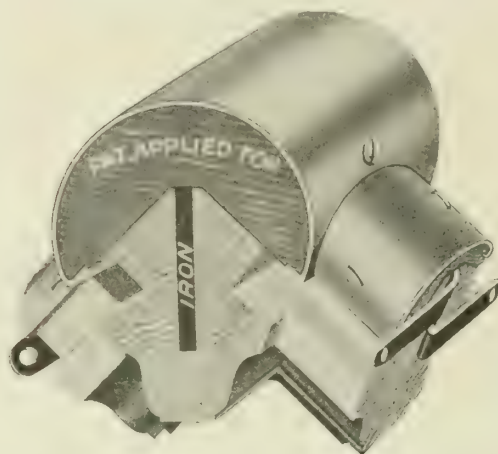


FIG. 3. NO. 32 "PETZ" PATENT CORNER POST WITH NO. 34 TRANSOM BAR COPED ON

Patented Nov. 28, 1905

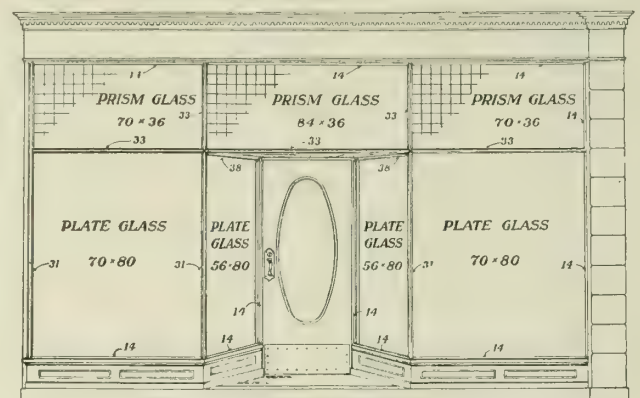


FIG. 4. STORE FRONTS SHOWING "PETZ" CORNER POST AND BARS IN ACTUAL USE

TERRITORY.

"Petz" Corner Posts and Transom Bars are handled by the following warehouses of the Pittsburg Plate Glass Co.:

New York, N. Y., Hudson and Vandam Sts.
Boston, Mass., 41-49 Sudbury St., 1 Bowker St.
Chicago, Ill., 442-452 Wabash Ave.
Cincinnati, O., Broadway and Court St.
St. Louis, Mo., Cor. 12th and St. Charles Sts.
Minneapolis, Minn., 500-510 South Third St.
Detroit, Mich., 53-59 Larned St. E.
Milwaukee, Wis., 492-494 Market St.

Baltimore, Md., 221-223 W. Pratt St.
Buffalo, N. Y., 372-378 Pearl St.
Brooklyn, N. Y., 635-637 Fulton St.
Philadelphia, Pa., Pitcairn Bldg.
Pittsburg, Pa., 101-103 Wood St.
Davenport, Ia., 410-416 Scott St.
Cleveland, O., 149-53 Seneca St.
Omaha, Neb., 1608-1612 Harney St.

St. Paul, Minn., 349-351 Minnesota St.
Atlanta, Ga., 32-34 S. Pryor St.
Kansas City, Mo., Fifth and Wyandotte Sts.
Portland, Ore., W. P. Fuller & Co.
Seattle, Wash., W. P. Fuller & Co.
Tacoma, Wash., W. P. Fuller & Co.
Spokane, Wash., W. P. Fuller & Co.
Sacramento, Cal., W. P. Fuller & Co.

J. W. COULSON & CO.

SOLE OWNERS AND MANUFACTURERS OF

The "Coulson" Patent Store Front Construction

234 North Third Street
COLUMBUS, OHIO

PRODUCT.

The "COULSON" PATENT STORE FRONT CONSTRUCTION, the only practical store front construction of its kind on the market.

DESCRIPTION.

This construction is furnished cut to required lengths. The wood-encased steel tees of the corner posts and vertical division bars are provided at either end with lugs having screw holes, by which they are secured to the base and lintel casing by screws. The wood-encased steel tees of the transom bars are provided with lugs at the ends, which are to fasten to the jamb casing and door posts in like manner. Where the transom bars intersect with the corner posts and division bars they are carefully fitted and framed into the same in our factory and provided with bolts, requiring only the setting in place and the tightening of the bolts. The glass is held in place by stops, which are nailed in, and which complete the contour of the posts and bars, and at the edges by quarter rounds. The entire outer surface is covered with metal drilled for screws, with screws to match the finish used. The metal used is 18-gauge brass, finished in polished brass, nickel-plated, oxidized copper-plated, gun-metal, or dull black, or in polished copper or polished aluminum as desired.

ATTACHMENTS.

When a canopy ceiling is used over the vestibule the return transom bars are made to support the same, as shown by the illustration, section C, on third page following. The front transom bar over the vestibule is provided with angle iron to support the canopy ceiling, which is secured to it by screws. When the canopy ceiling is used in the show windows, angle irons are provided for it as shown by Section B.

When desired, awning lugs are attached to the corner posts for the attachment of awning fixtures. See illustration.

Metal covering can also be had for the inside of the posts and bars, thus covering them entirely with metal.

ELECTRIC WIRING.

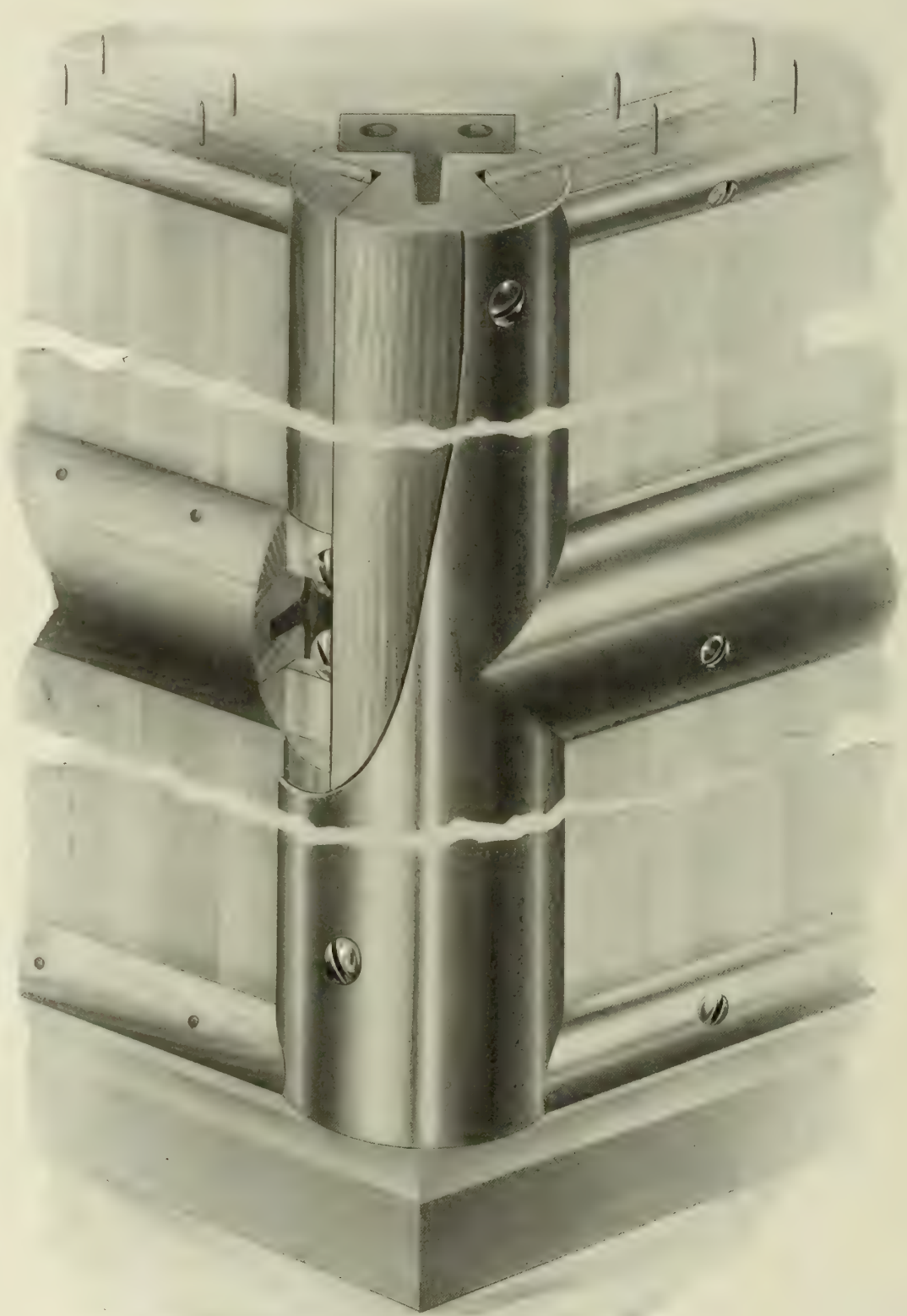
Provision can also be made for electrical lighting, the metal covering on the back being made of the size necessary to encase a metal conduit, through which electric wires run, with sockets ready to receive the bulbs, spaced as specified. This attachment is according to the rules and regulations of the National Board of Underwriters.

VENTILATING SYSTEM.

There is now ready to place on the market the "Coulson" Ventilating System, which consists of ventilating sill, transom bars, and moulds to provide for ventilating show windows. Write for circular.



ONE OF THE STORE FRONTS IN WHICH THE "COULSON" CONSTRUCTION IS USED

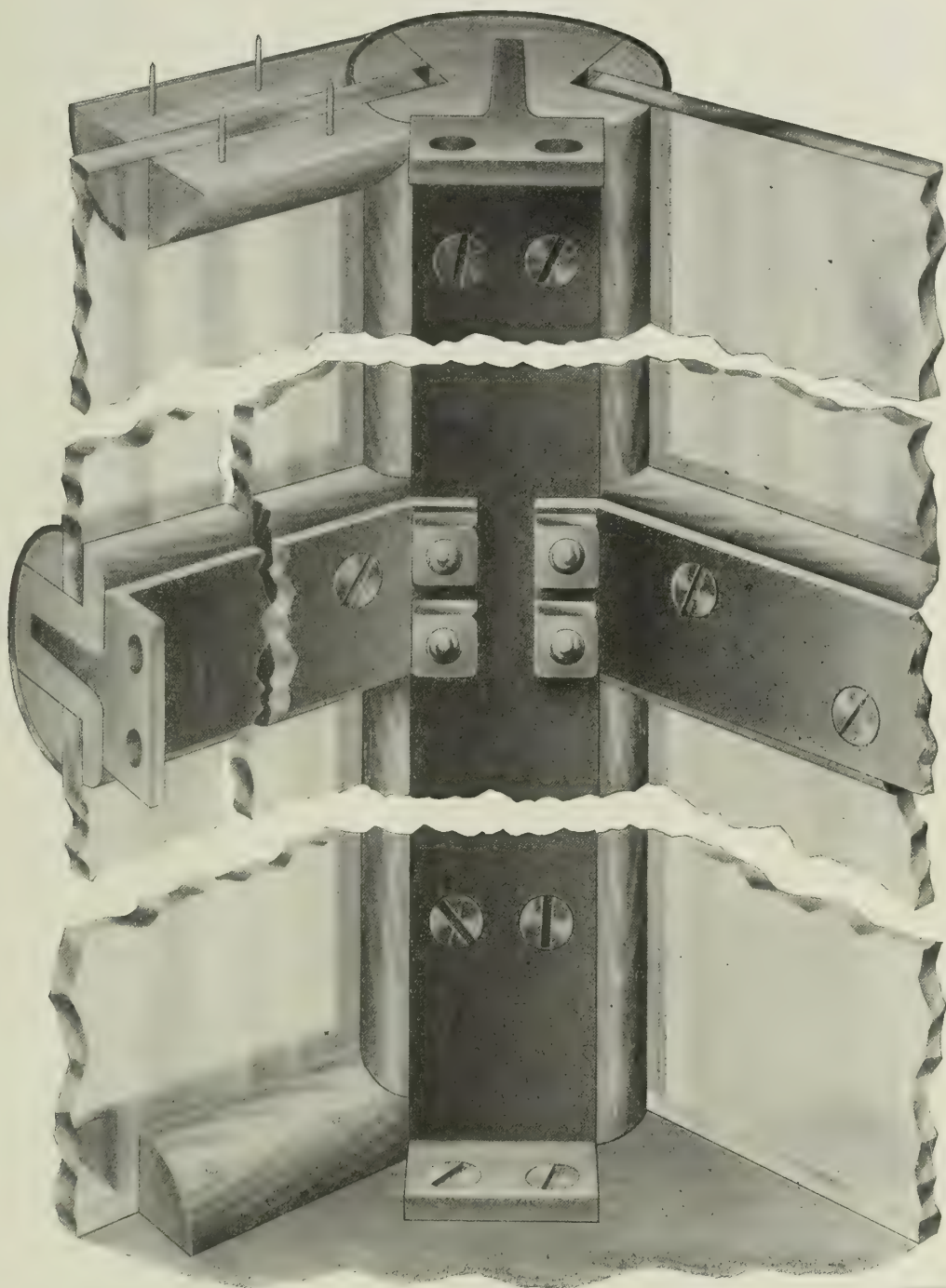


FULL-SIZED VIEW OF NO. 13 CORNER POST FROM FRONT

SPECIAL
FEATURES.

With the "Coulson" Patent Construction all glass is set in place from the outside, which not only saves time and expense, but should a light of glass be broken it is not necessary to remove any of the window fixtures or displays nor even to enter into the show window when replacing it. This feature recommends it to the plate glass insurance companies; they charge no extra rate as they do on glass set in other patent devices, but instead recommend its use.

Continued on next page



FULL-SIZED VIEW OF NO. 13 CORNER POST FROM REAR

The glass does not come in contact with the metal, which gives it the advantage of all-wood setting, and at the same time the greatest strength with the least obstruction.

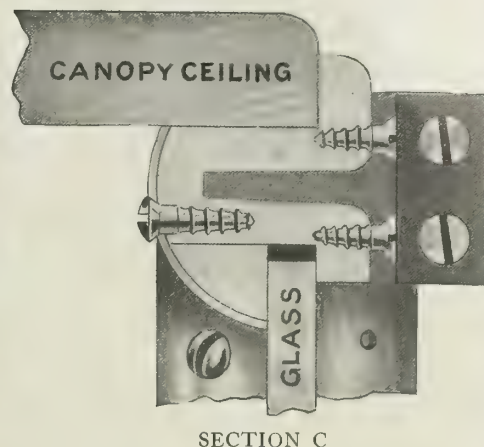
With it is obtained a neat appearing, substantial and durable store front, and the most practical setting for the glass.

If a first-class store front is wanted, specify "The 'Coulson' Patent Store Front Construction, sizes as shown on the drawings or as recommended by the manufacturers." Catalogue "E-9" gives the full-sized sections of the different sizes and shapes, and enters into a thorough description of the construction. This will be sent to any address upon receipt of request.

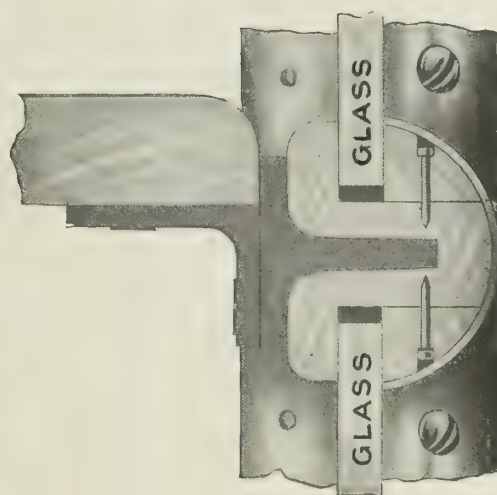
SPECIFICATIONS.

PRICES.

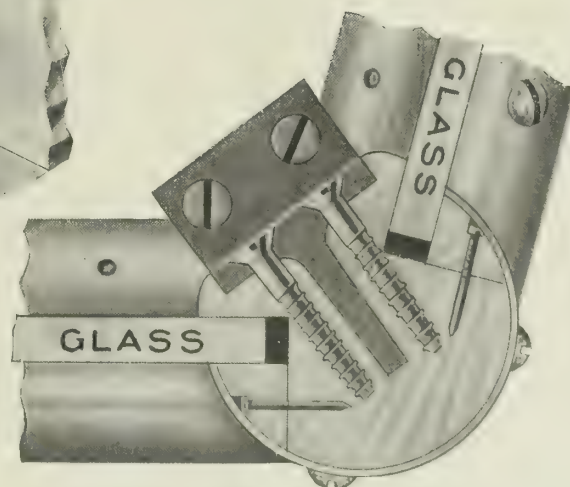
Estimates and detail drawings also furnished when desired.



SECTION C



SECTION B

SECTION A
NO. 13 CORNER POST

NOAH FELLS

"Fells" Protective Corners

207 East Fifth Street

NEW YORK, N. Y.

PRODUCTS.

Manufacturer and Patentee of "FELLS" PROTECTIVE CORNERS, "CENTURY" CORNER BAR, CLIPS for MITERED EDGES, METAL BARS, DRIP SILLS, and TRANSOM BARS for Store-Front Construction.

"FELLS CENTURY" BAR.

"Fells Century" Bar (Fig. 1) is neat and practical in every respect and very strong. It is made in two widths: No. 1 measures $\frac{3}{4}$ " full on each side, 16-gauge star brand copper, and will cover $\frac{1}{2}$ " of glass. No. 1 A measures 1" full on each side, is of same metal as $\frac{3}{4}$ " bar, and will cover $\frac{3}{4}$ " of glass. It is practicable in setting glass to bed bars in putty.

Both bars have solid oak backs, detachable foot plates, and screws brazed on bar every 10" apart. They have a $\frac{1}{4}$ " x $\frac{3}{8}$ " cold-rolled steel rod brazed on back in such a practical manner as not to soften copper.

"FELLS CENTURY" CENTER BAR.

The "Century" Center Bar (Fig. 2) measures $1\frac{1}{4}$ " over all, has a $\frac{1}{4}$ " x 1" cold-rolled steel rod brazed on back, a solid brass foot and head plate and is arranged to fit any frame.

The above bars can be had in any angle.

"FELLS" PROTECTIVE CORNER.

The Protective Corner Bar No. 2 is the smallest and most practical bar of its kind. It measures $\frac{1}{2}$ " each side, is made in 17-gauge star brand copper and set with cement putty and clips, making it doubly strong. The clips are set in suitable distances apart. When set it has a very neat appearance and can be had in any finish desired.

The Small Protective Corner Bar No. 1 is the very smallest yet most practical bar of its kind on the market. It is a half inch half-round copper-covered bar, and is set with clips at suitable distances, making it very strong in every respect. It is set in cement putty, making it dust and water proof. It can be had in any finish desired.

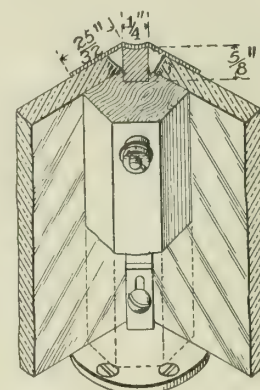


FIG. 1. "FELLS CENTURY" BAR NO. 1

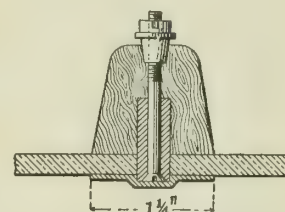


FIG. 2. "FELLS CENTURY" CENTER BAR

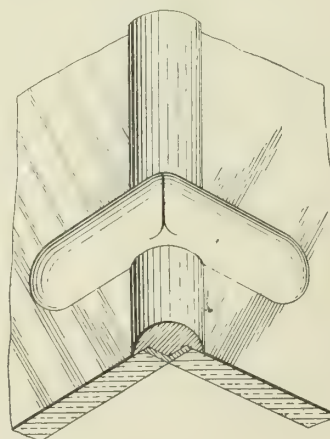


FIG. 3. "FELLS" PROTECTIVE CORNER BAR NO. 1

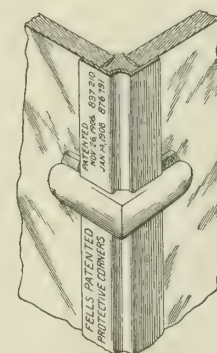


FIG. 4. "FELLS" PROTECTIVE CORNER BAR NO. 2

“ FELLS ”
SELF-
ADJUSTING
CLIPS.

The “ Fells ” Self-Adjusting Clip (Patented), (Fig. 5) is the most practical, strongest and neatest clip of its kind, and adjusts itself automatically by sliding to one side, so as to force the largest plate inward, protecting the notched light. It has also a recess at the front of the inside part of clip so as not to injure the mitered edges.

The “Fells ” Dividing Clip (Fig. 6) is the strongest and neatest of its kind. There is no independent movement, as the clip is made in one piece.

“ FELLS ”
COPPER-
COVERED
SILLS.

The “ Fells ” Copper-Covered Transom Sill, Bottom Sill and Side and Top Rail are as neat and practical as can be had. The Transom Bar (Fig. 8) measures 2" x 2". The Bottom Sill (Fig. 9) measures 2 $\frac{3}{4}$ " x 2". The Top and Side Rail (Fig. 7) measures 2 $\frac{3}{4}$ " x 2". These sills are covered with 16-ounce star brand copper and seasoned white pine wood.

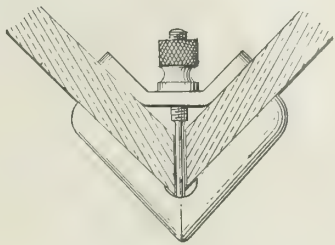


FIG. 5. “FELLS” SELF-ADJUSTING CLIP

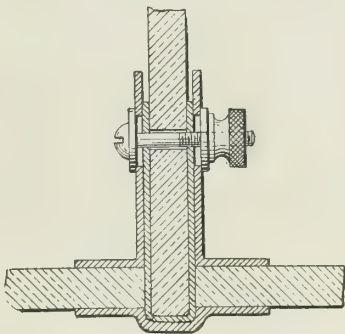


FIG. 6. “FELLS” DIVIDING CLIP

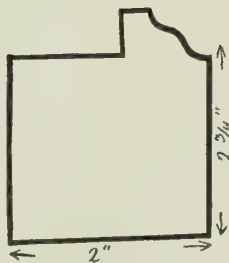


FIG. 7. “FELLS” TOP AND SIDE RAIL

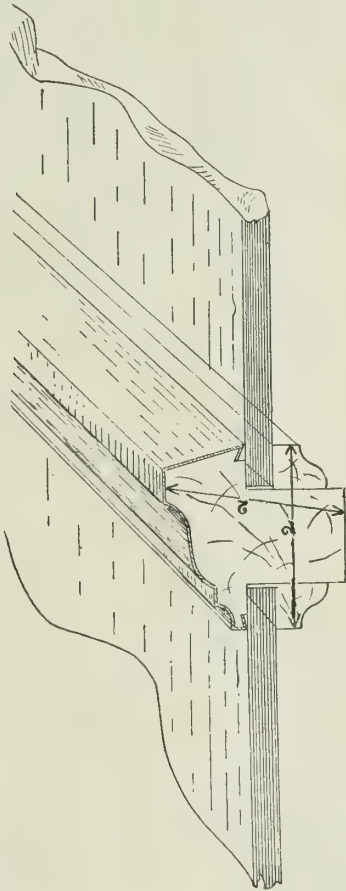


FIG. 8. “FELLS” TRANSOM BAR

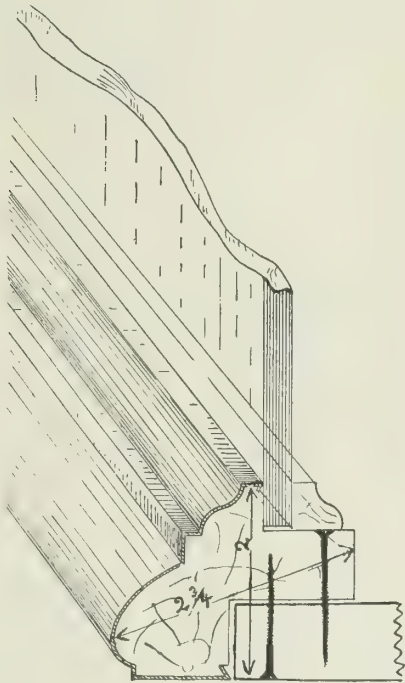


FIG. 9. “FELLS” BOTTOM SILL

KAWNEER MANUFACTURING CO.

Metal Store Fronts and Architectural Metal Mouldings

HOME OFFICE
152 Factory Street
NILES, MICH.

BRANCH OFFICES

CHICAGO, ILL.
ST. LOUIS, MO.
PITTSBURG, PA.
SPOKANE, WASH.
LONDON, ONT.
DENVER, COLO.

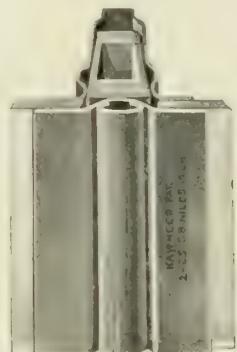
NEW YORK, N. Y.
PORTLAND, ORE.
ATLANTA, GA.
MILWAUKEE, WIS.
INDIANAPOLIS, IND.
LINCOLN, NEB.

KANSAS CITY, MO.
PHILADELPHIA, PA.
DETROIT, MICH.
SIOUX CITY, IOWA
VANCOUVER, B. C.
CINCINNATI, OHIO

MINNEAPOLIS, MINN.
SAN FRANCISCO, CAL.
SYRACUSE, N. Y.
HOUSTON, TEX.
SEATTLE, WASH.
LOS ANGELES, CAL.

PRODUCTS.

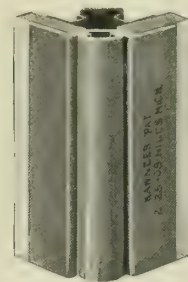
Manufacturers of "KAWNEER" SYSTEM of STORE FRONTS; "KAWNEER" ARCHITECTURAL METAL MOULDINGS.



NO. 14-B. DIVISION
BAR
Two-thirds Size



"KAWNEER" CONSTRUCTION INSTALLED



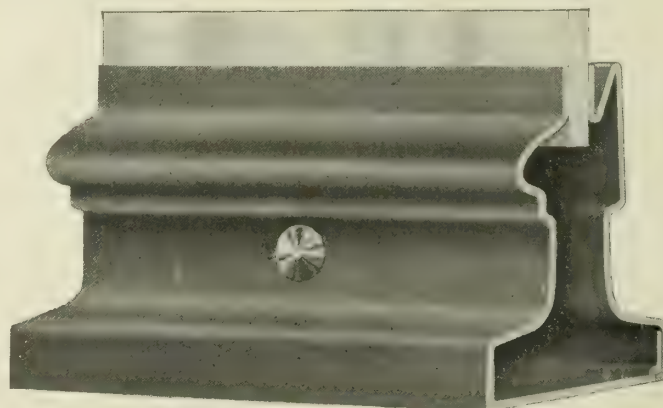
NO. 5. CORNER
BAR
Two-thirds Size

THE "KAWNEER" SYSTEM OF STORE FRONTS.

The half-tone reproductions shown on this page together with the sectional details on the following two pages, set forth the "Kawneer" System of Store Fronts. In addition many architectural metal mouldings, as well as special mouldings made to the particular specifications of the architect, can be furnished promptly. An Engineering and Drafting Department is maintained at the home office to give complete information, accompanied by drawings, to architects wherever special usages of "Kawneer" construction are required.



NO. 30. METAL SASH
Two-thirds Size



NO. 50. METAL SASH
One and one-fourth Size

FORM OF
SPECIFICA-
TION.
COPPER
WORK IN
MOULDINGS,
STORE
FRONTS, ETC.

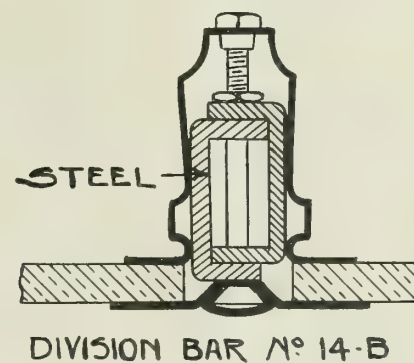
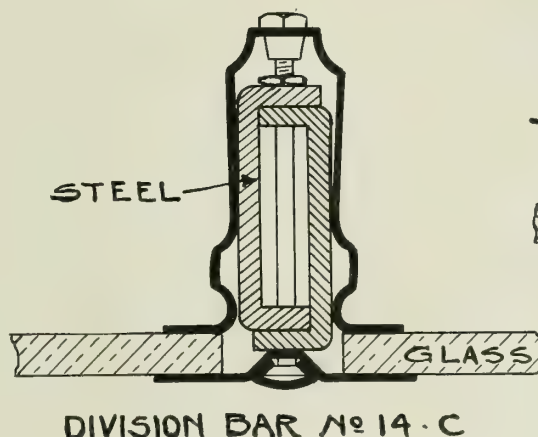
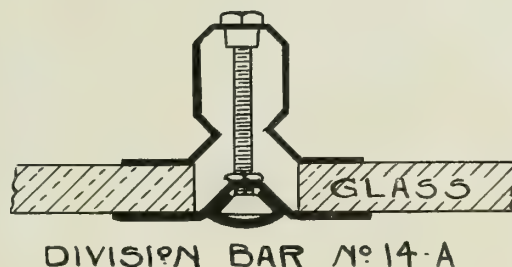
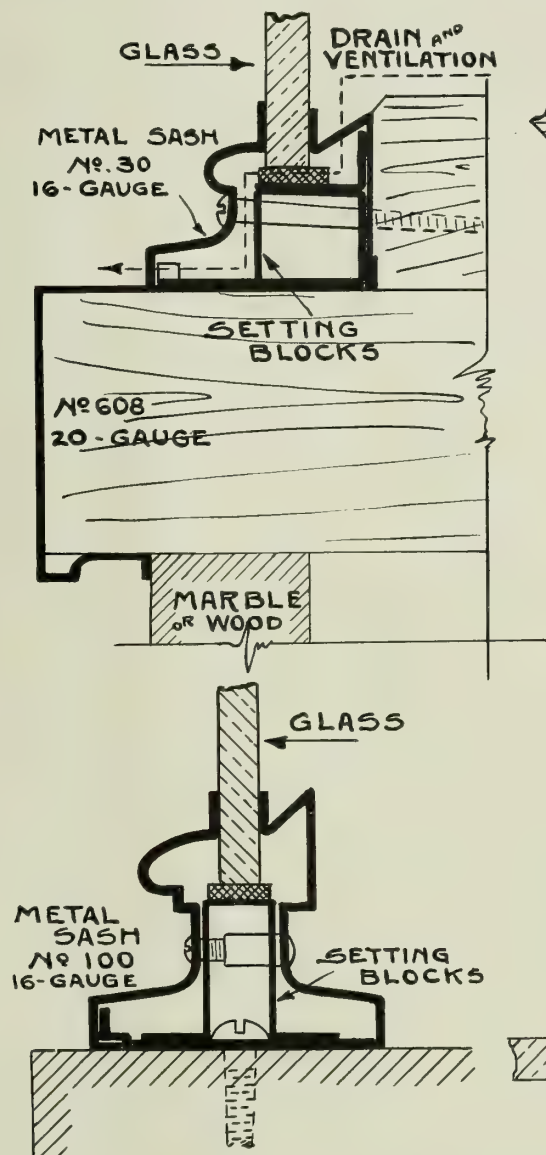
"All the material used under this work shall be the 'KAWNEER' MANUFACTURING Co.'s cold-drawn copper, brass, bronze, or aluminum (state kind of finish) stock. All the angles are to be drawn sharp and true, the member straight and in alignment. All the exposed surface shall be cleaned, buffed, and lacquered. The various members shall be drawn and finished the full length of the piece and no joints shall be allowed except extra long pieces and where mitered. Joints of metal sash shall be covered with neat caps made of same metal and to conform with the moulding.

"All screws and escutcheon nails necessary for the complete installation of this work shall be furnished by the KAWNEER MANUFACTURING Co.

"All the various miters shall be cut at the factory to as near the correct length as possible. Any additional cutting shall be done by those who erect same. Corner bars shall be made to correct angle as per blue prints.

"All the wood backing in the carpenter work shall be constructed with straight, clear timber. The work shall be plumb and true in every particular. The under surface shall receive a coat of paint before being put in place, and all shall be protected from rain, etc., until the metal is installed and the work completed.

"Estimates for the 'Kawneer' work will be furnished the general contractor by the KAWNEER MANUFACTURING Co. at (Giving nearest city in list on first page.)



SCALE - FULL - SIZE

DETAILS OF "KAWNEER" SYSTEM OF STORE FRONTS

The "Kawneer" System of Store Fronts, shown above and on following page, in sectional details, is a narrow, inconspicuous all-metal construction designed to give the greatest possible space for the window display. The glass is held rigidly with a spring cushion grip both by the metal sash and corner and division bars. This insures the safest possible setting for the glass; one that provides for expansion and contraction, vibrations from wind, and inequalities in the thickness. All glass is set from the outside.

All exposed metal is either copper, brass, bronze, or aluminum—pure lake copper being used for all oxidized or antique copper finishes as well as for the polished copper finish. This gives entire freedom from rust, rot or warp, and obviates any necessity of painting the store front.

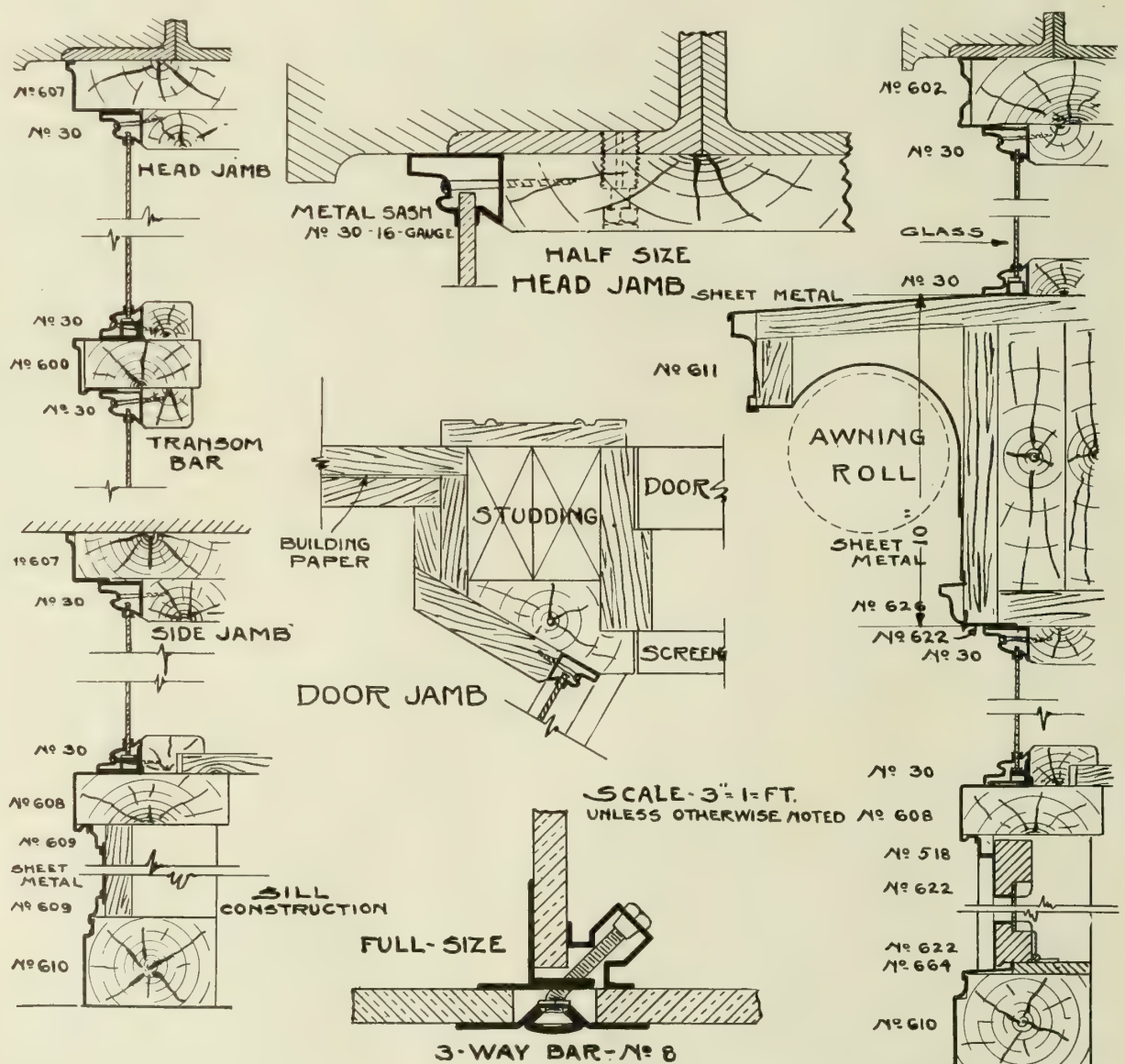
Metal Sash No. 30 and No. 100 are provided with a ventilation system that causes a current of outside air to strike directly against the inner surface of the glass. This ventilation, with properly backed windows, is the most efficient means of preventing frosted windows in cold weather. Drainage for the glass is provided also. Sash No. 30 sets directly against a brick, iron, concrete, or wood jamb and sill. A backing, either of wood or an angle iron, $1\frac{1}{8}$ " high, is used in which to fasten the screws. Sash No. 100 is self-supporting and requires no wood or iron backing.

Still another sash (No. 50) is manufactured exactly similar to No. 100 except that it provides for setting the glass from the inside. This sash is for use in the second or third floor display windows.

All inside pieces or springs are drawn from the same metal (always in the polished finish) as the face pieces, except in the case of bronze, where copper springs are used.

FINISHES.

"Kawneer" material is manufactured in the following finishes: Bronze, Aluminum, Gun-Metal, or Black Oxidized Copper, Spotted Oxidized Copper, Statuary Copper, Dull Brass, Antique Brass, Antique or Old Copper.



DETAILS OF "KAWNEER" SYSTEM OF STORE FRONTS

JOHN PHILLIPS & COMPANY, LIMITED

MANUFACTURERS OF

Store-Front Bars and Show-Cases

51-53 East Fort Street

DETROIT, MICH.

ESTABLISHED 1864

PRODUCTS.

We are manufacturers of "PHILLIPS" IMPROVED STORE-FRONT BARS for new or remodeled store fronts; METAL-COVERED MOULDINGS; and the celebrated "SILENT SALESMAN" SHOW-CASES.

CONSTRUCTION.

The accompanying illustrations indicate the salient construction features of our bars. We call particular attention to the fact that no screws are used from the outside, thus making a neater and much more durable bar than any other now on the market.

The reinforcement of half-round iron makes it very rigid.

The glazing is usually done from the outside.

In consequence of their structure our bars are light, yet strong, neat in appearance, and durable.

FINISHES.

We make these bars with a great variety of finishes, such as German silver, bronze, copper, brass, oxidized copper, nickel-plate, gun-metal, antique brass, etc.

MOULDINGS.

Besides the patented Sash Bar here shown, we make a very complete line of plain (not reinforced) Metal-Covered Mouldings for the embellishment of store fronts.

ADAPTABILITY.

We make the most complete line of Metal Store-Front Sash and Mouldings now on the market. Our large variety of shapes and sizes makes it possible for us to meet every requirement of store-front construction.

INSTRUCTIONS FOR ORDERS.

We supply mouldings and bars in any length desired, the builder usually doing his own mitering and fitting, which is a very easy matter. We can, however, miter the joints, if provided with plans and accurate measurements, for which service we make an additional charge. When transom bars are to be coped to the upright; always specify the angle at which the glass is to be set.

PRICES AND TERRITORY.

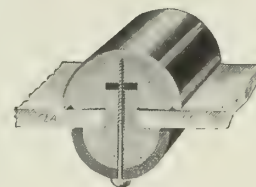
The prices of our product will be supplied, together with our catalogue, on request.

"Phillips" Bars are sold by all plate glass dealers throughout the United States and Canada.

CATALOGUE.

Write for our illustrated Catalogue, which will be sent upon request.

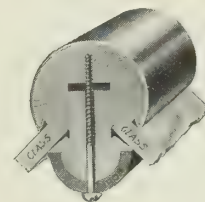
Silent Salesman
TRADE MARK



DIVISION BAR

Made in two sizes

No. 10. R. 2" wide
" 7. R. 1 1/8" wide

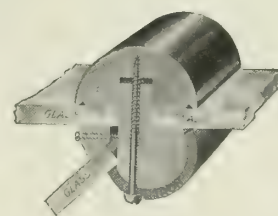


CORNER POST

Made in three sizes

No. 8. R. 1 1/2" wide
" 12. R. 2" wide
" 13. R. 2 1/2" wide

(Patented March 10, 1906)



NO. 203. DIVISION BAR

Expressly designed for fronts where prism glass is used over entrances



BASE AND CAP

Made in three sizes to fit
Nos. 8. R., 12. R., 13. R.

NATIONAL STORE-FRONT CO.

208-210 First Avenue
PITTSBURGH, PA.

PRODUCTS.

STORE FRONTS, DISPLAY CASES, VENTILATORS, ELECTRIC SIGNS.

DESCRIPTION.

The National Store-Front Construction (Patented) consists of several distinctive features which give it mechanical excellence and beauty of appearance. We build store fronts that are handsome, strong, durable, dust-tight, weather-tight, easy to erect or repair, and moderate in price.

ELECTRIC
CONDUIT
BAR.

With these advantages we combine our unique feature of an electric wire conduit and window bar all in one. The conduit is all metal and has been approved by the most exacting experts and insurance underwriters. The wiring can be removed or outlets altered without trouble, the conduit being formed by the inside metallic jacket and the angle or convex iron reinforcement of the bars. The National is the only store front on the market having this inside metal casing of the bars. We wire the conduits and put on the sockets, to order, this electrical feature being optional with the customer.

WOOD
SETTING
FOR GLASS.

A principal point of our construction is setting the glass in wood. This makes a soft cushion and even tension for the glass at all edges and thereby secures for it the lowest insurance rates. All glass is set from the outside.

REINFORCE-
MENT,
TUBING,
JOINING.

We use an angle iron, or convex steel bar reinforcement as being the best construction possible. All our tubing is drawn at our own works, thus insuring quality of work and speed in shipment. It is all of No. 18-gauge metal in polished brass, or in polished, natural, or oxidized copper, or in nickel-plated brass. Aluminum and German silver bars are furnished at special prices. The joining of corner posts, transoms, heads, and division bars is the most simple and practical known to the trade. Every order is joined and mitered in our shop and sent out ready to set up. The nipple and screw draw the two metal jackets together so as to hug the glass tightly.

The illustrations show two styles of venti-

STYLES, SILLS,
FRAME.

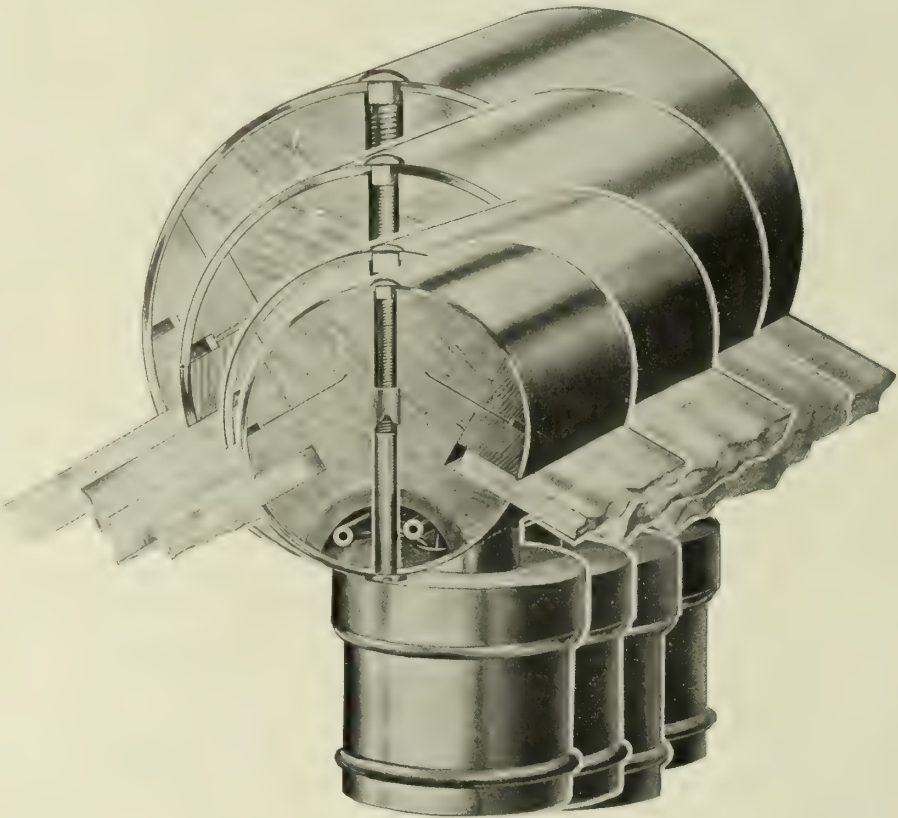


FIG. 1. NOS. 1 3, 5, 7, CORNER POST (ROUND STYLE)
PRICES OF CORNER POSTS, TRANSOM OR DIVISION BARS, VENTILATORS, ETC.

No. 0 Quarter Round.....per ft. \$0.25	No. 7 Corner Post per ft. \$2.80
No. 1 Corner Post per ft. 2.00	No. 8 Division Bar per ft. 1.40
No. 2 Transom or Division Bar per ft. 1.60	No. 9 Corner Post per ft. 1.40
No. 3 Corner Post per ft. 2.00	No. 10 Division Bar per ft. 2.00
No. 4 Transom or Division Bar per ft. 1.80	No. 11 Corner Post per ft. 2.00
No. 5 Corner Post per ft. 2.25	No. 12 Division Bar per ft. 2.50
No. 6 Transom or Division Bar per ft. 2.80	No. 13 Corner Post per ft. 2.25
	No. 15 Corner Post per ft. 2.80
	No. 16 Sill and Ventilator...per ft. 1.40
	No. 17 Ventilator per ft. .80

All prices f. o. b. Pittsburgh, Pa. The above prices do not include the electric light socket. Sockets will be attached to inside trim at 50 cents each at such intervals as may be ordered.

Discounts may be had from any glass jobber in the United States, or from the Company direct.

The construction will be wired complete before shipment, if desired, at reasonable cost.

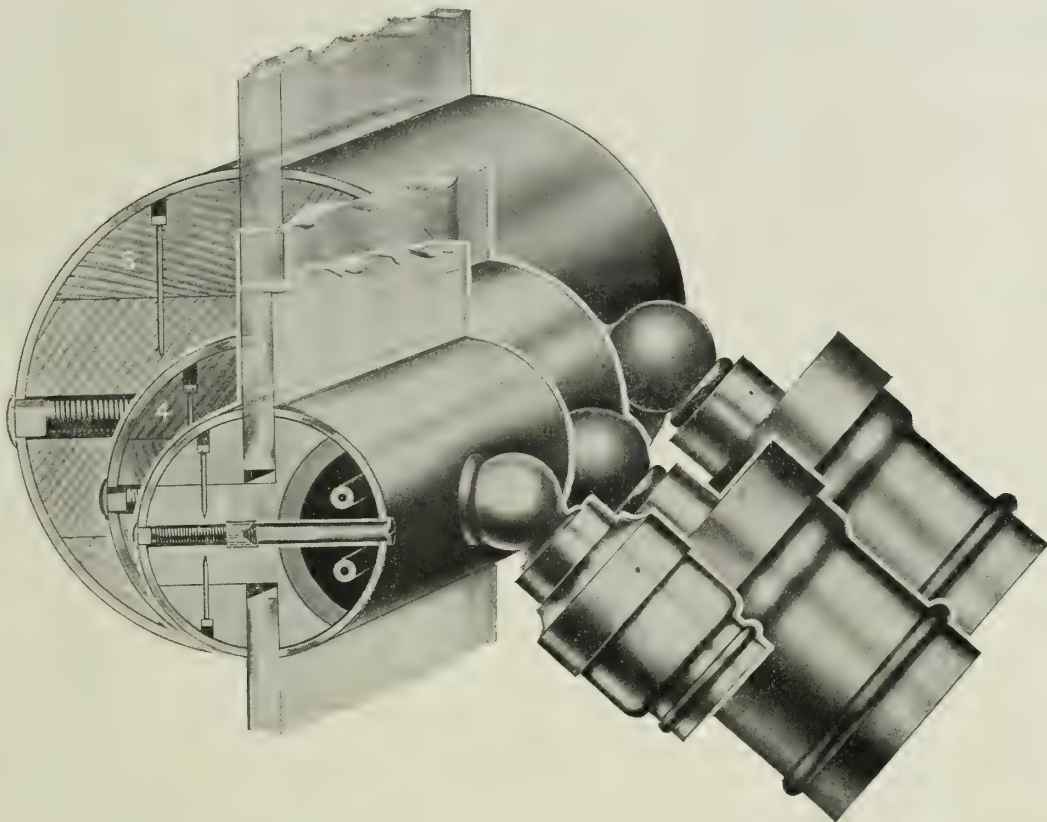


FIG. 3. NOS. 2, 4, 6 TRANSOM AND DIVISION BAR (ROUND STYLE)

lating sills, also two types of bars, round and square. The sill of Fig. 6 style is not covered with metal and is usually furnished by the carpenter.

Where these sill-sections are used at the sides and head and at the top and bottom of a transom, as the general frame of a show window, any style metal or wood transom can be employed, of sufficient width and suitably moulded on the face.

CO-OPERATIVE
SERVICE.

We are at all times glad to give information and to send our complete Trade Catalogue and special circulars.

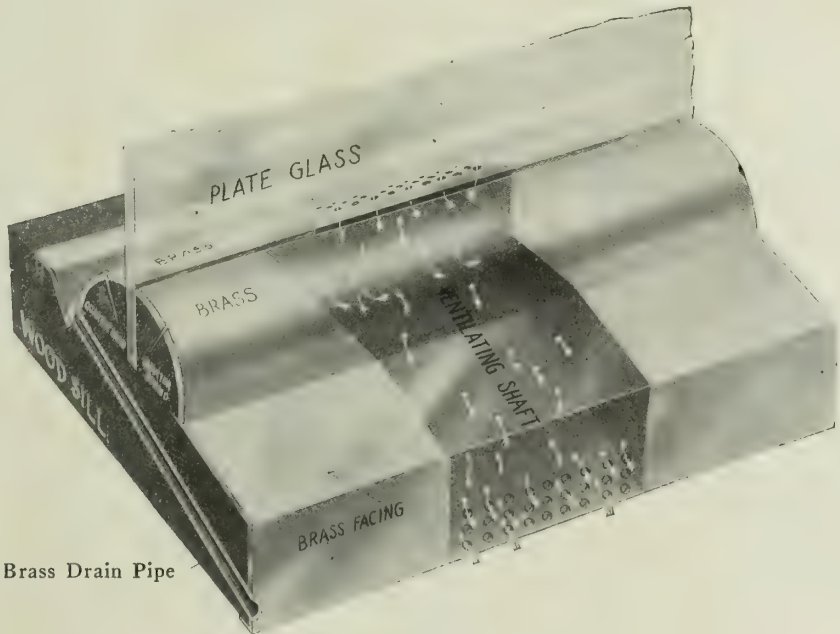


FIG. 5. NO. 16, METAL-COVERED VENTILATING SILL

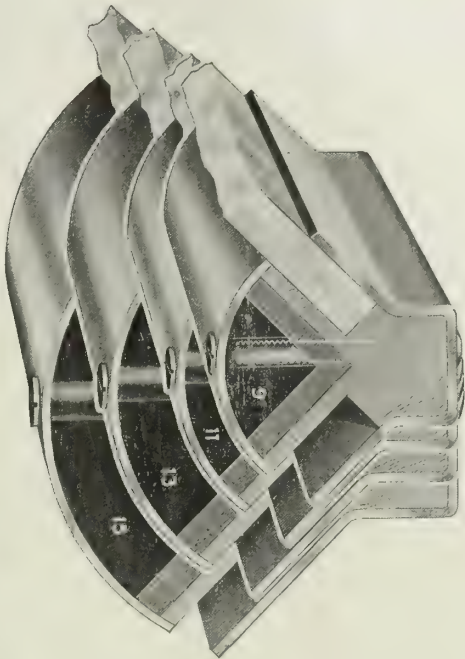


FIG. 2. NOS. 9, 11, 13, 15 CORNER POST (SQUARE STYLE)

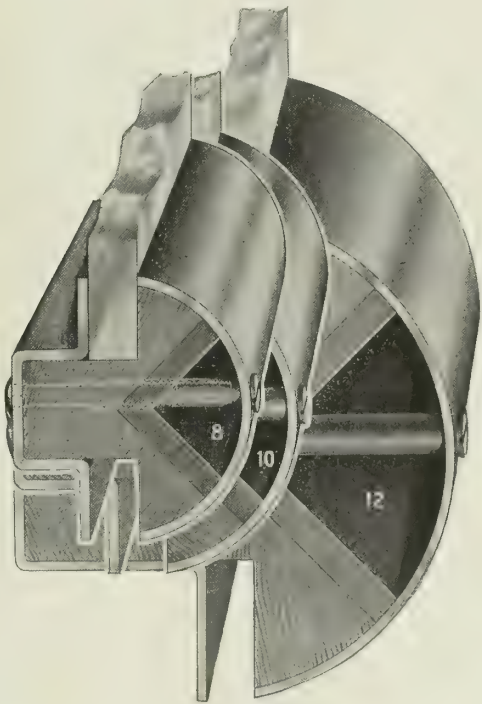


FIG. 4. NOS. 8, 10, 12 TRANSOM AND DIVISION BAR (SQUARE STYLE)

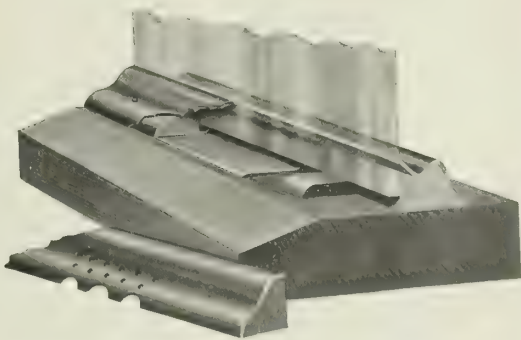


FIG. 6. NO. 17, WOOD SILL WITH VENT IN BAR

THE THORNE HOLD-FAST METAL BAR CO.

INCORPORATED

Solid Copper Store Front Construction Patented by Charles S. Thorne, July 3, 1907
TROY, N. Y.

PRODUCTS.

We are the sole owners and manufacturers of the "THORNE HOLD-FAST" PATENT VENTILATING CORNER, TRANSOM, JAMB and DIVIDING BARS; also, SOLID COPPER PATENT DRIP SILLS, for ALL-METAL STORE FRONT CONSTRUCTION.

"THORNE HOLD-FAST" PATENT VENTILATING CORNER.

The "Thorne Hold-Fast" Ventilating Corner (Fig. 1) is a patented metal bar designed to replace the old-style and unsatisfactory wooden corner on store-front windows.

It is made in plain solid copper and can be had in the following finishes; Polished Copper, Gun-Metal, Nickel Plated, Oxidized Copper, Bronze, Brass, or Old Copper.

This bar can be furnished in any angle required for a show window. It is made with 1" face, in No. 18 B. & S. Gauge Copper, and weighs $\frac{1}{2}$ pound to the lineal foot, having a full $\frac{5}{8}$ " rabbett for the glass; also, with $1\frac{1}{4}$ " face having a glass rabbett $\frac{3}{4}$ " deep, for use where extra long lengths are required and to resist heavy wind pressure.

It is a strong, simple and complete bar and has the advantage of requiring the smallest possible face for holding two lights of glass of varying thickness firmly in place, making a water-tight joint; and, in addition, has the merit of providing sufficient ventilation, which is a very desirable feature in the show window.

Store fronts fitted with the "Thorne Hold-Fast" Corner Bar are insured by all Accidental Insurance Companies at the same rate as for the ordinary old-style wooden store fronts.

PATENT SOLID COPPER DRIP SILL.

The "Thorne" Solid Copper Patent Heavy Drip Sill (Fig. 2), used in connection with the "Hold-Fast" Corner, makes an ideal store front construction.

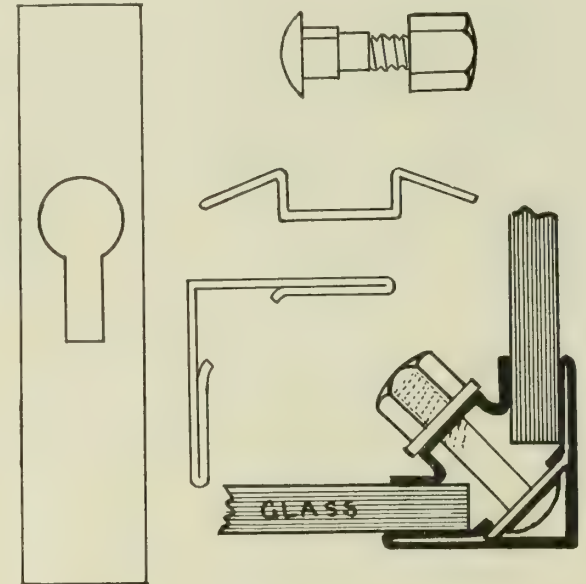


FIG. 1. VENTILATING CORNER
Full-sized detail

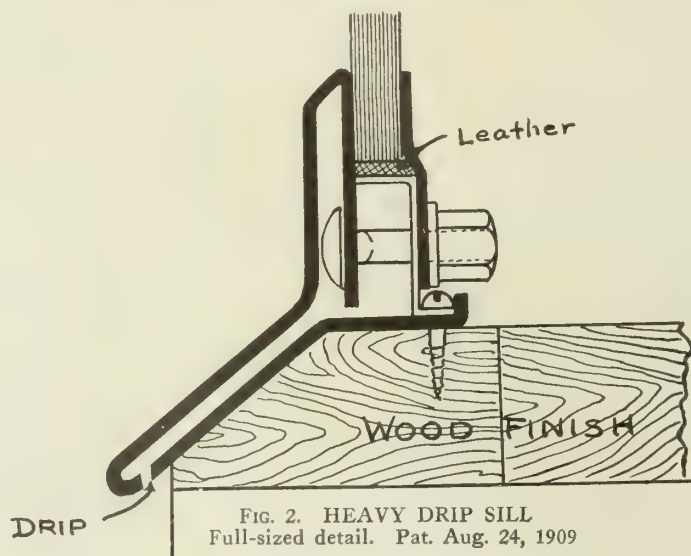


FIG. 2. HEAVY DRIP SILL
Full-sized detail. Pat. Aug. 24, 1909

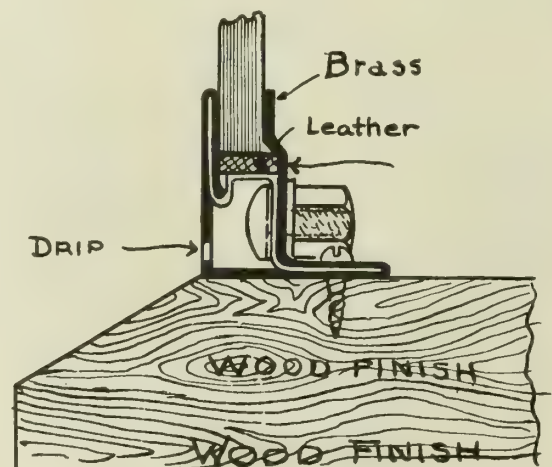


FIG. 3. LIGHT DRIP SILL
Full-sized detail

The Sill is made of solid copper and weighs $1\frac{3}{4}$ pounds to the lineal foot; it prevents the rotting out of the wood base and provides proper ventilation. It is mitered to fit the angle required, and is furnished in the same finishes as the Corner.

LIGHT
DRIP SILL.

This Sill (Fig. 3) is furnished when the Heavy Drip Sill is found to be too expensive, and it can be used as a Jamb Bar.

JAMB BAR.

The Corner Bar is used as a Jamb Bar, as illustrated in Fig. 4.

TRANSOM
BAR.

The Transom Bar (Fig. 6), when used in connection with the Corner, provides the smallest possible metal face consistent with strength and durability. It has a 2" metal face and up to 8 feet in length is furnished with wood back 1" wide and $1\frac{1}{2}$ " deep; on lengths over 8 feet, it is made with back 1" wide and 2" deep, reinforced with T iron $1\frac{1}{2}$ " x $\frac{5}{16}$ ".

DIVIDING
BAR.

The Dividing Bar (Fig. 7) is made with a $1\frac{1}{2}$ " face, and provides a neat and strong construction for this class of work. Up to 6 feet long it is made with a heavy brass stop specially adapted for holding two lights of glass of different thickness firmly in place. Over 6 feet long, it is reinforced with T iron $\frac{5}{16}$ " wide x $1\frac{1}{2}$ " deep, having brass stops to hold the glass in place.

PRICES.

Price - list, discounts and blue-prints, with full-sized details mailed on application.

ESTIMATES.

Estimates furnished on receipt of plans and specifications.

TERRITORY.

"Thorne" Bars are sold by all Plate Glass Jobbers throughout the United States and Canada.

Full-sized models furnished on application.

All Bars are cut to order, mitered and fitted before being shipped, and are ready to be installed when received.

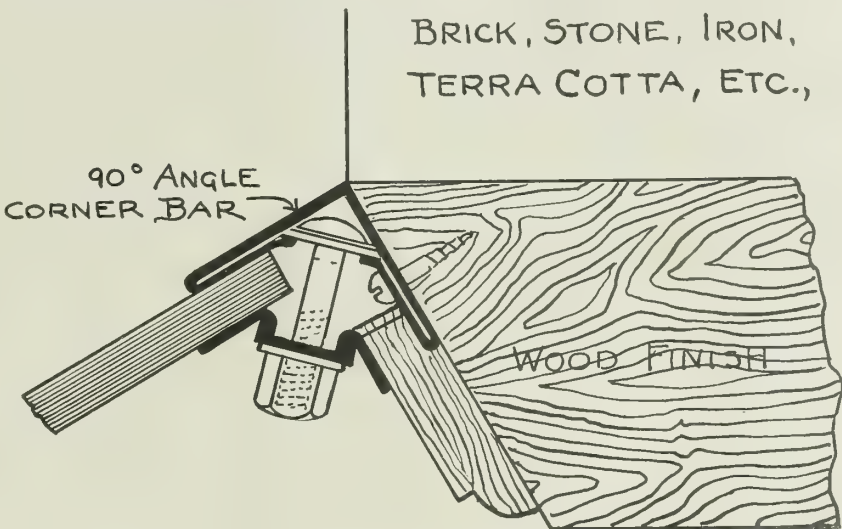


FIG. 4. SIDE JAMB BAR
Full-sized detail

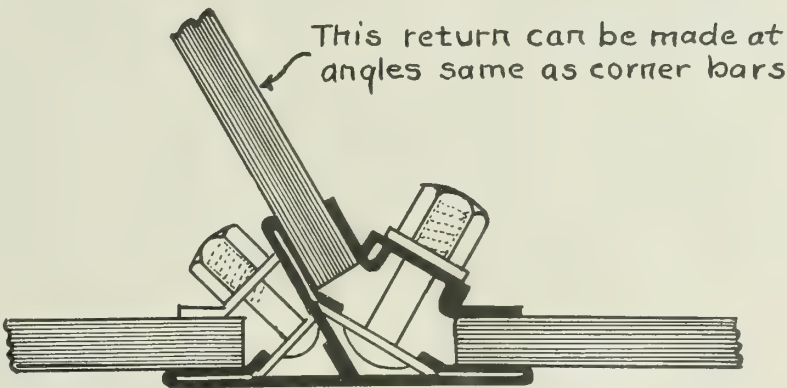


FIG. 5. THREE-WAY BAR
Full-sized detail

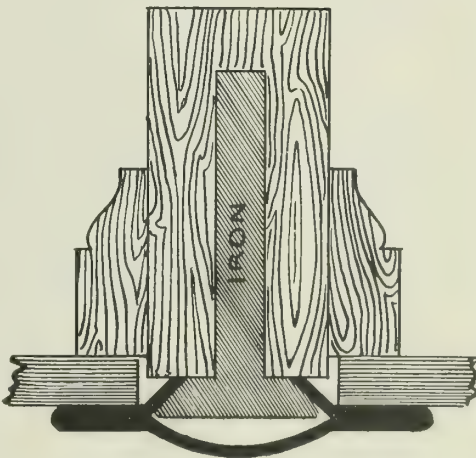


FIG. 6. TRANSOM BAR

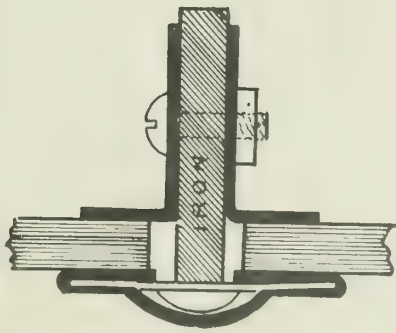


FIG. 7. DIVIDING BAR

Full-sized details

COLONIAL COLUMN MANUFACTURING CO.

MANUFACTURERS OF

"Triumph Lock Joint" Columns and Composition Capitals

206 Broadway

NEW YORK, N. Y.

TELEPHONE, 5692 CORTLANDT

PRODUCTS.

Our products consist of "TRIUMPH LOCK JOINT" COLUMNS and PILASTERS; BALUSTERS and WEATHER-PROOF COMPOSITION CAPITALS.

"TRIUMPH LOCK JOINT."

The "Triumph Lock Joint" is a perfect interlocking device. The staves are absolutely locked and can not possibly come apart (Fig. 1).

COLUMNS AND PILASTERS TO ARCHITECTS' DETAILS.

One mill is constantly employed at detail work, and we are prepared to execute it in the shortest possible time. We make columns in any desired wood, which is thoroughly kiln-dried before cutting the staves, from 6 to 40 inches in diameter, in any length.

STOCK COLUMNS.

Our stock columns are made in White Pine, which has proved to be the most durable for outside work. We make a specialty of the four designs, No. 70, No. 80, No. 90, and No. 100, in 1½-inch stock (Fig. 2).

PRIMING AND CRATING.

All our work is primed with weather-proof paint, unless otherwise ordered; they are also well crated, free of charge.

COMPOSITION CAPITALS.

We sell Weather-Proof Composition Capitals of all orders, and will submit cuts of various styles for your selection.

BALUSTERS.

Stock balusters in white pine are kept in stock for immediate shipment. Special estimates will be given for hardwood and detail balusters.

INSTRUCTIONS ON ESTIMATES AND ORDERS.

In asking for estimates or in giving orders, give full information as to the diameter of the columns at base and neck, exact length over all, and thickness of material to be used in the staves.

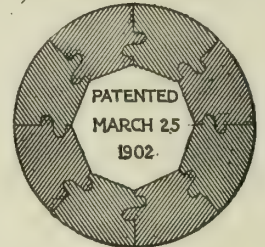


FIG. 1. CROSS-SECTION OF "TRIUMPH LOCK JOINT"

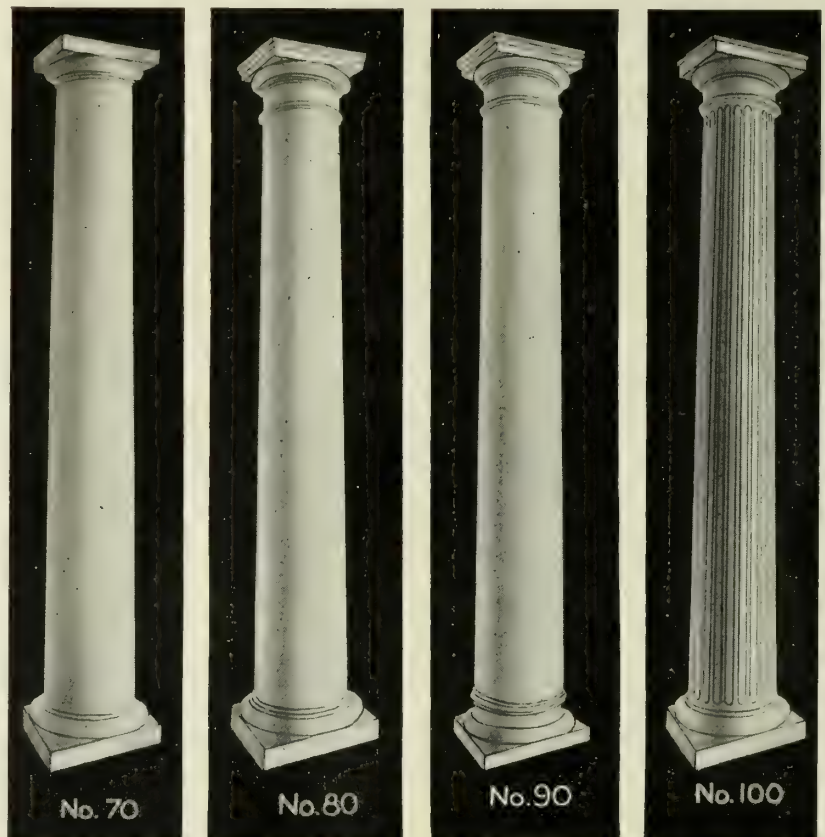


FIG. 2. "TRIUMPH LOCK JOINT" COLUMNS



RESIDENCE, RUSSELL HOPKINS, IRVINGTON-ON-HUDSON, N. Y. COLUMNS FROM COLONIAL COLUMN MANUFACTURING CO.
32 Columns, 32 inches by 22 feet 8 inches

PRICES ON
APPLICATION.

Prices quoted, upon application, by return mail, or upon request we will have one of our salesmen call on you personally.

OUR AIM.

We aim to furnish good work and to make shipments within the time promised.

DELIVERIES.

The above illustration is but one example, not only of our ability to do high-grade work, but it also gives an idea of the facility with which our deliveries are accomplished.

The columns on the above job were all delivered about three weeks after the receipt of order.

For the Eastern and Southern States we can secure much quicker deliveries than other similar concerns, as our largest mill is situated only forty miles from New York, on the line of the New York, New Haven & Hartford Railroad. We are also able to ship to New York City over night by boat.

THE DOANE & JONES LUMBER COMPANY

"Perfect Joint" Columns

ELMIRA, N. Y.

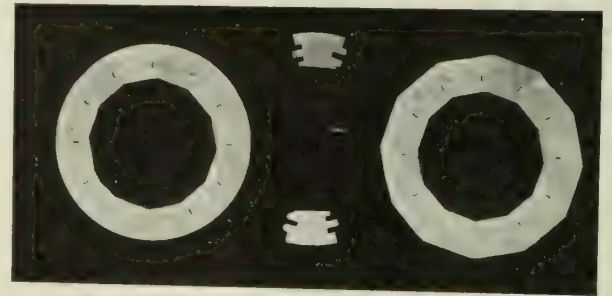
PRODUCTS.

We are patentees and sole manufacturers of the "PERFECT JOINT" COLUMN for Exterior, Interior, or Pergola work.

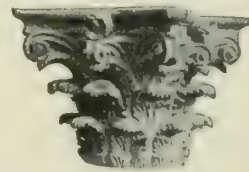
DESCRIPTION.

The joint is simple and capable of easy and perfect construction (see cut). We have never known any of our columns to break through the joint. Our lumber is all first-class air-dried material, and is also kiln-dried before the staves are made. The staves are then put together under intense pressure and heat, to prevent the glue from setting too quickly. The entasis is always secured in the rough. Our caps and bases are all mitered, doweled and glued so that the joints are effectually closed, and no end grain is exposed anywhere.

We are prepared to furnish promptly high-class composition work of standard design or made from special details. Dowels are always sent free of charge when caps are ordered.



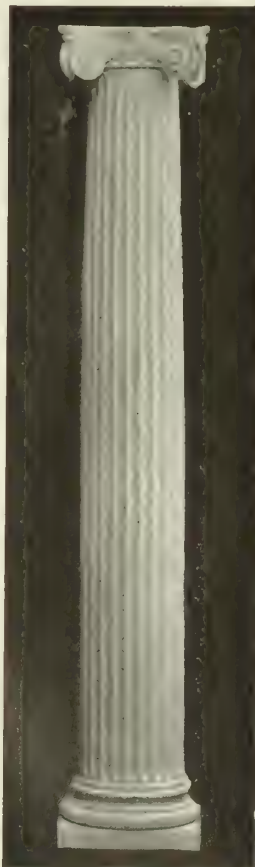
CROSS-SECTION SHOWING THE "PERFECT JOINT"



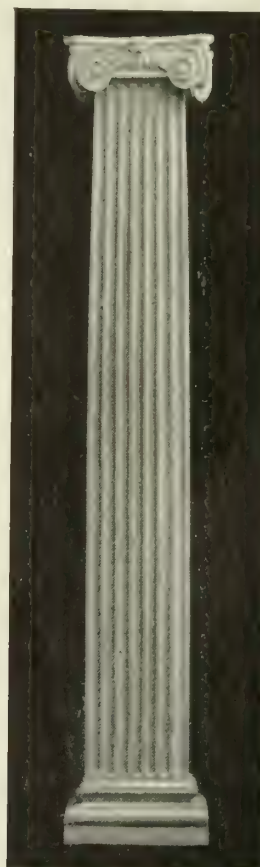
Roman Corinthian



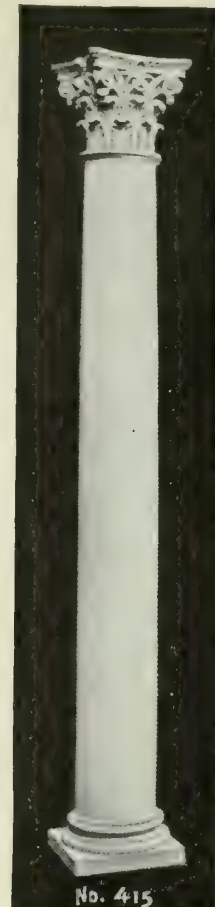
Italian Renaissance



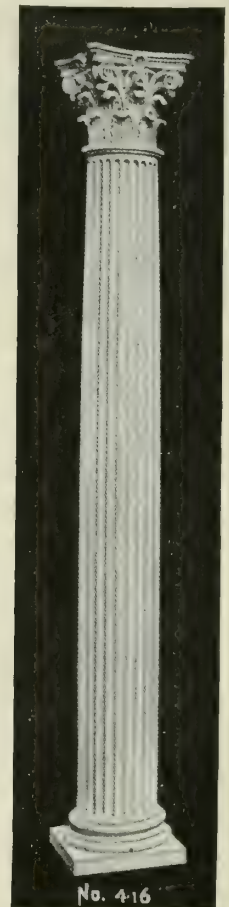
Ionic Column No. 422



Ionic Pilaster No. 423



Corinthian Column No. 415



Corinthian Column No. 416

EXAMPLES OF "PERFECT JOINT" COLUMNS

Continued on next page

In fluted or reeded columns the size of the flute or reed is changed gradually and continuously with the diameter of the shaft. We hand stop all flutes when desired, without extra cost.



O-TE-SA-GA HOTEL, COOPERSTOWN, N. Y.
PERCY GRIFFIN, Architect

- SHIPMENT.** We prime free of charge all of our columns and pilasters with white lead and oil, and wrap them in heavy paper, before crating. This insures safe delivery.
- DETAILS.** We prefer to work to architects' details, which we follow carefully. We are, however, in a position to furnish our own details, when so requested.
- ESTIMATES.** Our prices will, in all cases, be found low for the class of work we furnish. We send out estimates the same day the inquiry is received. Will wire prices when requested to do so.
- REFERENCES.** We especially desire to call attention to the new O-te-sa-ga Hotel at Cooperstown, N. Y., for which we furnished eight 42-in. columns 38 feet high, as well as six 27-in. columns, twelve 22-in. columns, and eight 9-in. columns. These 42-in. columns are the largest lock-joint columns ever made in this country, and the owners of the hotel awarded the contract to us without any competition whatsoever, on account of the well-known reputation for fine work which we have.

Some of our other recent contracts are as follows:

D. O. Herbert, Orangeburg, S. C., 6 Cols., 28"
Charles Steele, Westbury, L. I., 24 Cols., 18"
P. B. Bird, Lake Hopatcong, N. J., 4 Cols., 21"; 5 Cols., 10"
S. A. Jones, Chester, S. C., 6 Cols., 28"
John A. Pierce, Gainesville, Ga., 6 Cols., 25"; 4 Cols., 28"; 8 Cols., 14"
W. C. Martin, Dalton, Ga., 6 Cols., 26"
F. A. Barrett, Binghamton, N. Y., 4 Cols., 27"
W. H. Mackenzie, Montezuma, Ga., 4 Cols., 30"; 3 Cols., 15"
T. G. Wallace, Kingston, Ont., 4 Cols., 26"

T. P. Braswell, Battleboro, N. C., 6 Cols., 25"
J. B. Boyd, Warrenton, N. C., 6 Cols., 25"
J. Hector McNeil, Newtown, Pa., 6 Cols., 24"
F. L. Williamson, Burlington, N. C., 8 Cols., 24"
Montgomery, Ala., 6 Cols., 30"; 10 Cols., 28"
St. Mary's Academy, Hooksett, N. H., 10 Cols., 32"
Hotel, Rocky Mt., N. C., 6 Cols., 30"
College, Red Springs, N. C., 4 Cols., 36"
Hollins Institute, Hollins, Va., 12 Cols., 30"
Church, McColl, S. C., 5 Cols., 24"
High School, Lexington, Va., 4 Cols., 36"
High School, Front Royal, Va., 4 Cols., 24"

HARTMANN-SANDERS COMPANY

SUCCESSORS TO

HARTMANN BROS. MFG. CO., Mt. Vernon, N. Y.

THE HENRY SANDERS CO., Chicago, Ill.

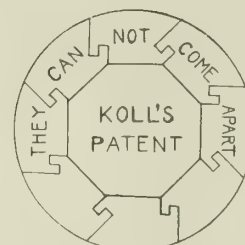
MANUFACTURERS OF

Koll's Patent Lock-Joint, Staved and Turned Columns

MAIN OFFICE AND FACTORY

Elston and Webster Avenues

CHICAGO, ILL.



TRADE-MARK

EASTERN OFFICE

NEW YORK, N. Y., 1123 Broadway
TELEPHONE, 1682 MADISON SQUARE

PACIFIC COAST

A. J. KOLL PLANING MILL CO., 335 East Second St.
LOS ANGELES, CAL.

PRODUCTS.

We are the exclusive manufacturers of KOLL'S PATENT LOCK-JOINT PORCH COLUMNS (Wood). We also manufacture HARDWOOD STAVED and VENEERED COLUMNS; also, a complete line of COMPOSITION ORNAMENTAL (Staff) CAPITALS. We make all styles of PILASTERS and SQUARE COLUMNS to match; also, SUN-DIAL PEDESTALS, GARDEN FURNITURE and PORCH TRIM.

We are the originators of the Lock-Joint Stave. "Koll's Patent Columns can not come apart." We guarantee all our work.

GENERAL INFORMATION.

The prices in this catalogue are based on a specially selected grade of White Pine for exterior work, as a standard, which is carefully selected by our own lumber buyer at the saw mills and cut under his direction, but should your specifications permit we can furnish columns at a ten per cent reduction in clear Western Fir. These woods are in our opinion the most suitable for column work, and we carry a large thoroughly weather-seasoned stock on hand at all times. But should you have a preference we could furnish columns in Western Spruce, Red Wood or Cypress at the same price as for White Pine.

Prices on sizes over 16 inches diameter upon application.

We can make plain or fluted columns and turn the same in the lathe up to 54 inches diameter and 35 feet long.

Owing to the great variety of pilaster details, we can not publish a fixed price-list, but will quote net prices on receipt of details giving section style and dimensions.

All prices quoted are with freight allowed to your nearest freight station unless otherwise specified.

ARCHITECTS' DETAILS.

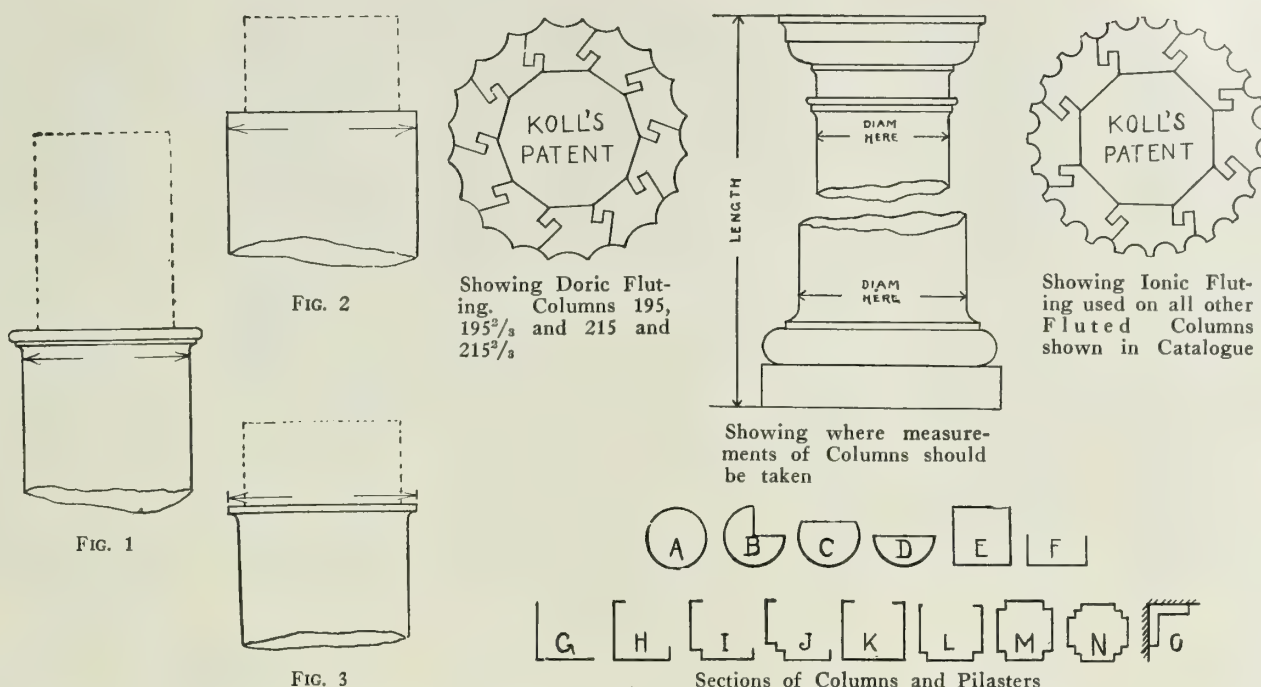
We make no extra charge for turning columns to your details; but in the absence of details, we make columns to conform accurately to the usual orders of architecture, as shown by the various cuts in this catalogue.

OUR PATENT 1904 CORRECT ENTASIS.

CORRECT ENTASIS SECURED IN FORMING STAVE ITSELF—All columns manufactured under Koll Patents are made in our own factories, every shaft being turned in the lathe, thereby permitting the proper entasis to be secured. The staves are straight one third and swell-tapered upper two thirds, so that when shaft is formed the correct entasis is obtained in the rough, securing enough stock top and bottom of shaft to permit our turning to proper detail and for fluting and to form top and bottom "turnout" and neck moulding, if any is called for, on the shaft itself without cutting too close to joint. These points of construction will be appreciated by the architect, but are found lacking in many so-called "lock joint" staved columns now on the market.

STOPPING FLUTES.

We stop all flutes properly, by means of an attachment to our machines, at a comparatively low cost; the expense of doing this part of the work by hand accounts for its absence on many columns being offered to the trade and on others now in use, an omission that is fatal to the proper architectural effect. We are prepared to furnish columns with any style of fluting or reeding desired.



VARIOUS STYLES OF FINISHING NECK OF COLUMNS AND PILASTERS FOR COMPOSITION CAPS

In ordering capitals give diameter where shown and state style of neck (give figure), also note line drawing of section of columns and pilasters

DOWELING FOR CAPS.

Where Composition Caps are used we furnish suitable wood dowel, shouldered on top of shaft, to carry the weight.

FACTS IN REGARD TO INSTALLATION.

Columns are primed with one coat lead and oil before shipment, but should be thoroughly painted as soon as possible after being placed in position. The ends of the columns should be temporarily covered with weather-proofed paper if for any reason they can not be used immediately or if roof is not in position.

Ornamental capitals should be *flushed* with sheet lead and protected by painting. Should they become wet through exposure it will be necessary to wait until they are thoroughly dry before applying the paint.

ADAPTABILITY.

Our columns can be used for interior or exterior work.

INSTRUCTIONS AS TO ORDERS.

Order by number if possible. As most of our columns are made to detail, we do not carry the larger sized shafts in stock. We carry instead a large supply of raw material which enables us to make up these special orders in a reasonably short time. We keep on hand the smaller sizes of shafts in the rough, ready to turn to detail, so that we can make prompt shipments.

We have many models of ornamental capitals of both classic and conventional design and can ship from stock.

It is very important to *specify thickness* of stock of which these columns are to be made. Unless otherwise ordered, stock will be 2, 2½ and 3 inches thick as follows:

Columns from 6 to 18 inch diameter, stock 2 inch thick.

" " 19 " 23 " " " 2½ " "

" " 24 inch diameter and upward, stock 3 inch thick.

" " 20 inch diameter and upward, if fluted, will be made of 3 inch stock.

Always state if for *porch, pergola, or interior use*.

In the absence of detail drawing we make the entasis to conform to the classic orders of architecture, also the dimensions of the caps and bases.

We make all flutes of the depth the diameter of the column would call for, following the architectural orders accurately.

We are prepared to make prompt estimates on receipt of detail or list of columns and pilasters required, giving number, diameter and length, together with style of caps and bases, or give our catalogue number.

OCTAGON
COLUMN
NO. 165 AND
SQUARE
COLUMN
NO. 170.

LENGTH											
Dia.	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'
6"	5.00	5.71	6.74	6.90	7.53	.....	.....	.....	.....	.....	.....
7"	5.71	6.66	7.30	8.09	8.80	.....	.....	.....	.....	.....	.....
8"	7.22	8.33	9.52	10.47	11.66	.....	.....	.....	.....	.....	.....
9"	8.80	9.92	11.35	12.70	13.80	.....	.....	.....	.....	.....	.....
10"	10.00	11.42	13.09	15.07	15.71	.....	.....	.....	.....	.....	.....
11"	11.03	12.62	14.12	15.71	17.30	18.88	20.47	.....	.....	.....	.....
12"	11.58	13.65	15.15	16.66	18.25	19.84	21.42	.....	.....	.....	.....
13"	13.09	14.68	16.34	18.01	19.60	21.19	22.85	24.44	26.11	.....	.....
14"	14.84	16.58	18.41	20.15	21.98	23.80	25.39	27.21	29.04	.....	.....
15"	16.03	17.85	19.52	20.42	23.17	25.00	26.74	28.57	30.31	32.06	33.88
16"	17.22	19.20	21.42	23.33	25.39	26.03	29.68	31.74	33.88	35.87	37.93

PANELED
SQUARE
COLUMN
NO. 175.

Dia.	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'
6"	6.11	6.74	7.30	7.85	8.80	.....	.....	.....	.....	.....	.....
7"	6.90	7.69	8.49	9.20	10.07	.....	.....	.....	.....	.....	.....
8"	8.98	9.60	10.63	11.90	13.01	.....	.....	.....	.....	.....	.....
9"	10.15	11.27	12.70	13.80	15.07	.....	.....	.....	.....	.....	.....
10"	11.35	12.62	13.96	15.39	16.98	.....	.....	.....	.....	.....	.....
11"	12.38	13.88	15.39	16.98	18.57	20.31	22.22	.....	.....	.....	.....
12"	13.33	15.07	16.50	17.93	19.68	21.19	23.01	.....	.....	.....	.....
13"	15.07	16.50	18.01	19.84	21.42	23.01	24.60	26.50	27.93	.....	.....
14"	16.66	18.25	19.92	21.50	23.17	24.76	26.34	28.01	30.55	.....	.....
15"	18.25	19.84	21.42	23.01	24.60	26.50	28.01	28.96	31.74	33.33	35.71
16"	19.84	21.82	23.01	25.71	27.38	29.36	31.34	33.33	35.31	36.90	38.88

SQUARE
COLUMN
NO. 180.

Dia.	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'
6"	4.52	5.16	5.71	6.27	6.82	.....	.....	.....	.....	.....	.....
7"	5.16	5.87	6.58	7.30	8.01	.....	.....	.....	.....	.....	.....
8"	6.58	7.53	8.57	9.52	10.55	.....	.....	.....	.....	.....	.....
9"	8.01	9.12	10.31	11.42	12.54	.....	.....	.....	.....	.....	.....
10"	9.12	10.39	11.74	13.01	14.28	.....	.....	.....	.....	.....	.....
11"	10.00	11.42	12.85	14.28	15.71	17.14	18.57	.....	.....	.....	.....
12"	10.55	12.30	13.73	15.15	16.58	18.01	19.44	.....	.....	.....	.....
13"	11.90	13.33	14.84	16.34	17.77	19.28	20.79	22.22	23.73	.....	.....
14"	13.49	15.07	16.74	18.33	20.00	21.58	23.17	24.84	26.42	.....	.....
15"	14.60	16.19	17.77	19.44	21.03	22.69	24.28	25.95	27.54	29.20	30.79
16"	15.63	17.54	19.44	21.35	23.17	25.07	26.98	28.88	30.79	32.61	34.52

SQUARE
COLUMN
(FLUTED)
NO. 185.

Dia.	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'
6"	6.11	6.74	7.30	7.85	8.80	.....	.....	.....	.....	.....	.....
7"	6.90	7.69	8.49	9.20	10.07	.....	.....	.....	.....	.....	.....
8"	6.98	9.60	10.63	11.90	13.01	.....	.....	.....	.....	.....	.....
9"	10.15	11.27	12.70	13.80	15.07	.....	.....	.....	.....	.....	.....
10"	11.35	12.62	13.96	15.39	16.98	.....	.....	.....	.....	.....	.....
11"	12.38	13.88	15.39	16.98	18.57	20.31	22.22	.....	.....	.....	.....
12"	13.33	15.07	16.50	17.93	19.68	21.19	23.01	.....	.....	.....	.....
13"	15.07	16.50	18.01	19.84	21.42	23.01	24.60	26.50	27.93	.....	.....
14"	16.66	18.25	19.92	21.50	23.17	24.76	26.34	28.01	30.55	.....	.....
15"	18.25	19.84	21.42	23.01	24.60	26.50	28.01	28.96	31.74	33.33	35.71
16"	19.84	21.82	23.01	25.71	27.38	29.36	31.34	33.33	35.31	36.90	38.88

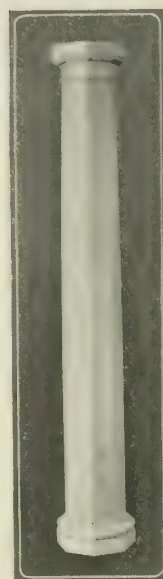
GREEK
DORIC
COLUMN
(PLAIN)
NO. 190.

Dia.	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'
6"	4.60	4.84	5.23	5.71	6.66	.....	.....	.....	.....	.....	.....
7"	5.23	5.79	6.27	7.14	7.93	.....	.....	.....	.....	.....	.....
8"	6.19	6.82	7.46	8.01	8.65	.....	.....	.....	.....	.....	.....
9"	6.66	7.46	8.09	8.96	9.36	.....	.....	.....	.....	.....	.....
10"	6.40	7.69	8.65	9.60	10.23	.....	.....	.....	.....	.....	.....
11"	8.65	9.84	11.03	12.06	13.33	14.60	15.79	.....	.....	.....	.....
12"	9.60	10.95	12.14	13.41	14.84	16.03	17.30	.....	.....	.....	.....
13"	11.11	12.46	13.88	15.23	16.66	18.09	19.44	.....	.....	.....	.....
14"	12.46	13.96	15.55	16.98	18.49	20.07	21.50	23.01	24.60	.....	.....
15"	14.12	15.71	17.30	18.96	20.63	22.22	23.83	25.55	27.22	28.73	30.47
16"	14.68	16.34	18.09	19.68	21.35	23.01	24.68	26.03	28.01	29.68	31.19

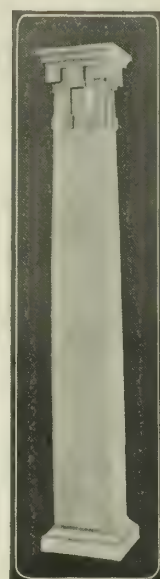
GREEK
DORIC
COLUMN
(FLUTED)
NOS. 195
AND 195²/₃.

Dia.	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'
6"	5.71	6.42	7.38	8.33	9.04	.....	.....	.....	.....	.....	.....
7"	6.42	7.38	8.33	9.28	10.23	.....	.....	.....	.....	.....	.....
8"	8.57	10.00	11.19	12.38	13.57	.....	.....	.....	.....	.....	.....
9"	9.04	10.55	11.66	12.85	14.04	.....	.....	.....	.....	.....	.....
10"	9.76	11.19	12.62	14.04	15.47	.....	.....	.....	.....	.....	.....
11"	10.95	12.62	14.28	15.95	17.61	19.04	20.47	.....	.....	.....	.....
12"	12.14	14.04	15.71	17.38	19.28	20.95	22.61	.....	.....	.....	.....
13"	13.33	15.23	17.14	19.04	20.95	22.85	24.76	26.66	28.57	.....	.....
14"	14.76	16.90	19.04	20.95	23.09	25.23	27.14	29.28	31.42	.....	.....
15"	16.19	18.57	20.71	22.85	25.23	27.38	29.52	31.90	34.04	36.19	38.57
16"	17.85	20.23	22.61	25.00	27.38	29.76	32.14	34.52	36.90	39.28	41.66

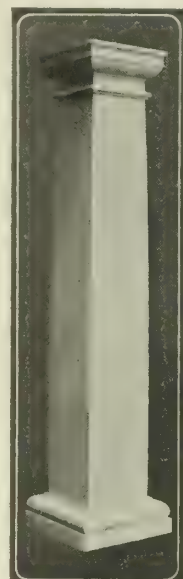
All prices f. o. b. Chicago, with freight allowed to nearest freight station. All columns on this list made from 2-inch stock, selected grade of White Pine. If made in clear Western Fir, deduct 10 per cent. Prices on larger columns upon application. Above prices subject to discount.



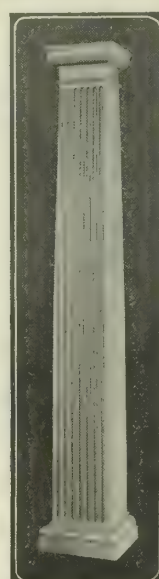
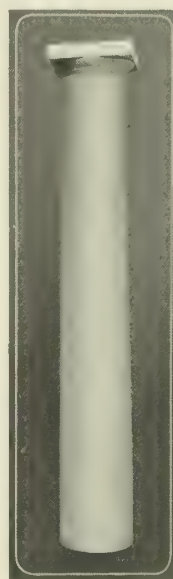
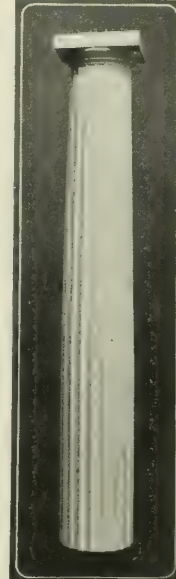
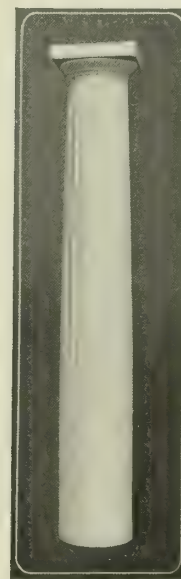
No. 165



No. 170

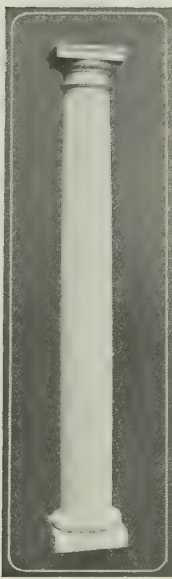
No. 175. PANELED
OCTAGON COLUMN SQUARE COLUMN SQUARE COLUMN

No. 180. SQUARE COLUMN

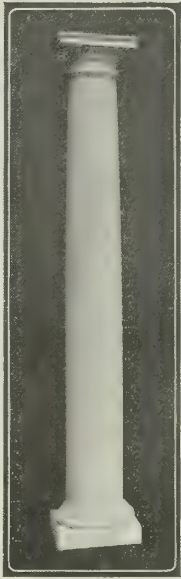
No. 185. SQUARE
COLUMN (Fluted)No. 190
GREEK DORIC
COLUMN (Plain)No. 195
GREEK DORIC COLUMNS
Fluted full length and fluted two thirdsNo. 195²/₃



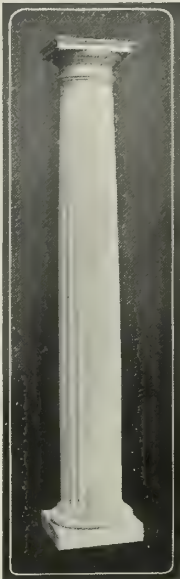
No. 200
TUSCAN
COLUMN
Plain



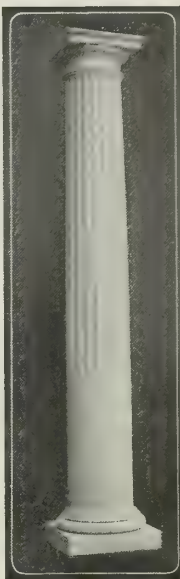
No. 205
TUSCAN
COLUMN
Fluted



No. 210
ROMAN
DORIC
COLUMN
Plain



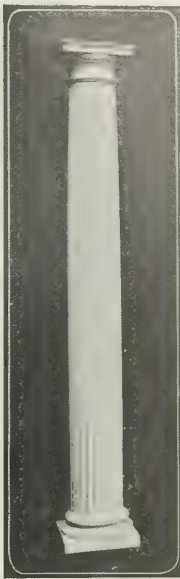
No. 215
ROMAN
DORIC
COLUMN
Fluted



No. 215 2/3
ROMAN DORIC
COLUMN
Fluted



No. 220
PLAIN
COLUMN
Doric Cap and Attic Base



No. 225
FLUTED
COLUMN

PRICE-LIST OF DESIGN NO. 200
LENGTH

Dia.	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'
6"	4.68	5.23	5.63	6.11	6.50	.....	.....	.....	.....	.....	.....
7"	5.63	6.19	6.82	7.53	8.33	.....	.....	.....	.....	.....	.....
8"	6.66	7.30	7.93	8.49	9.12	.....	.....	.....	.....	.....	.....
9"	7.14	7.93	8.57	9.28	9.92	.....	.....	.....	.....	.....	.....
10"	7.46	8.25	9.20	10.15	11.11	.....	.....	.....	.....	.....	.....
11"	9.28	10.47	11.66	12.70	13.96	15.23	16.42	.....	.....	.....	.....
12"	10.31	11.66	12.93	14.12	15.55	16.74	18.01	.....	.....	.....	.....
13"	11.90	13.25	14.68	16.03	17.46	18.88	20.23	21.66	23.01	.....	.....
14"	13.33	14.84	16.42	17.85	19.36	20.95	22.38	23.88	25.47	.....	.....
15"	15.07	16.66	18.25	19.92	21.58	23.17	24.84	26.50	28.17	29.68	31.42
16"	15.87	17.54	19.20	20.87	22.54	24.20	25.87	27.54	29.20	30.87	32.54

PRICE-LIST OF DESIGN NO. 205
LENGTH

Dia.	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'
6"	5.31	5.95	6.42	7.06	7.46	.....	.....	.....	.....	.....	.....
7"	6.34	6.98	7.77	8.57	9.52	.....	.....	.....	.....	.....	.....
8"	7.61	8.33	9.12	9.84	10.47	.....	.....	.....	.....	.....	.....
9"	8.25	9.04	9.84	10.63	11.58	.....	.....	.....	.....	.....	.....
10"	8.57	9.52	10.63	11.66	12.70	.....	.....	.....	.....	.....	.....
11"	10.55	11.90	13.25	14.44	15.87	17.30	18.65	.....	.....	.....	.....
12"	11.74	13.25	14.68	16.03	17.69	19.04	20.47	.....	.....	.....	.....
13"	13.49	15.07	16.66	18.25	19.84	21.42	23.01	24.60	26.19	.....	.....
14"	15.07	16.82	18.57	20.23	21.98	23.80	25.47	27.14	28.88	.....	.....
15"	17.14	18.96	20.71	22.61	24.60	26.34	28.17	30.15	31.98	33.73	35.71
16"	18.09	20.00	21.90	23.80	25.71	27.61	29.52	31.42	33.33	35.55	37.14

PRICE-LIST OF DESIGN NO. 210
LENGTH

Dia.	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'
6"	4.76	5.31	5.71	6.19	6.58	.....	.....	.....	.....	.....	.....
7"	5.71	6.27	6.90	7.61	8.41	.....	.....	.....	.....	.....	.....
8"	6.82	7.46	8.09	8.65	9.12	.....	.....	.....	.....	.....	.....
9"	7.30	8.09	8.73	9.44	10.23	.....	.....	.....	.....	.....	.....
10"	7.61	8.41	9.36	10.31	11.27	.....	.....	.....	.....	.....	.....
11"	9.52	10.71	11.90	12.93	14.20	15.47	16.66	.....	.....	.....	.....
12"	10.55	11.90	13.17	14.36	15.79	16.98	18.25	.....	.....	.....	.....
13"	12.22	13.57	15.00	16.34	17.77	19.20	20.55	21.98	23.33	.....	.....
14"	13.65	15.15	16.74	18.17	19.68	21.27	22.69	24.20	25.79	.....	.....
15"	15.47	17.06	18.65	20.31	21.98	23.57	25.23	26.90	28.57	30.07	31.82
16"	16.27	17.93	19.60	21.27	22.93	24.60	26.27	27.93	29.60	31.27	32.93

PRICE-LIST OF DESIGNS NOS. 215 AND 215 2/3
LENGTH

Dia.	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'
6"	5.71	6.42	6.90	7.53	8.00	.....	.....	.....	.....	.....	.....
7"	6.74	7.46	8.33	9.28	10.15	.....	.....	.....	.....	.....	.....
8"	7.93	8.96	9.76	10.63	11.27	.....	.....	.....	.....	.....	.....
9"	8.57	9.76	10.63	11.50	12.54	.....	.....	.....	.....	.....	.....
10"	9.04	10.31	11.50	12.54	13.65	.....	.....	.....	.....	.....	.....
11"	11.42	12.85	14.28	15.55	17.06	18.57	20.00	.....	.....	.....	.....
12"	12.70	14.28	15.79	17.22	19.12	20.47	21.98	.....	.....	.....	.....
13"	14.60	16.27	17.93	19.68	21.35	23.01	24.68	26.35	28.09	.....	.....
14"	16.27	18.09	19.92	21.74	23.73	25.55	27.30	29.04	30.87	.....	.....
15"	18.57	20.39	22.54	24.36	26.50	28.33	30.23	32.30	34.28	36.11	38.25
16"	19.60	21.58	23.65	25.63	27.69	29.68	31.74	33.96	35.79	37.77	39.84

PRICE-LIST OF DESIGN NO. 220
LENGTH

Dia.	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'
6"	4.76	5.31	5.71	6.19	6.58	.....	.....	.....	.....	.....	.....
7"	5.71	6.27	6.90	7.61	8.41	.....	.....	.....	.....	.....	.....
8"	6.82	7.46	8.09	8.65	9.12	.....	.....	.....	.....	.....	.....
9"	7.30	8.09	8.73	9.44	10.23	.....	.....	.....	.....	.....	.....
10"	7.61	8.41	9.36	10.31	11.27	.....	.....	.....	.....	.....	.....
11"	9.52	10.71	11.90	12.93	14.20	15.47	16.66	.....	.....	.....	.....
12"	10.55	11.90	13.17	14.36	15.79	16.98	18.25	.....	.....	.....	.....
13"	12.22	13.57	15.00	16.34	17.77	19.20	20.55	21.98	23.33	.....	.....
14"	13.65	15.15	16.74	18.17	19.68	21.27	22.69	24.20	25.79	.....	.....
15"	15.47	17.06	18.65	20.31	21.98	23.57	25.23	26.90	28.57	30.07	31.82
16"	16.27	17.93	19.60	21.27	22.93	24.60	26.27	27.93	29.60	31.27	32.93

PRICE-LIST OF DESIGN NO. 225
LENGTH

Dia.	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'
6"	5.39	6.03	6.50	7.14	7.53	.....	.....	.....	.....	.....	.....
7"	6.42	7.06	7.85	8.65	9.60	.....	.....	.....	.....	.....	.....
8"	7.77	8.49	9.28	10.00	10.55	.....	.....	.....	.....	.....	.....
9"	8.25	9.20	10.00	10.87	11.74	.....	.....	.....	.....	.....	.....
10"	8.73	9.68	10.79	11.82	12.85	.....	.....	.....	.....	.....	.....
11"	10.71	12.14	13.49	14.68	16.11	17.54	18.88	.....	.....	.....	.....
12"	11.98	13.49	14.92	16.27	17.77	19.28	20.79	.....	.....	.....	.....
13"	13.80	15.39	16.98	18.57	20.15	21.74	23.33	24.92	26.50	.....	.....
14"	15.39	17.14	18.88	20.47	22.30	24.12	25.79	27.46	29.20	.....	.....
15"	17.46	19.36	21.11	23.01	25.00	26.74	28.57	30.55	32.38	34.12	36.11
16"	18.49	20.39	22.30	24.20	26.11	28.01	29.92	31.82	33.73	35.71	37.54

All prices are f. o. b. Chicago, with freight allowed to nearest freight station. All columns on this list made from 2-inch stock, selected White Pine.
If made in clear Western Fir, deduct 10 per cent. Prices on larger columns upon application.
Above prices subject to discount.

PRICE-LIST OF DESIGNS NOS. 280, 290 AND 310

LENGTH												
Dia.	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'	
6"	6.19	6.74	7.14	7.61	8.01	.....	.....	.....	.....	.....	.....	.....
7"	7.30	7.85	8.49	9.20	10.00	.....	.....	.....	.....	.....	.....	.....
8"	8.57	9.20	9.84	10.39	10.87	.....	.....	.....	.....	.....	.....	.....
9"	9.52	10.31	10.95	11.66	12.46	.....	.....	.....	.....	.....	.....	.....
10"	10.23	11.03	11.98	12.93	13.88	.....	.....	.....	.....	.....	.....	.....
11"	13.17	14.36	15.55	16.58	17.85	19.12	20.31	.....	.....	.....	.....	.....
12"	14.52	15.87	17.14	18.33	19.76	20.95	22.22	.....	.....	.....	.....	.....
13"	16.42	17.77	19.20	20.55	21.98	23.41	24.76	26.19	27.54	.....	.....	.....
14"	18.88	20.39	21.98	23.41	24.92	26.50	27.93	29.44	31.03	.....	.....	.....
15"	21.82	23.41	25.00	26.66	28.33	29.92	31.58	33.25	34.92	36.42	38.17	.....
16"	23.41	25.07	26.74	28.41	30.07	31.74	33.41	35.08	36.74	38.41	40.07	.....

PRICE-LIST OF DESIGNS NOS. 285, 295 AND 315

LENGTH												
Dia.	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'	
6"	6.82	7.46	7.93	8.57	8.96	.....	.....	.....	.....	.....	.....	.....
7"	8.01	8.65	9.44	10.23	11.19	.....	.....	.....	.....	.....	.....	.....
8"	9.52	10.23	11.03	11.74	12.30	.....	.....	.....	.....	.....	.....	.....
9"	10.31	11.42	12.22	13.09	13.96	.....	.....	.....	.....	.....	.....	.....
10"	11.35	12.30	13.41	14.44	15.47	.....	.....	.....	.....	.....	.....	.....
11"	14.36	15.79	17.14	18.33	19.76	21.19	22.54	.....	.....	.....	.....	.....
12"	15.95	17.46	18.88	20.23	21.74	23.25	24.76	.....	.....	.....	.....	.....
13"	18.01	19.60	21.19	22.77	24.36	25.95	27.54	29.12	30.71	.....	.....	.....
14"	20.63	22.38	24.12	25.11	27.54	29.36	31.03	32.69	34.44	.....	.....	.....
15"	23.80	25.71	27.46	29.36	31.34	33.09	34.92	36.96	38.73	40.47	42.46	.....
16"	25.63	27.54	29.44	31.34	33.25	35.16	37.06	38.96	40.87	42.85	44.68	.....

PRICE-LIST OF DESIGNS NOS. 250 AND 300

LENGTH												
Dia.	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'	
6"	6.34	6.90	7.30	7.77	8.17	.....	.....	.....	.....	.....	.....	.....
7"	7.93	8.49	9.12	9.84	10.63	.....	.....	.....	.....	.....	.....	.....
8"	9.20	9.84	10.47	11.03	11.50	.....	.....	.....	.....	.....	.....	.....
9"	10.39	11.19	11.82	12.54	13.33	.....	.....	.....	.....	.....	.....	.....
10"	10.95	11.74	12.70	13.65	14.60	.....	.....	.....	.....	.....	.....	.....
11"	13.41	14.60	15.79	16.82	18.09	19.36	20.55	.....	.....	.....	.....	.....
12"	14.84	16.19	17.46	18.65	20.07	21.27	22.54	.....	.....	.....	.....	.....
13"	17.30	18.65	20.07	21.42	22.85	24.28	25.63	27.06	28.41	.....	.....	.....
14"	19.60	21.11	22.69	24.12	25.63	27.22	28.65	30.15	31.74	.....	.....	.....
15"	22.61	24.20	25.79	27.46	29.12	30.71	32.38	34.04	35.71	37.22	38.96	.....
16"	25.00	26.66	28.33	30.00	31.66	33.33	35.00	36.66	38.33	40.00	41.66	.....

PRICE-LIST OF DESIGN NO. 260

LENGTH												
Dia.	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'	
6"	6.03	6.58	6.98	7.46	7.85	.....	.....	.....	.....	.....	.....	.....
7"	7.14	7.69	8.33	9.04	9.84	.....	.....	.....	.....	.....	.....	.....
8"	8.41	9.04	9.52	10.23	10.71	.....	.....	.....	.....	.....	.....	.....
9"	9.12	9.92	10.55	11.27	12.06	.....	.....	.....	.....	.....	.....	.....
10"	9.68	10.47	11.42	12.38	13.33	.....	.....	.....	.....	.....	.....	.....
11"	12.22	13.41	14.60	15.63	16.90	18.17	19.36	.....	.....	.....	.....	.....
12"	13.49	14.84	16.11	17.30	18.73	19.92	21.19	.....	.....	.....	.....	.....
13"	15.79	17.14	18.57	19.92	21.35	22.77	24.30	25.55	26.90	.....	.....	.....
14"	17.93	19.44	21.03	22.46	23.96	25.55	26.98	28.49	30.07	.....	.....	.....
15"	20.15	21.74	23.33	25.00	26.66	28.25	29.92	31.58	33.25	34.76	36.50	.....
16"	21.50	23.17	24.84	26.50	28.17	29.84	31.50	33.17	34.84	36.50	38.17	.....

PRICE-LIST OF DESIGN NO. 320

LENGTH												
Dia.	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'	
6"	7.77	8.33	8.73	9.20	9.60	.....	.....	.....	.....	.....	.....	.....
7"	8.88	9.44	10.07	10.79	11.58	.....	.....	.....	.....	.....	.....	.....
8"	10.15	10.79	11.42	11.98	12.46	.....	.....	.....	.....	.....	.....	.....
9"	11.19	12.14	12.78	13.49	14.28	.....	.....	.....	.....	.....	.....	.....
10"	12.38	13.17	14.12	15.07	16.03	.....	.....	.....	.....	.....	.....	.....
11"	14.68	15.87	17.06	18.09	19.36	20.63	21.82	.....	.....	.....	.....	.....
12"	16.11	17.46	18.73	19.92	21.35	22.54	23.80	.....	.....	.....	.....	.....
13"	18.65	20.00	21.42	22.77	24.20	25.63	26.98	28.41	29.76	.....	.....	.....
14"	20.95	22.46	24.04	25.47	26.98	28.57	30.00	31.50	33.09	.....	.....	.....
15"	23.80	25.39	26.98	28.65	30.31	31.90	33.57	35.23	36.90	38.41	40.15	.....
16"	25.79	27.46	29.12	30.79	32.46	34.12	35.79	37.46	39.12	40.79	42.46	.....

All prices are f. o. b. Chicago, with freight allowed to nearest freight station. All columns on this list made from 2-inch stock, selected grade of White Pine. If made in clear Western Fir, deduct 10 per cent. Prices on larger columns upon application. Above prices subject to discount.

INTERIOR COLUMNS.

Prices of our Hardwood Staved and Veneered Columns will be supplied on application.

PRICE-LIST OF DESIGNS NOS. 230, 240 AND 270

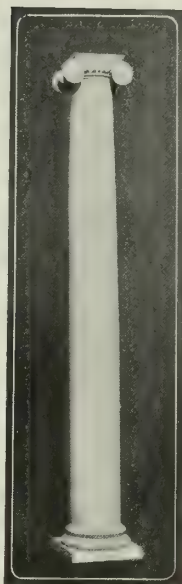
LENGTH												
Dia.	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'	
6"	5.87	6.42	6.82	7.30	7.69	.....	.....	.....	.....	.....	.....	.....
7"	6.98	7.53	8.17	8.88	9.68	.....	.....	.....	.....	.....	.....	.....
8"	8.17	8.80	9.44	10.00	10.47	.....	.....	.....	.....	.....	.....	.....
9"	8.88	9.68	10.31	11.03	11.82	.....	.....	.....	.....	.....	.....	.....
10"	9.36	10.15	11.11	12.06	13.01	.....	.....	.....	.....	.....	.....	.....
11"	11.90	13.09	14.28	15.31	16.58	17.85	19.04	.....	.....	.....	.....	.....
12"	13.09	14.44	15.71	16.90	18.33	19.52	20.79	.....	.....	.....	.....	.....
13"	15.39	16.74	18.17	19.52	20.95	22.38	23.73	25.15	26.50	.....	.....	.....
14"	17.54	19.04	20.63	22.06	23.57	25.15	26.58	28.09	29.68	.....	.....	.....
15"	19.76	21.35	22.93	24.60	26.27	27.85	29.52	31.19	32.85	34.36	36.11	.....
16"	21.03	22.69	24.36	26.03	27.69	29.36	31.03	32.69	34.36	36.03	37.70	.....

PRICE-LIST OF DESIGNS NOS. 235, 245 AND 275

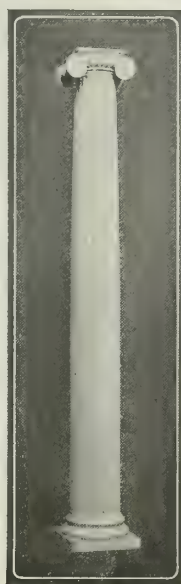
LENGTH												
Dia.	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'	
6"	6.50	7.14	7.61	8.25	8.73	.....	.....	.....	.....	.....	.....	.....
7"	7.69	8.33	9.12	9.92	10.87	.....	.....	.....	.....	.....	.....	.....
8"	9.12	9.84	10.63	11.35	11.90	.....	.....	.....	.....	.....	.....	.....
9"	9.84	10.79	11.58	12.46	13.33	.....	.....	.....	.....	.....	.....	.....
10"	10.47	11.42	12.54	13.57	14.60	.....	.....	.....	.....	.....	.....	.....
11"	13.09	14.52	15.87	17.06	18.49	19.92	21.27	.....	.....	.....	.....	.....
12"	14.52	16.03	17.46	18.80	20.31	21.82	23.33	.....	.....	.....	.....	.....
13"	16.98	18.57	20.15	21.74	23.33	24.92	26.50	28.09	29.68	.....	.....	.....
14"	19.28	21.03	22.77	24.36	26.19	28.01	29.68	31.34	33.09	.....	.....	.....
15"	21.74	23.65	25.35	27.30	29.28	31.03	32.85	34.84	36.66	38.41	40.39	.....
16"	23.25	25.15	27.06	28.96	30.87	32.77	34.68	36.58	38.49	40.47	42.46	.....

PRICE-LIST OF DESIGNS NOS. 255 AND 305

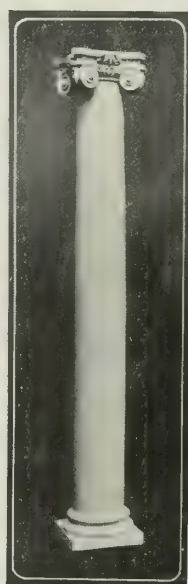
LENGTH												
Dia.	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'	
6"	6.98	7.61	8.09	8.73	9.12	.....	.....	.....	.....	.....	.....	
7"	8.65	9.28	10.07	11.03	11.82	.....	.....	.....	.....	.....	.....	
8"	10.15	10.87	11.66	12.38	12.78	.....	.....	.....	.....	.....	.....	
9"	11.19	12.30	13.09	13.96	14.84	.....	.....	.....	.....	.....	.....	
10"	12.06	13.01	14.12	15.15	16.19	.....	.....	.....	.....	.....	.....	
11"	14.60	16.03	17.38	18.57	20.00	21.42	22.77	.....	.....	.....	.....	
12"	16.26	17.77	19.20	20.55	22.06	23.57	25.07	.....	.....	.....	.....	
13"	18.88	20.47	22.06	23.65	25.23	26.82	28.41	30.00	31.58	.....	.....	
14"	21.35	23.09	24.84	26.42	28.25	30.07	31.74	33.41	35.16	.....	.....	
15"	24.60	26.50	28.25	30.15	32.14	33.88	35.71	37.70	39.52	41.26	43.23	
16"	27.22	29.12	31.03	32.93	34.84	36.74	38.65	40.55	42.46	44.44	46.27	



No. 230



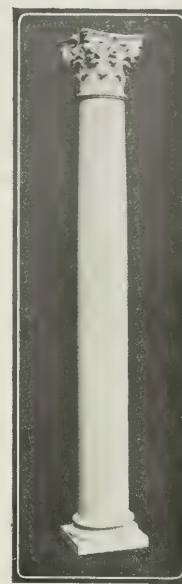
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No. 240



No. 245



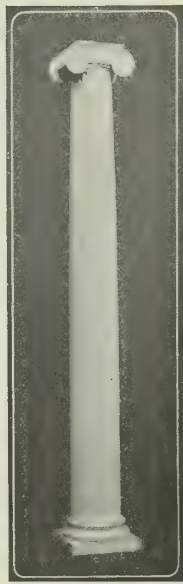
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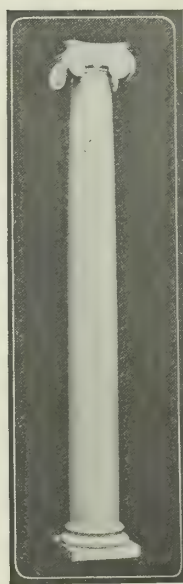
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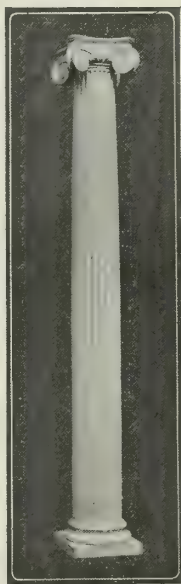
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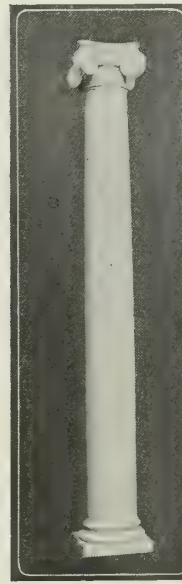
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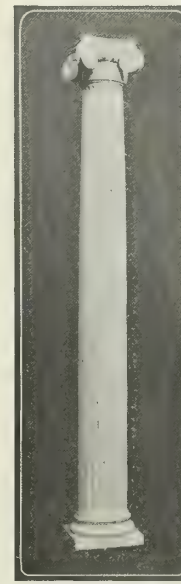
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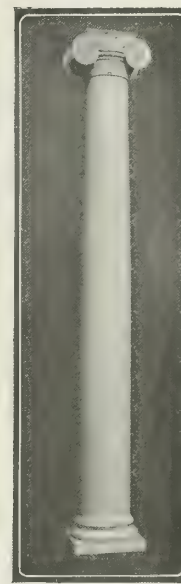
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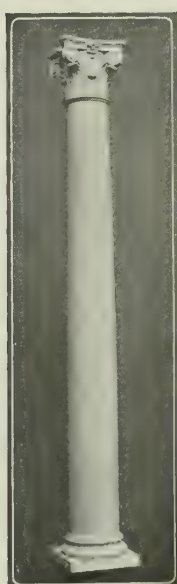
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No. 285



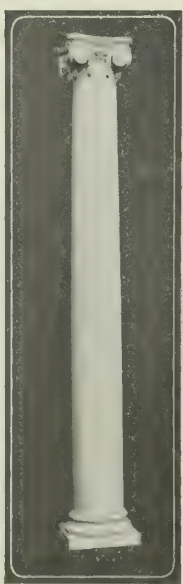
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No. 300



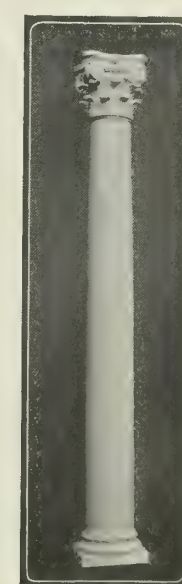
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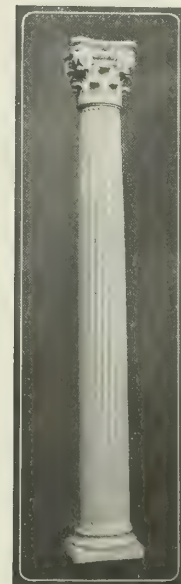
No. 310



No. 315



No. 320



No. 325



No. 295

EXAMPLES OF PLAIN AND FLUTED COLUMNS WITH ANGULAR GREEK, ERECHTHEUM, ROMAN, IONIC, SCAMOZZI, CORINTHIAN, RENAISSANCE AND COMPOSITE CAP

THE C. T. NELSON CO.

MANUFACTURERS OF

Columns and All Kinds of Veranda Work

323 Dublin Avenue

COLUMBUS, OHIO

TELEPHONES, BELL AND CITIZENS

YARD AND FACTORY

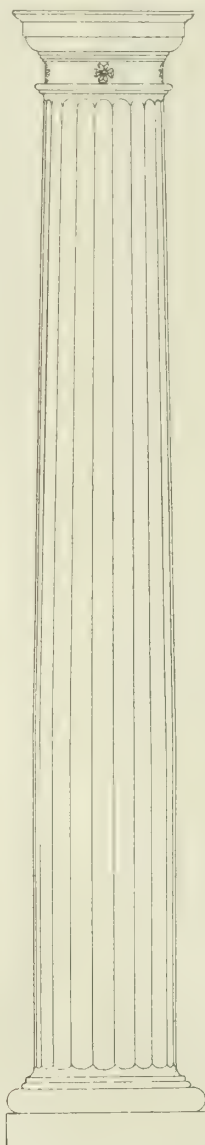
DUBLIN AVENUE AND COZZENS STREET
SPRING STREET AND DENNISON AVENUE

PRODUCTS.

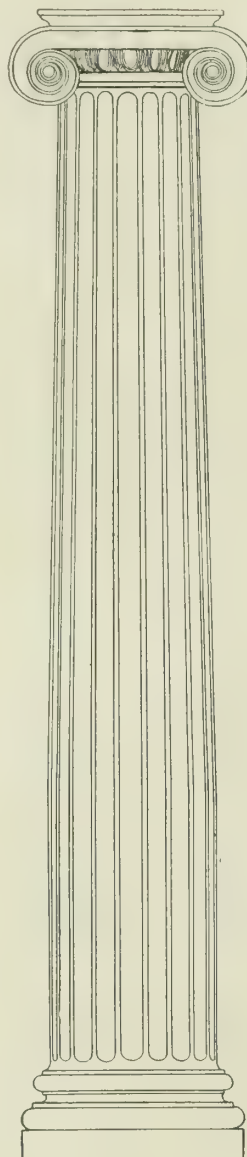
TURNED and STAVED-UP VERANDA COLUMNS, CAPITALS, NEWELS, BALUSTERS, SPINDLES, RAIL, BRACKETS, PEDESTALS, WATER-TABLE, and all kinds of VERANDA WORK; Poplar and Yellow Pine MOULDINGS; INTERIOR COLUMNS and STAIR WORK; Hand-Carved WOOD CAPITALS; also, COMPOSITION CAPITALS.



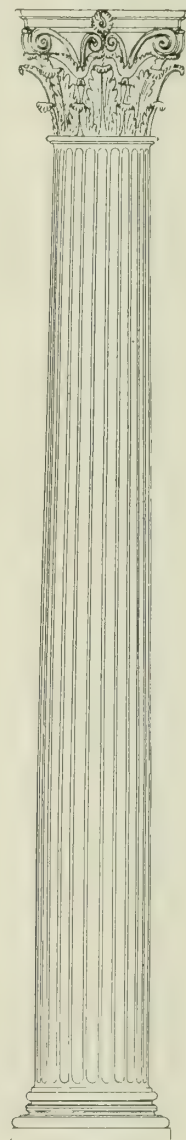
Tuscan No. 25



Doric No. 32



Ionic No. 26



Corinthian No. 33

TYPES OF VERANDA COLUMNS

COLUMNS.

We furnish Columns and Capitals for interior as well as exterior work, and make this a specialty.

Columns are made in all sizes up to 36 inches in diameter and 28 feet long.

STAVED-UP COLUMNS.

We manufacture the best Staved-up Column on the market, made of No. 1 Poplar lumber, thoroughly kiln-dried and the staves joined together by tongue-and-groove glued joints running the entire length of the stave, making a perfect joint and one that will stand. Our staved columns will not open in the joints.

There is nothing better than the built-up or staved column when it is properly made and properly taken care of, but as a column is exposed to all kinds of weather and constant changes in the atmosphere, it must be well manufactured in the first place and then must be kept painted.

We have had many years' experience in the manufacture of staved columns, and are making them just as good as they can be made, as our work in all parts of the country will bear us testimony.

CONSTRUCTION.

We use 2-inch stock for the staves for columns up to 12 inches in diameter, and for columns larger than 12 inches we use 2½ and 3 inch stock, depending on the size of the column. On the largest columns we use the 3-inch stock.

We generally use as many staves to each column as the column is inches in diameter; thus, on a 24-inch column we use 24 staves. This allows of the stock working full thickness and makes a good strong substantial column and one that will last.

We use selected lumber, thoroughly kiln-dried, and the very best workmanship, and our goods are all first-class.

DETAIL WORK.

We make a specialty of fine Veranda Work to architects' details, and have had many years' experience in this line of work.

Poplar or whitewood is one of the best woods for the veranda, as it works smoothly, takes paint well, and stands exposure to the weather. We use the best poplar, and furnish goods that are strictly first-class in every respect and exactly according to details.

We can furnish cypress or white pine goods when specified.

Hardwood Columns and Stair Work made for inside oil finish.

Write for prices, giving sizes and specifications.

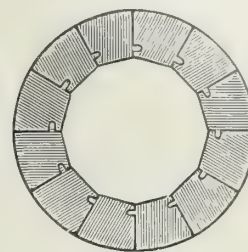
WOOD AND COMPOSITION CAPITALS.

Hand-carved Wood Capitals are made of any size or style, and we also carry a full line of Composition Capitals.

Write for prices, giving sizes and specifications.

SHIPMENTS.

We make prompt shipments.



CROSS-SECTION OF
STAVED-UP
COLUMN



RESIDENCE IN COLUMBUS, OHIO. FRANK L. PACKARD, Architect

NICKERSON MANUFACTURING COMPANY

MANUFACTURERS OF

Porch Columns, Balusters and Rails

KNOXVILLE, TENN.

FACTORY TELEPHONE, 1409 NEW

PRODUCTS.

"NICKERSON" PATENT DOUBLE-LOCK JOINT, and CENTER-TURNED PORCH COLUMNS; INTERIOR HARDWOOD COLUMNS; PORCH and STAIR BALUSTERS and RAILS.

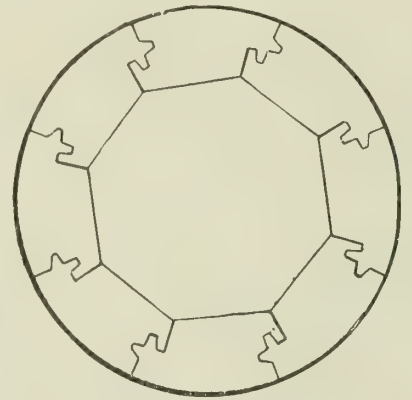
"NICKERSON" PATENT DOUBLE-LOCK JOINT.

We are the exclusive manufacturers of the "Nickerson" Patent Double-Lock Joint, which is considered the best method used in the construction of Porch Columns, for the reason that each joint is an absolute lock in itself.

The staves are all put together from the end and can not come apart except by removing them from the end, which shows conclusively that the column can not possibly open up after it is put together. Furthermore, it does not require the placing of the last stave to lock the column, for when two staves are put together that joint is perfectly locked; and as other staves are added each is locked when placed in position.

ADVANTAGES AND SUPERIORITY.

The superiority of the "Nickerson" Patent Double-Lock Joint Column over all others should be a sufficient inducement for you to place your orders with us. It can not come apart; and even if you take out one or more staves the remaining ones are as securely locked as though there had been none removed, as each joint is a lock in itself.



"NICKERSON" PATENT DOUBLE-LOCK JOINT



No. 200

No. 225

No. 250

No. 275

No. 300

No. 325

VARIOUS DESIGNS OF THE "NICKERSON" PATENT DOUBLE-LOCK COLUMNS

FACILITIES.

We are the only column factory South of the Ohio River making a lock-joint column and the only one in the United States making a double-lock joint. Styles architecturally correct.

INTERIOR
COLUMNS.
ILLUSTRATIONS.

We build all kinds of Interior Hard-wood Columns strictly to detail.

The illustrations depict some of our designs, a large stock of which we always carry. Special designs made to order.

We make our columns plain or fluted, and furnish any style cap or base desired.

PRICES.

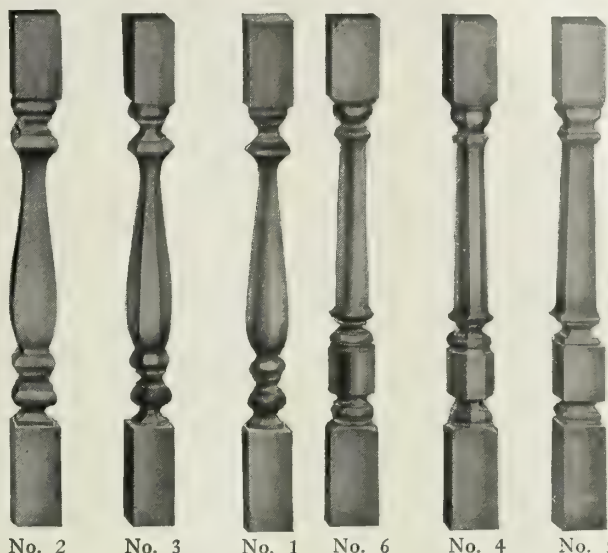
Prices of our Columns, Balusters and Rails will be forwarded on application.

CO-OPERATIVE
SERVICE.

We are prepared at all times to execute orders promptly and to follow architects' details very carefully. It makes no difference how large or how small columns you need we will make them for you.

GUARANTEE.

Style and workmanship guaranteed.



SPECIMENS OF BALUSTERS CARRIED IN STOCK

Car-load business solicited.



RESIDENCE WITH CORINTHIAN COLUMNS

SYRACUSE CORNER BLOCK FACTORY

CHARLES E. ZIMMERMAN, PROPRIETOR

Patent Iron Bases for Wood Porch Columns
SYRACUSE, N. Y.

PRODUCTS. The ZIMMERMAN IRON BASE and VENTILATOR for Wood Porch Columns (patented).

DESCRIPTION. The Zimmerman Iron Base is set in between the base of the wood column and the wood floor and is so designed that ventilation and drainage for the water is provided. The base is a casting, the top having a raised circle forming a fillet which prevents all water backing under and between the turned wood base and the iron base. All the bearings on the floor are also made on a circle, preventing water from lodging under the base.

The bases are manufactured and supplied in the South by the Sheffield Steel Range & Stove Co., Sheffield, Ala.

The best method of fastening the column and the iron base to the floor is first to screw the wood base to the iron base, then screw the iron base to the floor, and finally fit the column to the wood base. Four screws, one in each corner, are provided for fastening the base to the floor. The screw hole is drilled through the solid iron of the corner bearing and is then re-bored to one half inch diameter from the top to one half inch from the bottom of the base. When the screw is in place and the re-bore filled with putty the top of the base is flush, protecting the screw from any moisture.

The bases are thoroughly painted with pure white lead and linseed oil.

ADVANTAGES. The destructive effect of water is well known to cause rotting of woodwork at the base of wood veranda columns as usually constructed, resting directly on the wood floor. Every time it rains or the floor is washed the water penetrates into the joint formed between the base of the wood column and the porch floor, and this moisture, being quickly absorbed by the wood, shortly causes decay, and, as usually happens, both the base of the column and the floor are found to have rotted, making the veranda unsightly. Often the veranda is left in such an unsafe condition that extensive repairs to the whole structure are necessary.

This trouble is entirely avoided by use of the Zimmerman Iron Base.

The base gives a neat finish to any veranda, making its life equal to that of the rest of the building. The base is not expensive and has given complete satisfaction wherever used during the past five years.

SIZES AND LIST PRICES.

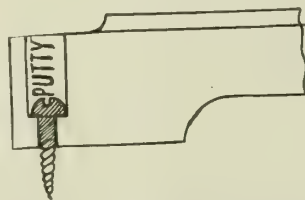
The table gives stock sizes of bases which are also supplied to order to fit any size column, either round or square, the largest in use being 50" x 50" square, as found in the court-house building at Millen, Ga.

MODEL. A miniature nickeled base will be mailed free on application.

Sizes	Prices
8 x 8 x 1 7/8 in.	\$0.60
9 x 9 x 1 7/8 "	.65
10 x 10 x 2 "	.80
11 x 11 x 2 1/4 "	.95
12 x 12 x 2 1/2 "	1.20
13 x 13 x 2 3/4 "	1.40
14 x 14 x 2 3/4 "	1.60
16 x 16 x 3 "	2.10
18 x 18 x 3 1/2 "	2.35
20 x 20 x 3 3/4 "	3.50
22 x 22 x 3 "	3.70
24 x 24 x 3 3/4 "	6.00
26 x 26 x 3 1/2 "	7.50
28 x 28 x 3 3/4 "	9.75
30 x 30 x 3 1/2 "	11.50



TOP VIEW OF BASE



METHOD OF FASTENING BASE



FRONT VIEW OF BASE



BOTTOM VIEW OF BASE
SHOWING CENTER BEARING

THE DYER REVOLVING DOOR CO.

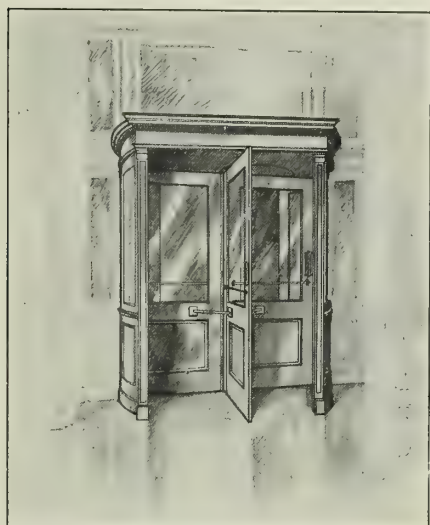
1310 Fuller Building, Broadway at 23rd Street

NEW YORK, N. Y.

TELEPHONE, 5765 GRAMERCY

PRODUCTS.

The "DYER" REVOLVING DOORS, constructed of all kinds of Wood, Steel, Bronze and Iron in two types—the "DYER" STANDARD TYPE and the "DYER" COLLAPSIBLE PANIC-PROOF TYPE.

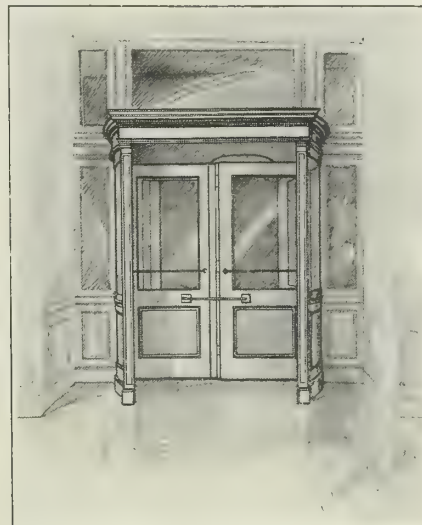


DOOR IN REVOLVING POSITION



DOOR IN FULL OPEN POSITION

Showing use of Fly-Door



DOOR IN LOCKED POSITION

THE "DYER" STANDARD TYPE REVOLVING DOORS.

The Standard Type Revolving Doors are new in principle and construction. They are extremely simple and easy to operate. When the doors are folded together ready to allow for the wide-open position, there is no shoving and pushing of the doors to one side. The Doors are suspended on a ball-bearing turntable concealed in the ceiling chamber. This turntable is operated by means of chain, sprocket and crank, which are located in one of the pilasters of the curved vestibule. The crank is only in evidence when operating the doors for full open position. All mechanism is concealed, but at the same time easily accessible in case of any trouble, there being no ugly open slots in the ceiling. The brace arms, which are of the extension and compression types, hold the doors, when they are in their rotating position, as a rigid unit.

THE "DYER" COLLAPSIBLE PANIC-PROOF TYPE.

The Collapsible Panic-Proof Type meets all requirements of City and Building Departments. It is unique in that it is controlled by a very simple but strong mechanical device which immediately releases all the wings of the door, in their rotating position, at once to a collapsed position. This is accomplished either by an excess of pressure or by simply pushing a press button, in one of the pilasters of the curved vestibule, which connects with the overhead mechanism. The action is positive and almost instantaneous.

IN GENERAL REVIEW.

The "Dyer" Revolving Doors, either the Standard or Collapsible Panic-Proof Types, are the most ideally economical types of doors which can be used for the entrances of all classes of buildings. They protect and regulate the traffic of such buildings and are a perfect protection against all weather conditions.

DESIGNS, SPECIFICATIONS AND PRICES.

From an architectural standpoint we are prepared to submit carefully worked out standard designs, with specifications and prices for same in any material desired. Architects' special designs receive careful interpretation in their development and construction.

Either send for us to call at your office or mail us full data of what is wanted, and we will give all matters our personal attention.

AMERICAN COMPOUND DOOR COMPANY

Manufacturers of Flush Veneered Doors

Twenty-First and Morgan Streets

CHICAGO, ILL.

SALES OFFICES IN PRINCIPAL CITIES

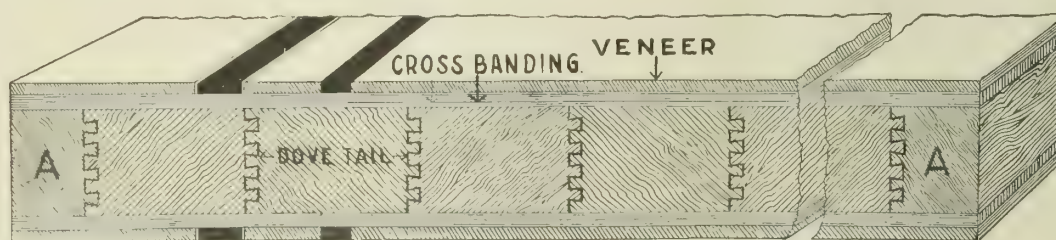
PRODUCTS.

FLUSH VENEERED DOORS, FLUSH PANELS, FRONT and VESTIBULE DOORS.

FLUSH VENEERED DOORS.

Our Flush Veneered Doors have passed the experimental stage. Experience has demonstrated that they are the perfect door. They are double veneered on each side and have the following points of advantage over the old-style doors:

- (1) Their beauty.
- (2) They are strictly sanitary.
- (3) Their method of construction prevents them from shrinking and swelling.
- (4) There are no joints to open.
- (5) They are practically sound-proof, which makes them valuable for communicating doors in hotels, and for corridor doors for all public buildings and apartment houses.
- (6) An elegant polished finish can be put on these doors at very little expense.
- (7) They are burglar-proof.



CROSS-SECTION SHOWING CONSTRUCTION OF FLUSH VENEERED INLAID DOORS

WILL THEY STAND?

Absolutely, and better than any other veneered door made. They are cross-banded, which binds the veneers together and prevents shrinking, swelling, or warping. They have been manufactured for five years.

KINDS OF VENEER.

Do not specify white pine or cypress. We can furnish doors made of these woods, but they will be more expensive than the hard woods, as the veneers are not carried in stock. All of the kinds of wood below are carried in veneer stock: Birch, mahogany, vermillion, plain oak, quartered oak, elm, walnut, whitewood, basswood, white maple, curly maple, gum and ash. We would suggest selection from some of these. The brown ash finishes to look very much like cypress. Basswood answers the place very well for white pine.

HOW THICK SHOULD DOORS BE MADE. PRICES.

Doors 2 ft. 8 in. and under in width may be made $1\frac{3}{4}$ inches thick; over 2 ft. 8 in. they should be made $1\frac{1}{2}$ inches thick. Toilet doors may be 1 inch or $1\frac{1}{8}$ inches.

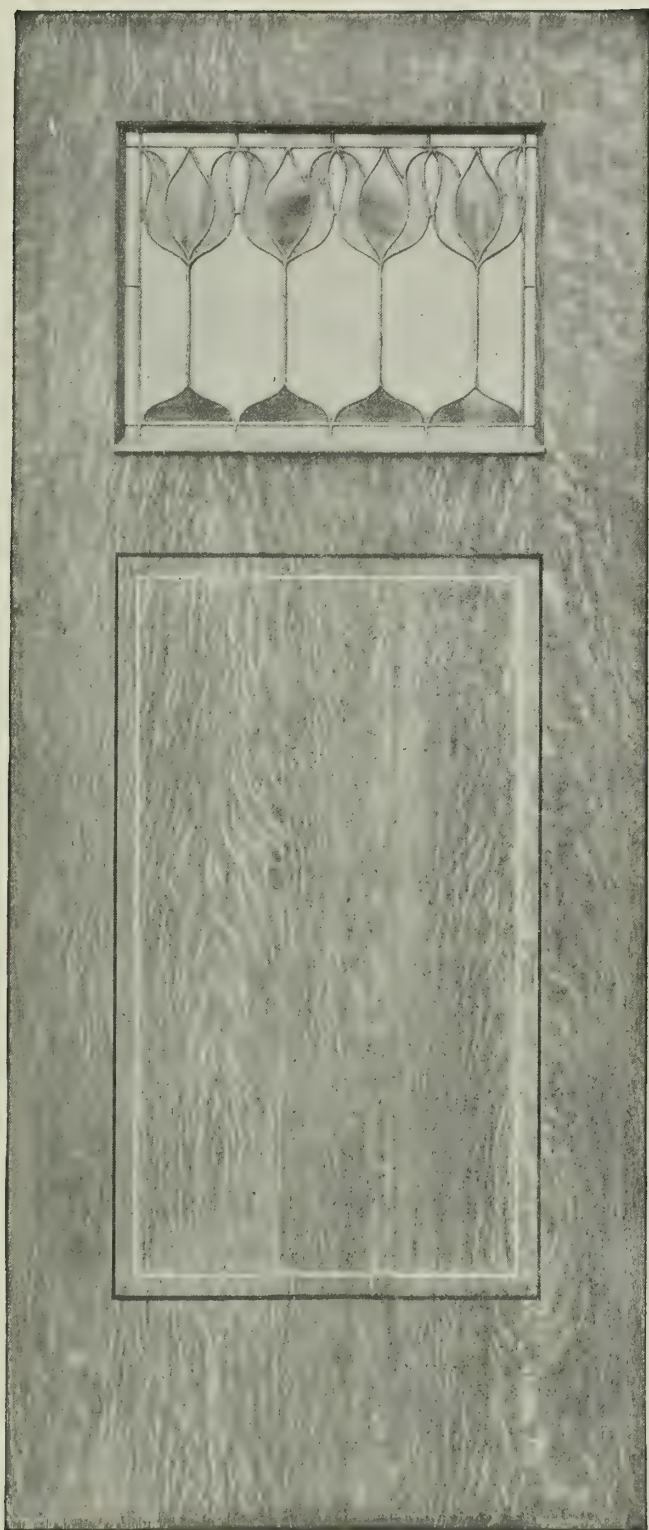
The prices are about the same as for ordinary veneered doors. Send for net price-list.

GUARANTEE.

To new customers who have not used the doors, we will give a guarantee bond to replace any door at our own expense which proves defective within one year.

TESTIMONIALS.

One customer says: "A more perfect door we have never seen. They are simply beyond criticism." Another one: "The work has been in place five years and looks to-day as if it had just been put up." One architect writes: "These doors have in use proved most satisfactory, and we have been much pleased with the promptness of execution of the work and the satisfactory quality of the goods. The doors speak for themselves and are exceedingly handsome." Another one says: "In regard to the doors furnished for my residence, beg to advise they give me entire satisfaction. They cause most favorable comments from everybody who sees them." Another one says: "We have tested the sound-resisting qualities and found them even better than we anticipated."



STYLE L QUARTERED WHITE OAK FLUSH VENEERED
DOOR INLAID WITH EBONY AND WHITE
HOLLY AND GLAZED WITH ART GLASS



STYLE X MAHOGANY FLUSH VENEERED DOOR

SPECIFICATIONS.

All doors shall be Flush Veneered Doors, manufactured by the AMERICAN COMPOUND DOOR COMPANY, Chicago, Ill., under the following specifications:

There shall be strips of thoroughly kiln-dried, soft wood lumber, dove-tailed and glued together. These centers shall then be dried again until no moisture shows on the hygrometer. They shall then be surfaced to an even thickness and covered with cross binding $\frac{1}{8}$ " thick on each side and thoroughly dried and brought to an even surface before applying the face veneers. The face veneers shall be of wood corresponding to the finish in the different rooms. After applying the face veneers dry the door until no moisture is registered on the hygrometer and then bring the door to a smooth surface, leaving no tool or sandpaper mark showing. Stain and fill the doors to the desired color and give them one coat of shellac at the factory.

Bond—A bond must be filed guaranteeing that no defects caused by inferior material or workmanship shall appear for a period of one year, and that in case defects appear this bond shall provide for repairing or replacing doors without expense to the owner.

AMERICAN REVOLVING DOOR CO., INC.

410 North May Street
CHICAGO, ILL.

PRODUCTS.

Manufacturers of REVOLVING DOORS made in wood, metal, or metal-covered wood; REVERSIBLE and SWINGING WINDOWS of all types; REVOLVING DUMB-WAITERS.

"STANDARD" REVOLVING DOOR.

The four rotating wings of this door are made so that, besides their regular revolving position, they may be folded flat on each other and moved aside. They are suspended from an over-head carriage. The walls may be made of bent-wood frames filled with bent-wood or plate-glass panels, or may consist of metal or masonry, lined with marble, mosaic or tile.

AUTOMATICALLY COLLAPSIBLE, "SAFETY" REVOLVING DOOR.

The fixtures for this door are so arranged that in case of a panic or fire when people rush into the revolving door vestibule and naturally press simultaneously against opposite wings, the rotating structure collapses automatically in an outward direction, leaving a double, unobstructed passage way. Where a building entrance permits it, wall sections may also be hinged to flex out of the way in order to increase the exit.



"STANDARD" REVOLVING DOOR

The fixtures of this door are of the plainest, most durable construction and absolutely eliminate all complicated mechanism, which make this type the ideal door for department stores, hotels, theaters, churches, public halls, etc.

"SIMPLEX" REVOLVING DOOR.

The construction of this, our low-cost Revolving Door, is the same as our Standard, except that the wings do not move aside, but they can be folded flat on each other, leaving an unobstructed passage on both sides of them when locked in central open position. This door is made in one stock size only, 6½ ft. diameter, 7 ft. high, of oak, birch, or pine, as may be selected.

REVOLVING DUMB-WAITER.

This device permits dishes and food to be passed from kitchen or butler's pantry to the dining-room without communicating the fumes or noise from one to the other. It consists of a rotating platform of 30 inches diameter, enclosed by a cylindrical wall, covered on top, and revolving on vertical pivots, with an opening on one side and a bent-glass panel opposite, so that when dishes or other objects are placed on it the platform may be revolved and the dishes, etc., removed on the other side. Rubber strips at the joints make the structure air and sound proof. If desired, this device may be made higher and a second platform put in, with opening and glass panel reversed from the lower part, thus doubling the capacity.

The same device is made use of in telegraph and newspaper offices to keep out the noise from telegraph instruments, linotype machines, etc.



Style A



Style B



Style C



Style D



Style F

TYPES OF REVERSIBLE WINDOWS

STYLE A.

A regulation Sliding Window, with Swinging Attachment which, in regard to up-and-down sliding movement, is the same as the ordinary window, but each sash is, with one of its vertical edges, confined to a continuous hinge which allows it to swing into the room, a very convenient position for cleaning.

STYLE B.

A regulation Sliding Window, with Reversible Attachment, in appearance and operation the same as the ordinary window, but both sashes can be turned around. The illustration shows the bottom sash reversed for cleaning the outer surface of the glass from the room; the top sash operates the same way.

STYLE C.

Shows the application of our Reversible Attachment to a modern transom window balanced in the center. The transom can also be revolved for cleaning.

STYLE D.

Vertical pivoted sash turns on top and bottom friction centers entirely around in a very convenient position for cleaning, also giving the full opening for ventilation.

STYLE F.

Horizontally pivoted sash in an ordinary plank frame with transom-bar division. These sashes may also be used three or more in height and in mullion or triple frames, etc.; the glass may be divided into small lights for use in factories, warehouses, etc.

CLEANING.

Windows equipped with our fixtures can be cleaned in a fraction of the time it takes to clean the old-style windows and in absolute safety.

FULL-SIZED
DETAILS.

We will supply, free of charge, full-sized details of our strips and fixtures illustrating their method of application.

SPECIAL
DESIGNS.

Our very extensive experience in the manufacture of Revolving Doors and special window constructions is at the service of architects and builders, and we invite opportunities and inquiries to submit details for any extraordinary construction.

LITERATURE.

Illustrated descriptive literature sent on application.

ATCHISON REVOLVING DOOR CO.

INDEPENDENCE, KAN.

AGENCIES

ST. LOUIS, MO., SEIDEL MFG. Co., Chemical Building
 PACIFIC COAST, WATERHOUSE & PRICE Co., Main Office, San Francisco, Cal.
 MILWAUKEE, WIS., KIEFER-HAESSLER HARDWARE Co.
 CHICAGO, ILL., ROSS E. STEWART, 1010 Monadnock Block
 NEW ORLEANS, LA., CRESCENT CITY SUPPLY Co.
 BOSTON, MASS., LOMBARD & TRACY Co., 161 Devonshire Street
 PITTSBURGH, PA., C. M. EICHENLAUB, 318 Bissell Block
 BUFFALO, N. Y., HENRY MEYER & SON, 2194 Main Street

WASHINGTON, D. C., SAMPLE & MARSHALL Co.
 INDIANAPOLIS, IND., VONNEGUT HARDWARE Co.
 NEW YORK, N. Y., THE QUAY ENGINEERING COMPANY, 1123 Broadway
 MINNEAPOLIS, MINN., JOHNSON, JACKSON & CORNING, INC., 216 Lumber Exchange
 ST. PAUL, MINN., JOHNSON, JACKSON & CORNING, INC., 633 Ryan Building
 WINNIPEG, CAN., CARRUTHERS & Co.

PRODUCTS.

"CURVED WING" and "STRAIGHT WING" REVOLVING DOORS and Connected Work in Wood; and Bronze or Iron Solid or Overlay Work not thinner than 16-gauge, or Copper Covering 16 to 20-gauge. Patented in the United States, Canada, France, and England.

THE "CURVED WING" REVOLVING DOORS.

"Curved Wing" Doors are far easier to pass through, due to the 6-inch (depth of segment) added stepping space in front and the lack of interference by the rear curving wing behind. They present a handsomer appearance and a natural invitation to pass in the right direction.

METHOD OF FOLDING WINGS.

Either "Curved" or "Straight" Wings swing aside on secondary pivots by throwing three levers, to lie in curve of enclosure walls without occupying an inch of the entrance space. (See Figs. 3, 4 and 5.) Drop-arms are such as to make door practically panic-proof. No ceiling slots. Pivots and floor socket adjustable, the latter with renewable bushing and spring closed.

HANGING MECHANISM. LOCKING.

The overhead supporting channel and large stationary ball-bearing permit a cornice depth of as little as six inches.

Wings have integral means for locking at four points, top and bottom and each side, and from either side of building.

FLY DOORS. ESTIMATES.

D. A. Screen or Fly Doors may be used without interference.

Designs submitted to suit varying conditions which preclude stock prices, although figured on a uniform base. Send for Catalogue B.

SPECIFICATIONS.

Specify "Atchison Revolving Doors 'Curved Wing' (or 'Straight Wing') type made by the ATCHISON REVOLVING DOOR Co., of Independence, Kan., wings to fold aside to lie entirely within curvature of enclosure walls, without projection at any point."

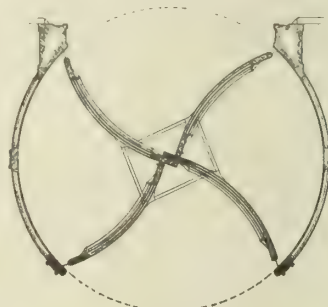


FIG. 1. "CURVED WING" PLAN

Wings in Revolving Position



FIG. 2. U. S. NATIONAL BANK, PORTLAND, ORE.

E. M. LAZARUS, Architect

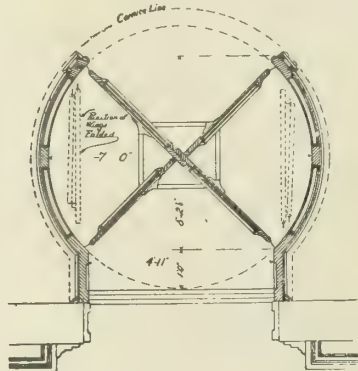


FIG. 3. "STRAIGHT WING" PLAN

Dotted line shows position of wings when folded.

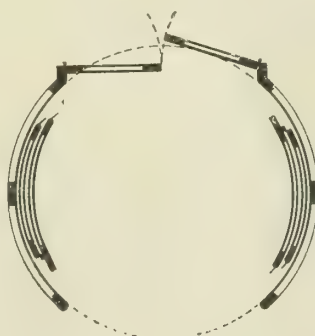


FIG. 4. "CURVED WING" PLAN, WINGS FOLDED

Note position of D. A. Screen or Fly Doors



FIG. 5. CENTRAL UNION TELEPHONE BUILDING, INDIANAPOLIS, IND.

CLINTON J. WARREN, Architect
 Wings folded. D. A. Doors in position



FIG. 6. WRIGHT BUILDING,
ST. LOUIS, MO.
EAMES & YOUNG, Architects
Marble Enclosures

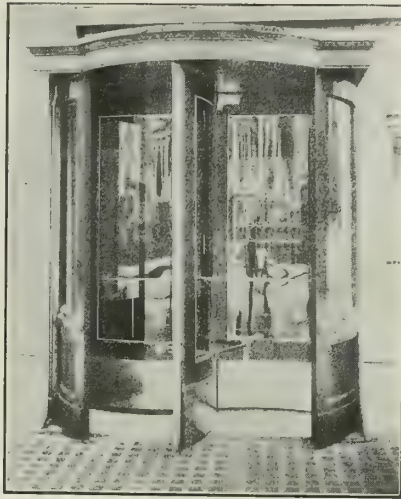


FIG. 7. CORBETT BUILDING, PORT-
LAND, ORE.
WHIDDEN & LEWIS, Architects

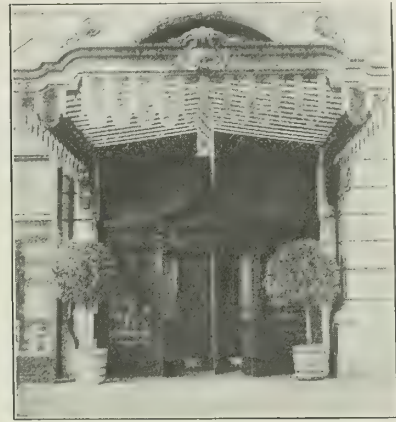


FIG. 8. SEELBACH HOTEL ANNEX
RATHSKELLER ENTRANCE,
LOUISVILLE, KY.
FRANK M. ANDREWS, Architect



FIG. 9. ELLICOTT SQUARE, BUFFALO, N. Y.
ESENWEIN & JOHNSON, Architects



FIG. 10. NATIONAL BANK OF COMMERCE, KANSAS CITY, MO.
JARVIS HUNT, Architect

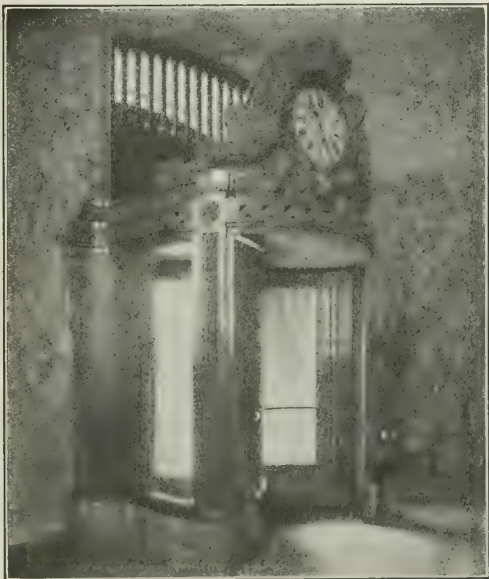


FIG. 11. BRONZE DOOR, IMPORTERS AND
TRADERS BANK, NEW YORK, N. Y.
J. H. FREEDLANDER, Architect



FIG. 12. NATIONAL BANK
OF THE REPUBLIC,
KANSAS CITY, MO.
Temporary door, a typical
low-priced design

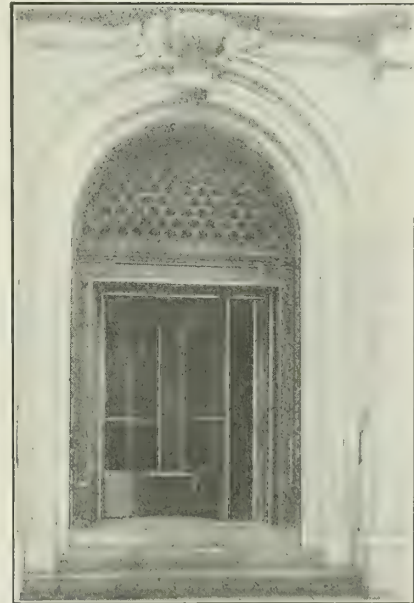


FIG. 13. BRONZE DOOR, ONE OF TWO
IN CLEVELAND TRUST BUILD-
ING, CLEVELAND, OHIO
GEO. B. POST & SONS, Architects

THE COMPOUND DOOR COMPANY

ESTABLISHED 1888

Specialists in High-Grade Interior Finish

ST. JOSEPH, MICH.

PRODUCTS.

HIGH-GRADE VENEERED DOORS built on special order only, and INTERIOR FINISH for high-class buildings in all woods, following architects' specifications and details.

SPECIAL ORDER WORK.

Experience has proved that architects can rely on getting the individual effects for which they plan and detail, and which are so essential to the success of high-class work, only in a factory organized solely for special-order work. Only on this basis can close attention to workmanship and individual selection in material be counted upon. It is the result of this organization that has given us the reputation of being the leading manufacturers of Veneered Doors in the United States.

CONSTRUC- TION.

The sectional cuts shown give a perfect idea of the construction we use in all doors. The material for a core of door may be specified on each order. Where no particular wood is specified we furnish the core in poplar, pine, or chestnut.

FLUSH-DOOR DEPART- MENT.

We give special attention to our Flush Doors which are rapidly growing in favor for hospitals, as well as high-grade offices, apartment buildings, and fine residences. The possibility of individuality in decoration is almost unlimited, and their perfectly smooth surfaces guarantee absolute cleanliness. We have a large special equipment in our Flush Door Department and can execute orders promptly.

FACILITIES.

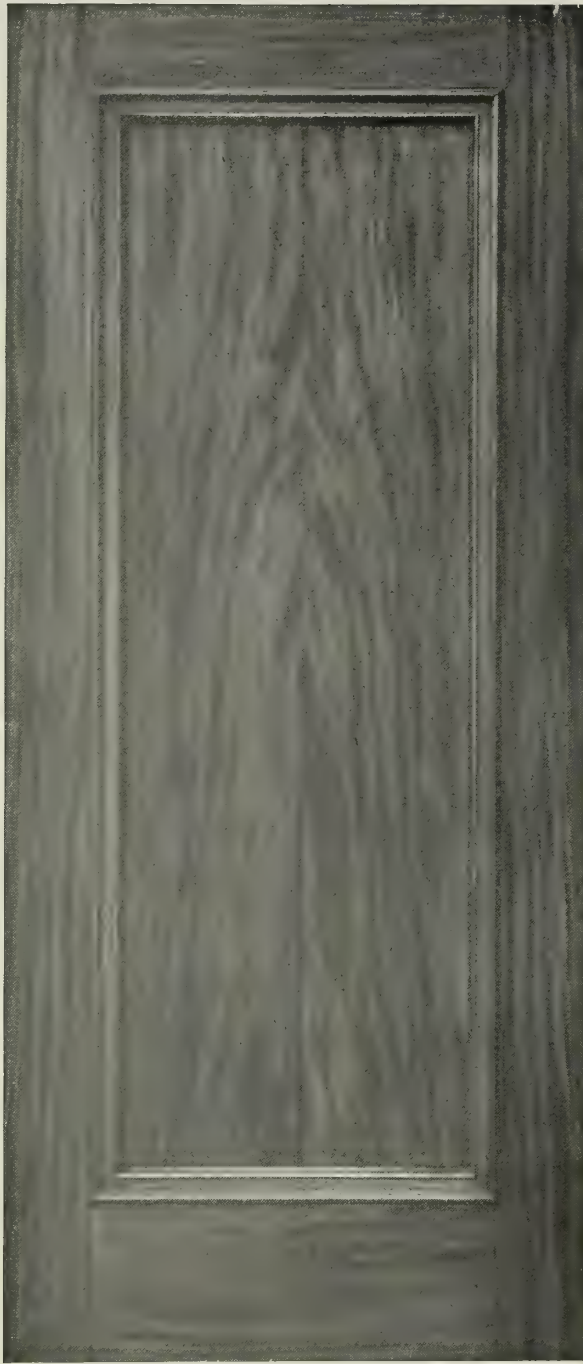
We have the best equipment in this country for the prompt delivery of veneered doors and interior trim in exact reproduction of architects' designs and in absolute accordance with specifications. We manufacture no stock veneered doors, and have no connection with any other Veneered Door Company.



SECTION THROUGH STILE OF COMPOUND
DOOR



SECTION THROUGH FLUSH OR HOSPITAL
DOOR



COMPOUND DOOR NO. 100

FLUSH OR HOSPITAL INLAID COMPOUND DOOR
NO. 203

REFERENCES.

This Company has furnished doors under architects' specifications for many of the best-known buildings in all parts of the country, a few of which are given below, and we are pleased to give a complete list of representative contracts which have been filled:

Ansonia Hotel, New York, N. Y.
 United States Post Office and Custom House, Chicago, Ill.
 First National Bank, Cincinnati, Ohio
 Bellevue-Stratford Hotel, Philadelphia, Pa.
 Wright Building, St. Louis, Mo.
 Long Building, Kansas City, Mo.
 Omaha Post Office and Custom House, Omaha, Neb.
 Alaska Building, Seattle, Wash.
 Shawmut Bank Building, Boston, Mass.
 Tennessee Trust Building, Memphis, Tenn.
 Brown-Marx Building, Birmingham, Ala.

State Capitol Building, Montgomery, Ala.
 Empire Building, Atlanta, Ga.
 Union Station, Nashville, Tenn.
 Ohio Building, Toledo, Ohio
 Buchanan Hotel, St. Joseph, Mo.
 Farmers Bank, Pittsburg, Pa.
 Majestic Theater and Office Building, Milwaukee, Wis.
 American National Bank Building, Indianapolis, Ind.
 Chamber of Commerce, Pasadena, Cal.
 Capital Savings & Trust Co. Building, Columbus, Ohio
 Bank of Hamilton, Hamilton, Ont.

FLEXIFOLD DOOR AND SHUTTER CO.

SUCCESSORS TO THE FLEXIBLE DOOR AND SHUTTER CO.
10 East Worcester Street
WORCESTER, MASS.

PRODUCTS.

VERTICAL "FLEXIFOLD" COILING DOORS and HORIZONTAL ROLLING PARTITIONS for Churches, Schools, Hotels, and Residences; also, for exterior of buildings; COILING WINDOW-BLINDS for High School, College, and Laboratory Windows; FLEXIBLE FRONTS for School Wardrobes; COILING SHUTTERS for Lockers and Bookcases.

VERTICAL
"FLEXI-
FOLD"
COILING
DOORS.

With Vertical "Flexifold" Coiling Doors, rolling partition openings up to 50 feet wide and 15 feet high can be closed, leaving the floor clear when coiled away. The coiling machinery in the box operates without a fault; the thick mouldings and interlocking steel connections give a vertically rigid construction; the roller-bearing trolleys carry the door smoothly and easily on the track.

CONSTRUC-
TION.

In Fig. 1 heavy black lines show, placed in position, the rough box in which door is shipped, hung, adjusted and finished. B and C are the box measurements as per following table:

Width of Finished Openings	Pocket Measure- ments for Pair of Doors		Pocket Measure- ments for Single Doors	
	Line B In.	Line C In.	Line B In.	Line C In.
8	12 x 11		15 x 14	
9	12 x 11		15 x 14	
10	12 x 11		16 x 14	
11	13 x 12		16 x 15	
12	13 x 12		17 x 16	
13	14 x 13		17 x 16	
14	14 x 13		18 x 17	
15	15 x 14		18 x 18	
16	15 x 14		19 x 18	
17	15 x 14		20 x 18	
18	15 x 14		20 x 19	
19	16 x 14		21 x 19	
20	16 x 14		21 x 20	
21	16 x 15		21 x 20	
22	16 x 15		22 x 20	
23	17 x 16		22 x 21	
24	17 x 16		22 x 21	
25	17 x 16		23 x 21	

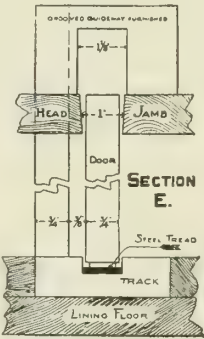


FIG. 3. Track and Guideway

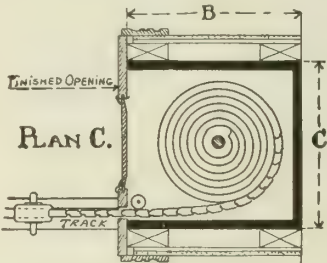


FIG. 1. Rough Box in Pocket

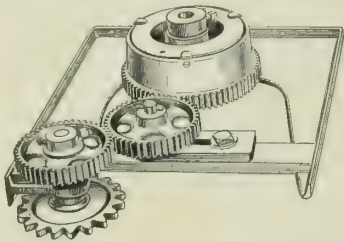


FIG. 2. Coiling Apparatus

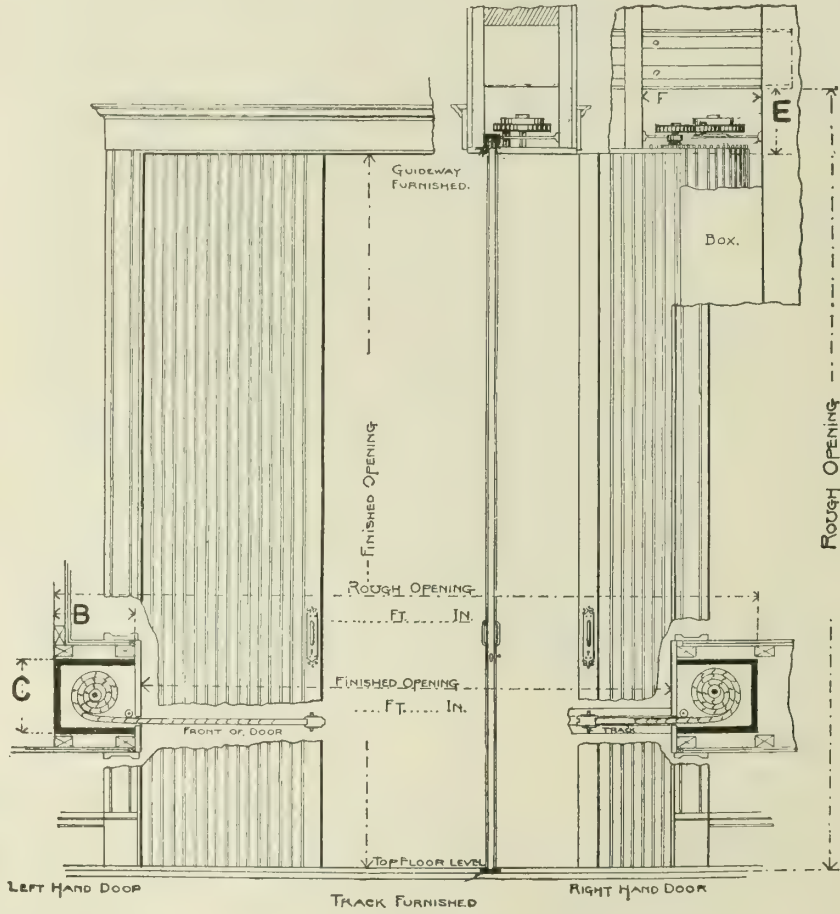


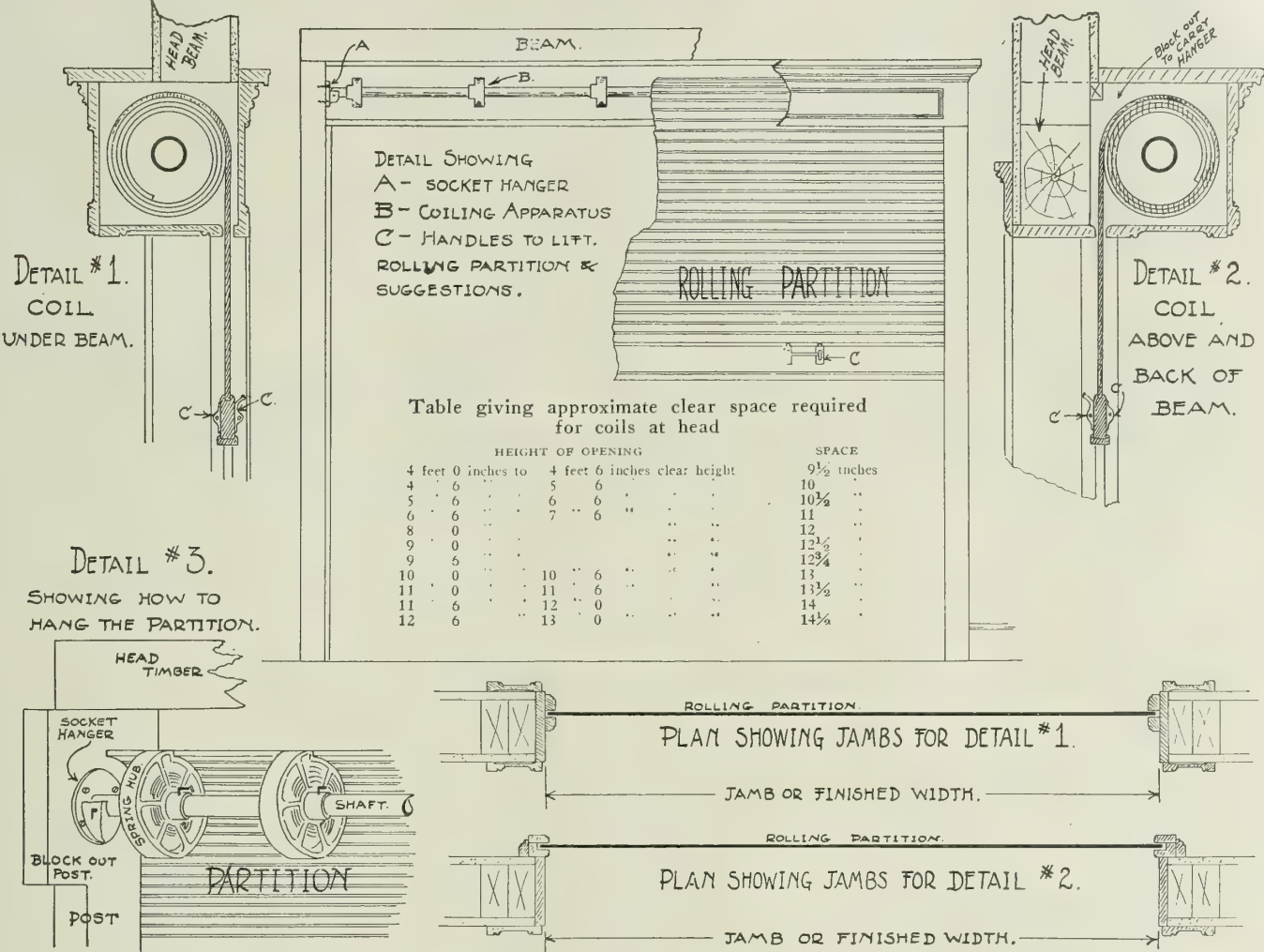
FIG. 4. Detail of Complete Work

VERTICAL "FLEXIFOLD" COILING DOORS

Fig. 2 shows coiling apparatus. Fig. 3 shows details of hardwood steel-lined track set flush with finished floor. If not possible to set track in this manner we will furnish hardwood steel-lined saddle. Detail shows grooved guideway. All orders are shipped with this equipment. Fig. 4 shows the complete work, measurements required, and a suggestion as to finishing boxes containing coils. It also shows top of coiling apparatus, and space (line E) required from head jamb to girder, lintel or truss.

WOOD AND FINISH OF DOORS.

We use $\frac{3}{4}$ inch thick mouldings of any kind of wood. Doors are shipped varnished and finished according to specifications, together with appropriate hardware. The door is finished moulded on both sides.



HORIZONTAL ROLLING PARTITIONS.

This partition is $\frac{1}{2}$ inch thick, moulded alike on both sides, with *non-friction joints*, and connected with strong steel cables. Partitions should never be more than 15 feet wide and preferably not over 12 feet. For wider openings mullions or movable posts can be used. We furnish center iron brackets of special pattern to carry partitions at the head. Movable posts are not included in estimates unless specially mentioned. Partitions can be furnished with blackboard surface on one side.

The illustrations show the various parts of the work. In No. 3 the shaft is shown carried by socket hanger screwed to wood-block bracket at the head. No. 1 shows coil in position under the head beam (the rolling partitions run between finished jambs). No. 2 shows the coil back and above the head beam or truss (the jambs or guides should be put on as shown by plan for this detail).

FINISH.

Partitions are shipped varnished and finished according to specifications, attached to an adjusted coiling apparatus, and provided with socket hangers to carry the ends of shaft.

SHIPMENTS.

Shipments are boxed, crated, and delivered f. o. b. cars at factory.

PLANS AND ESTIMATES.

Plans and estimates for our doors and partitions will be furnished on request. Send sketches illustrating requirements in every case, or refer to above details, stating where the measurements given are taken. We make special drawings for each case, and submit same for approval before order is placed in the factory.

MORGAN COMPANY

Manufacturers of Hardwood Doors

OSHKOSH, WIS.

BRANCHES

CHICAGO, ILL., MORGAN SASH & DOOR CO.
FOSTER CITY, MICH., MORGAN, LUMBER & CEDAR COMPANY

NEW YORK, N. Y., MORGAN COMPANY, 116 Nassau Street
BALTIMORE, MD., MORGAN COMPANY, 806 Union Trust Building

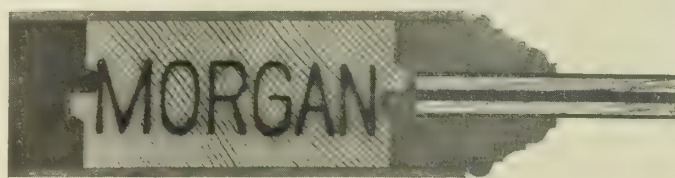
PRODUCTS.

We make "MORGAN" CRAFTSMAN DOORS, BUNGALOW ENTRANCE DOORS, INTERIOR, FRONT and VESTIBULE HARDWOOD DOORS, INTERIOR MIRROR DOORS; also, WINDOWS, BLINDS, SIDELIGHTS, STAIRWORK and INTERIOR FINISH in various woods.



CROSS-SECTION, SOLID MOULD DOOR

Showing construction of 1 3/8-inch door, with 1/2-inch three-ply panel



CROSS-SECTION, FLUSH MOULD DOOR

Showing construction of 1 3/8-inch door, flush moulded two sides, with 1/2-inch five-ply panel

CONSTRUCTION.

"Morgan" Doors are Hardwood Veneered. They are "built up" from narrow pieces of solid pine with edges of hardwood, which are glued together under powerful hydraulic pressure, obtaining perfect joints. This forms the core or center of the door (pine being used on account of its lightness), to which the face veneers of beautiful hardwood are applied, using the best veneer glue. The veneer and core are again subjected to hydraulic pressure, making a solid piece.

ADVANTAGES.

Using this multiple-ply principle of wood laying, first having the wood thoroughly seasoned and all moisture eliminated, a "Perfect Door" has been constructed, which will withstand the extremes of expansion and contraction.

DIMENSIONS OF "MORGAN" DOORS ILLUSTRATED

Design	Size of Door Feet	Stile Inches	Top Rail Inches	Lock Rail Inches	Bottom Rail Inches	Intermediate Rails Inches	Height to Top of Lock Rail Inches	Mould
M-54	3 x 7	4 7/8	4 3/4	4 13/16	9	4 13/16	68 1/16	Solid
M-60		5 1/2	5 1/2		12			Flush
M-114		5 1/2	5 1/2	8 7/8	12	4 13/16		Solid
M-89		5 5/8	5 5/8		18			Raised

All widths of stiles and rails given for solid mould doors include the sticking

The height to top of lock rail given includes the width of the moulding

The width of the stiles and rails given for moulded doors does not include the width of the moulding

SPECIAL SIZE DOORS.

We are equipped to supply special sizes upon short notices and we build Doors, Sash or Interior Finish to architects' drawings and specifications.

PRICES.

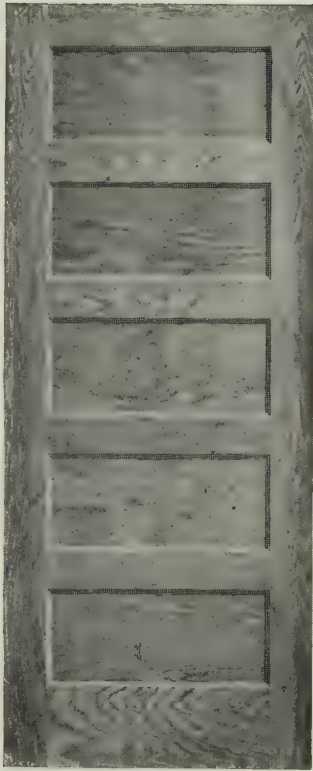
Our price list is sent free of charge on application, and when lists are given, we will quote delivered prices.

TRADE-MARK.

The name "MORGAN" is stamped on the top edge of every hardwood door we manufacture, and is a guarantee of a "Perfect Door." We will replace any "Morgan" Hardwood Door that fails to give entire satisfaction.

TERRITORY.

Our distributing facilities permit us to ship our product to any part of the United States or Canada promptly. Our goods are sold largely through local dealers.



M—54

FIVE CROSS-PANEL INSIDE DOOR

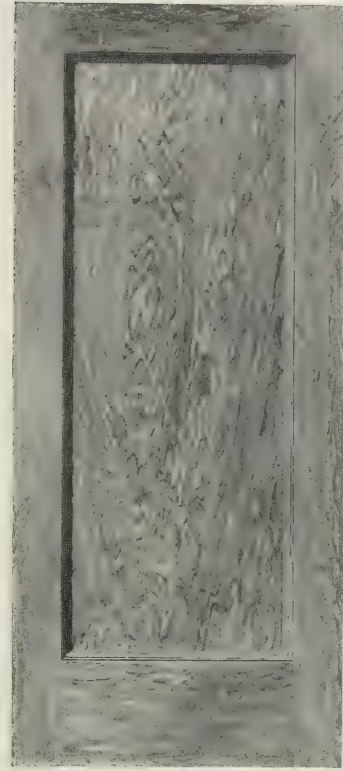
Cut shows Plain Red Oak, Flat Panel, Solid Mould. Standard sizes in unselected Birch and Plain Red Oak carried in stock



M—59

RENAISSANCE TWO-PANEL INSIDE DOOR

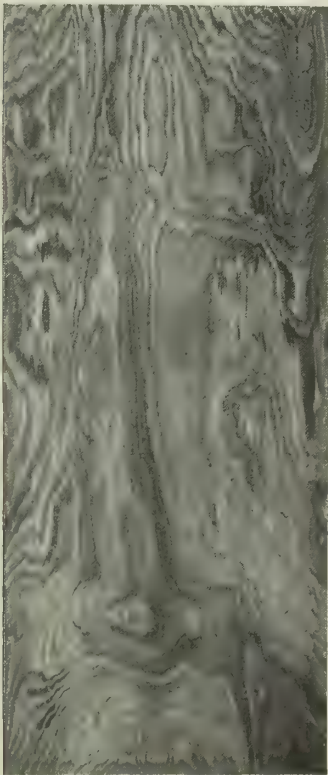
Cut shows Plain Red Oak, Flat Panel, Solid Mould. Standard sizes in Plain Red Oak and unselected Birch carried in stock



M—60

EMPIRE ONE-PANEL INSIDE DOOR

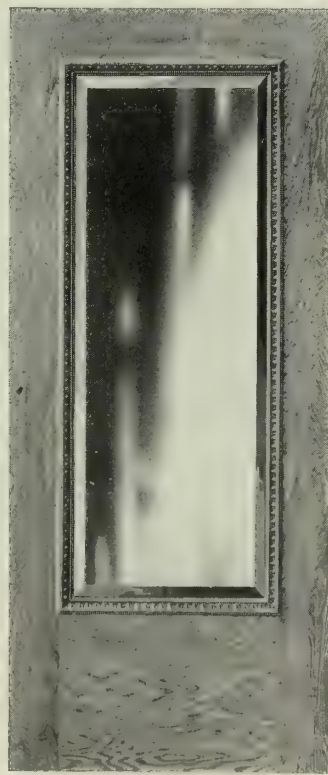
Cut shows Plain Red Oak, Five-ply, Flat Panel Flush Mould. This door is built in different woods



M—115

SANITARY DOOR, FOR HOSPITALS, CLUB HOUSES, ETC.

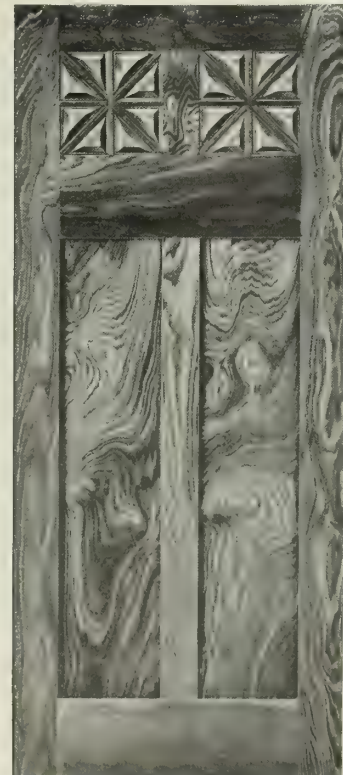
Cut shows Wisconsin Brown Ash, flush, framed core, with single sheets of veneer on faces. There are no panels. Can make in Birch, Plain Red or White Oak, Brown Ash, Quartered Oak and other woods



M—89

**ENTRANCE OR VESTIBULE DOOR
RAISED E. & D. MOULD**

Cut shows plain Red Oak, with Fillet and Flush Mould one side. This door is built in different woods. Plain Red Oak carried in stock



M—114

BUNGALOW DOOR, FOR COTTAGES, BUNGALOWS, ETC.

Cut shows Brown Ash, Five-ply, Flat Panels, square edge Stiles and Rails, bevel plate glass. Can be built in different woods

ESTABLISHED 1855

PAINE LUMBER COMPANY, LTD.

GENERAL OFFICES AND MANUFACTURING PLANTS

OSHKOSH, WIS.

BRANCH OFFICES AND DISPLAY ROOMS

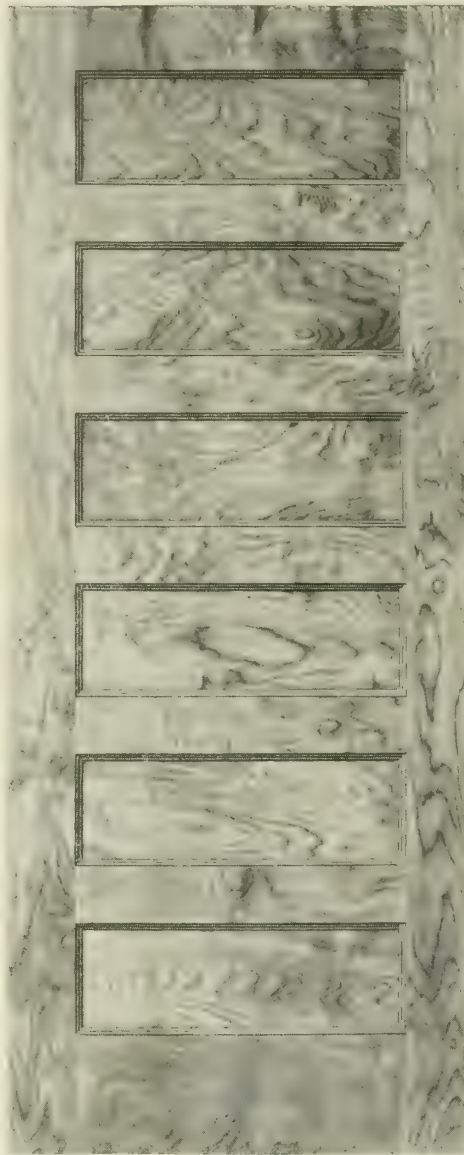
NEW YORK, N. Y., 4025 Metropolitan Life Building
 CHICAGO, ILL., 516, 517 and 518 Chamber of Commerce
 PHILADELPHIA, PA., 1343 Real Estate Trust Building
 WASHINGTON, D. C., Merchants and Mechanics Savings Bank
 Building

ST. LOUIS, MO., 1616 Wright Building
 DALLAS, TEX., 615 Praetorian Building
 ATLANTA, GA., 1111 Candler Building
 NEW ORLEANS, LA., 840-842 Baronne Street
 KANSAS CITY, MO., 512 R. A. Long Building



DESIGN NO. 380. VESTIBULE OR FRONT
 DOOR

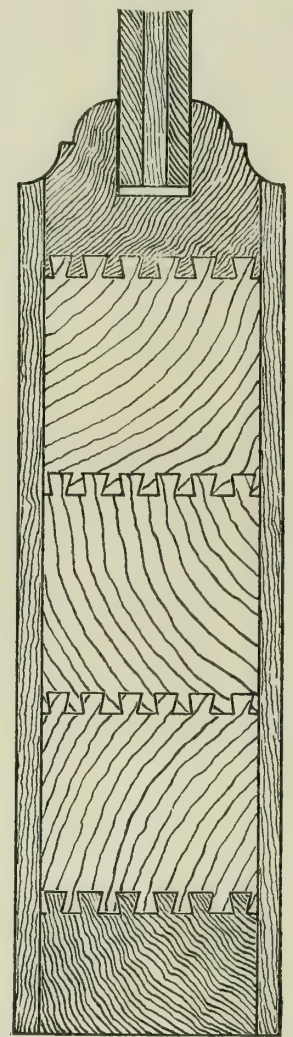
Glass Plate, 1 $\frac{3}{4}$ -inch Bevel



DESIGN NO. 377. SIX-CROSS-PANEL
 INTERIOR DOOR

KORELOCK

TRADE-MARK



A PERFECT CORE

PRODUCTS.

We manufacture in Hardwood and make a specialty of the famous "KORELOCK" VENEERED INTERIOR, VESTIBULE and FRONT DOORS. We also make, in Hardwood, BALUSTERS, RAIL, STAIR WORK, COLONNADES and MOULDINGS.

In Softwood, PANEL DOORS, SASH DOORS, WINDOWS, BLINDS, BUILT-UP COLUMNS, PORCH WORK and MOULDINGS.

PRODUCTION
AND
FACILITIES.

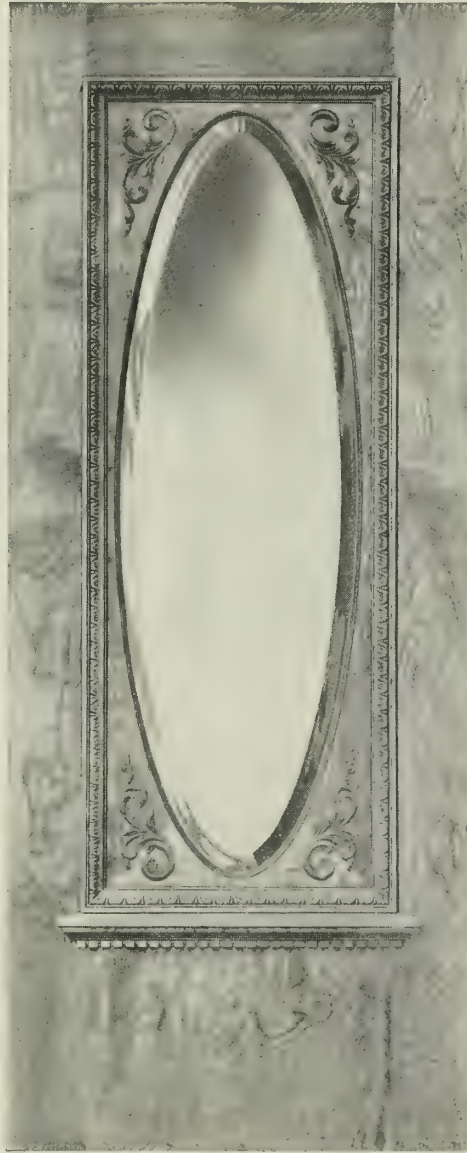
PAINE LUMBER COMPANY, LTD., manufactures more Hardwood Veneered Doors than all their competitors in the world combined. They own their timber reserves and operate their own lumber camps, saw-mill and veneer mills. All being under one control, the veneer logs are selected and every step in the operation is done with one definite end in view—a "Korelock" Door.

ILLUSTRATIONS.

The illustrations shown are a few of the "Korelock" designs originated by PAINE LUMBER COMPANY, LTD. These designs, as well as all of their "Korelock" designs, are made in Unselected Birch, Selected White Birch, Selected Red Birch, Plain Red Oak, and in other woods.

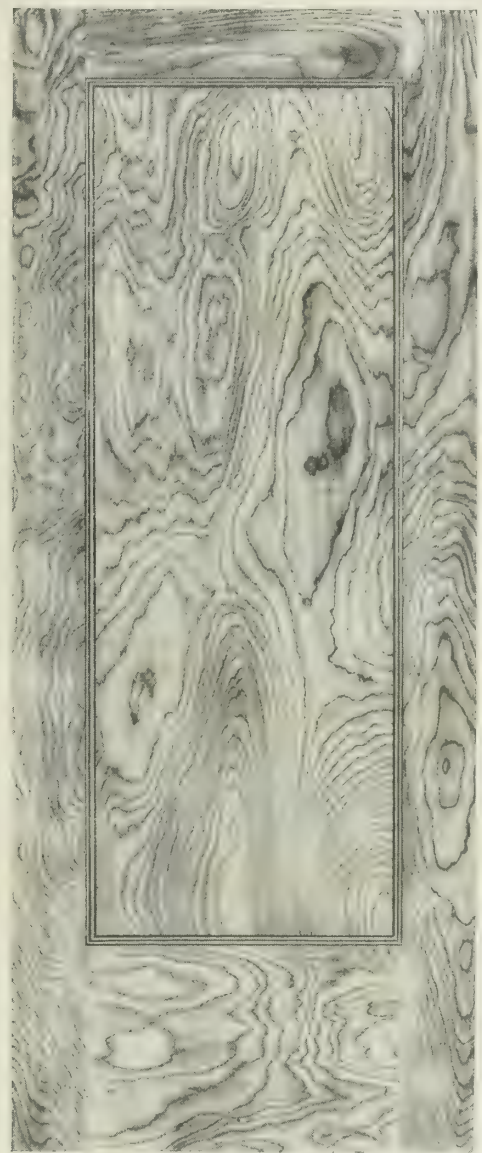


DESIGN NO. 381. TWO-PANEL INTERIOR
DOOR



DESIGN NO. 404. VESTIBULE OR FRONT
DOOR

Glass Plate, 1 $\frac{3}{4}$ -inch Bevel



DESIGN NO. 402. ONE-PANEL INTERIOR
DOOR

GUARANTEE.

Every "Korelock" Door is positively guaranteed against any faults and defects in construction. Waterproof glue is used exclusively, which removes all doubt as to the durability of veneered front doors.

PRICES,
CATALOGUES.

Catalogues, samples and price-lists will be sent upon receipt of inquiry.

REFERENCE.

Upon request we will send a list giving a few of the many hotel, office, apartment, and public buildings in various parts of the United States where "Korelock" Doors are giving excellent satisfaction.

THE PITT BALANCE DOOR COMPANY

MANUFACTURERS OF

The "Pitt" Balance Door

136-138 West Twenty-Fourth Street

NEW YORK, N. Y.

TELEPHONE, 3100, 3101 CHELSEA

PRODUCTS.

"PITT" BALANCE DOORS, TELEPHONE BOOTHS, "CHAMPION" METAL WEATHER-STRIP.



FIG. 1

"PITT" STANDARD
VESTIBULE

Consisting of two pairs of doors
Entrance to Hotel Imperial
Café, Broadway, New York



FIG. 2

TELEPHONE BOOTH TELEPHONE BOOTH TELEPHONE BOOTH

Door closed

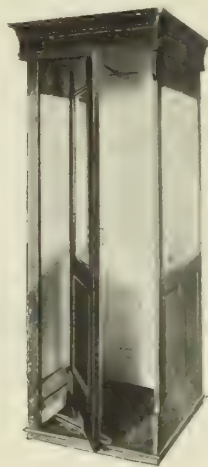


FIG. 3

Door partly open



FIG. 4

Door wide open



FIG. 5. "PITT" CENTER-PANEL
VESTIBULE

Consisting of four single doors
This is more rapid, comfortable and
panic-proof than any revolving
door

DESCRIPTION AND ADVANTAGES OF "PITT" BALANCE DOOR.

The "Pitt" Balance Door is a double-swing door of light, strong construction, adapted for entrances to buildings which have considerable traffic, and which entrances are required to be weather-proof.

Due to its mechanical construction, the "Pitt" Balance Door can not be blown open. It is very quick in its action, allowing the minimum possible amount of cold air to enter the building while some person is walking through it, but it can not possibly strike or injure any one. The door is provided with springs of necessary tension, which are very light, making the use of the door easy. It may be fastened open in the summer time, obviating its removal during the warm weather.

The door economizes space, as it takes up only its own width when fully opened in either direction (see illustrations), using the same area in each of its swings, thus economizing space over the ordinary double-swing door. Its oscillations in coming to rest are very few.

The door is operated exactly as an ordinary double-swing door is operated, causing no inconvenience to traffic.

The Center Panel Vestibule has the same good qualities as the ordinary "Pitt" door, with the added merit that it divides the traffic "in" and "out" of a building into separate channels, obviating confusion and inconvenience to patrons. (See Figs. 5 and 9.)

TELEPHONE
BOOTHES.

The Telephone Booths furnished with our doors (see Figs. 2, 3, 4, 10 and 11) take up no corridor space, and afford the greatest comfort for the patrons, as they operate easily and positively. As the door does not extend beyond the booth, it is always left open when the telephone is not in use, and held so by a spring. This insures excellent ventilation, which adds greatly to the comfort of those who use the telephone. The same spring, before mentioned, holds the door closed when the booth is in use.

UTILITY
AND OFFICIAL
INDORSE-
MENT.

The "Pitt" Balance Doors can be used to great advantage in all public and semi-public buildings, for entrance doors, or for use as a protection against fire and draughts. The New York Bureau of Buildings and the National Board of Fire Underwriters will approve the "Pitt" Balance Door for all buildings.

SPECIFICA-
TIONS
AND SIZES.

"Pitt" Balance Doors should be specified of Standard size to save time and expense, although any size can be furnished.

The Standard "Pitt" Door is 2' 10" wide by 7' 6" high, with a full glass panel or half glass panel with wooden panels below. Two pairs of doors make a standard vestibule.

In specifying "Pitt" Balance Doors allowance should be made in the plans for the side panels and soffits. Where this is to be done, write for information or for representative to call.

INSTALLA-
TION.

In drawing these Doors in plans, architects should first consult us for details.

ESTIMATES
AND
CO-OPERATIVE
SERVICE.

A full line of all the Doors, Telephone Booths, and the Weather-Strip can be seen at our office in full-sized working models.

We are at all times pleased to submit estimates and rough designs to architects and others upon application. In writing for estimate please state the finish, material and hardware required and forward us a dimensioned plan and elevation.

In writing for estimates for "Pitt" Balance Doors we require the following information:

- (1) Sketch of the entrance, indicating present doors and distance between them.
- (2) Distance from floor to transom bar.
- (3) Width and height of present saddles and whether they are flush with the floor or project above it.
- (4) Position of any columns, stairs, radiators, counters, etc.
- (5) Number of steps in entrance and their width and height.
- (6) Of what material the present floor is composed.
- (7) Kind of wood required for the new "Pitt" Balance Doors.

Upon receipt of this information we will promptly submit drawings and estimates on "Pitt" Balance Doors.

For estimates for Telephone Booths we should have access to architects' plans and specifications.

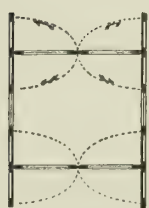


FIG. 6



FIG. 7



FIG. 8

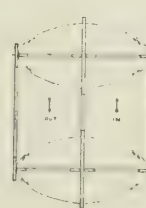


FIG. 9

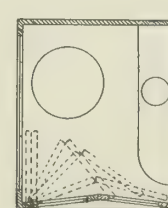


FIG. 10

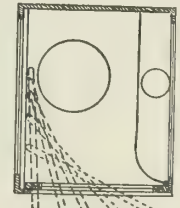


FIG. 11

DIAGRAMS OF THE "PITT" BALANCE DOOR IN USE

THE SAGAX WOOD COMPANY

MANUFACTURERS OF

Fire Doors, Fire Shutters, Composition Floors

MAIN OFFICE AND PLANT

Andre Street, Locust Point
BALTIMORE, MD.

CABLE ADDRESS, "SAGAX," BALTIMORE

NEW YORK, N. Y.
JOHN W. RAPP, 1 Madison Avenue

PRODUCTS. Manufacturers of "SAGAX" FIRE DOORS and FIRE SHUTTERS; also, COMPOSITION FLOORS.

DESCRIPTION. "Sagax" is a fireproof and weather-proof wood substitute, or artificial wood, made of a peculiar composition manufactured by us and protected by letters patent in the United States and fourteen foreign countries.

PHYSICAL PROPERTIES OF "SAGAX." Tests at Columbia University show the following results:

Shearing stress per square inch, 600 to 900 pounds.
Modulus of rupture per square inch 1,200 pounds.
Compressive strength per square inch, 2830 to 3450 pounds.
Tensile strength per square inch, 630 to 800 pounds.
Modulus of elasticity per square inch, 350,000 pounds.
Porosity, 4 per cent in 48 hours.
Weight, 72 pounds per cubic foot or 6 pounds per board foot.

Fire tests have been made at both Columbia University in New York and the Underwriters' Laboratories, Inc., in Chicago.

ADAPTABILITY. "Sagax" Fire Doors and Fire Shutters can be used anywhere that such devices are required. They are particularly desirable where a smooth door or shutter is demanded for appearance, and also where acids or salts are apt to come in contact with them.

"Sagax" Floors are also desirable where a fine appearance and sanitary construction are required, as in office buildings, hotels, schools, and hospitals.

We do not recommend "Sagax" for warehouse floors.

ADVANTAGES. "Sagax" is not injured by the application of high temperatures extending over long periods, or by subsequent application of water; is an excellent non-conductor of heat; is strong and permanent; can be worked with edged tools; can be sawed, and will hold a nail as well as oak. "Sagax" is not deteriorated by weather and does not require painting, though paint can be applied if desired. There is no tin or rot, rust, or tear off.

SIZES AND WEIGHTS. "Sagax" Fire Doors are made for openings up to 80 square feet, stock sizes being as shown in table.

"SAGAX" SLIDING FIRE DOORS			
Top beveled 3/4" per foot			
SIZE OPENING		SIZE DOOR	
Height to Center of Arch	Width	Height at Center	Width
6' 0"	3' 0"	6' 4"	3' 8"
6' 0"	3' 6"	6' 4"	4' 2"
6' 0"	4' 0"	6' 4"	4' 8"
6' 0"	5' 0"	6' 4"	5' 8"
7' 0"	5' 0"	7' 4"	5' 8"
7' 0"	6' 0"	7' 4"	6' 8"
8' 0"	6' 0"	8' 4"	6' 8"
8' 0"	7' 0"	8' 4"	7' 8"
9' 0"	6' 0"	9' 4"	6' 8"
9' 0"	7' 0"	9' 4"	7' 8"
9' 0"	8' 0"	9' 4"	8' 8"
10' 0"	7' 0"	10' 4"	7' 8"
10' 0"	8' 0"	10' 4"	8' 8"

APPROVAL.

"Sagax" Fire Doors and Fire Shutters are included in the list of fire doors and shutters examined under the requirements of the National Board of Fire Underwriters by the National Fire Protection Association after exhaustive tests by the Underwriters' Laboratories, Inc., and approved for use.

Doors are 2 inches thick and weigh 12 pounds per square foot.

"Sagax" Fire Shutters are made for openings as required. They are 1½ inches thick and weigh 9 pounds per square foot.

Standard hardware may be used to hang "Sagax" Fire Doors and Shutters, whether sliding, swinging or lifting.

"Sagax" Floors weigh 3 pounds per square foot and are laid about ½ inch thick.

PRICES.

Prices of "Sagax" Fire Doors and Fire Shutters f. o. b. factory or f. o. b. destination upon application. In general the price is not higher than other doors or shutters.

Prices upon "Sagax" Floors vary with conditions, but in general are about twice the cost of wood-top floors.

Preliminary or final estimate on "Sagax" Floors laid in place furnished upon application.

TRADE-MARK.

Our goods all bear our Trade-Mark and the Underwriters' Label.

SPECIFICATIONS.

Architects should specify fire doors or shutters or floors as made by THE SAGAX WOOD COMPANY, of Baltimore, Md.

GUARANTEE.

We guarantee "Sagax" Floors not to crack or discolor, and to remain in good condition, subject only to ordinary wear and tear.

REFERENCES.

The following is a partial list of buildings in Baltimore in which "Sagax" has been used:

FIRE DOORS AND FIRE SHUTTERS

Terminal Warehouse
Baltimore Retort & Fire Brick Co.
State Tobacco Warehouse
Macht Building
Dietrich Bros. Steel Shop

FLOORS

Office, Blankford & Maginess
Residence, 1320 Eutaw Place
Residence, 27 West Biddle Street



TRADE-MARK

HYDE-MURPHY COMPANY

Cabinet Work, and Bank and Office Fixtures

RIDGWAY, PA.

PRODUCTS.

BANK and OFFICE FIXTURES; INTERIOR WOODWORK of every nature, including CABINET WORK, MANTELS, HARDWOOD INTERIOR FINISH, VENEERED DOORS, STAIR BUILDING, PANEL WORK, GRILLES, and MILL WORK of all kinds; WHITE PINE COLUMNS.

We make a specialty of HARDWOOD INTERIOR FINISH and high-class CABINET WORK.

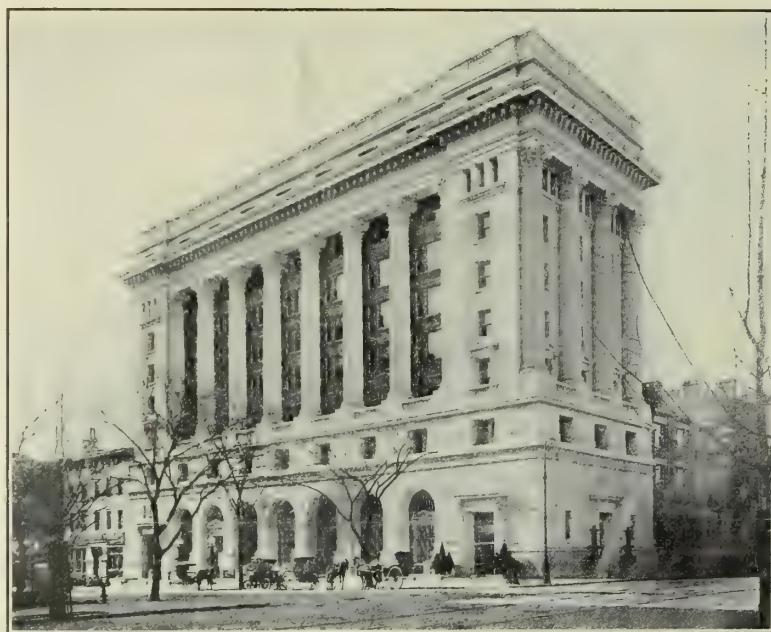
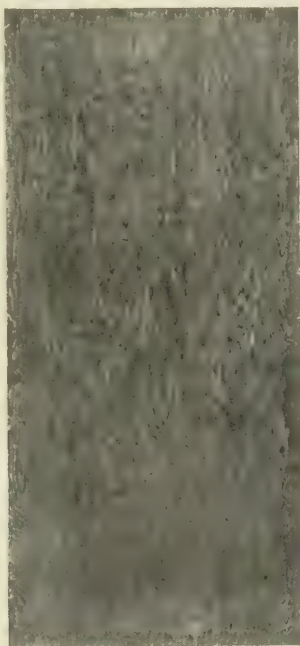
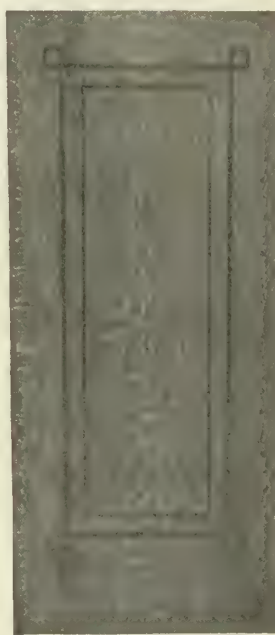
We are prepared to do work for all classes of buildings, including office, bank and government buildings and residences.

FACILITIES.

We have the largest Hardwood Interior Finish and Veneered Door Plant in Western Pennsylvania.

ILLUSTRATIONS.

Stock designs of our Veneered Sanitary Doors are shown below. There are no mouldings and crevices to hold dust and microbes. The detail section shows the construction.



Stile K White One Quarter
Oak, Inlaid with
Vermilion

Section

Stile M Rotary Cut
Red Oak Veneered

UNION TRUST BUILDING, WASHINGTON, D. C.

EXAMPLES OF VENEERED SANITARY DOORS

ESTIMATES.

Upon receipt of plans and specifications, estimates will be furnished on all kinds of woodwork. Our large catalogue, with details of our goods, will be supplied upon application, and all desired information will be cheerfully furnished.

REFERENCES.

BUILDING

Union Trust Building
Hibbs Building
Residence of Roland G. Mitchell
Bank and Office Building for W. J. Smith
Altoona Trust Building
National Exchange Bank Building
Lawrence Savings & Trust Co.
Willett Apartment Building
American National Bank
National Museum
St. Francis Hospital
School of Engineering, University of Pennsylvania
University Club
Presbyterian Hospital
Thirty-Ninth St. Manhattan Terminal
Staten Island Terminal Station
Pittsburg Athletic Club

LOCATION

Washington, D. C.
Washington, D. C.
White Plains, N. Y.
Greenwich, Conn.
Altoona Pa.
Steubenville, Ohio
Newcastle, Pa.
82d St. and West End Ave., New York
Fort Worth, Texas
Washington, D. C.
Pittsburg, Pa.
Pittsburg, Pa.
Pittsburg, Pa.
Allegheny, Pa.
New York
New York
Pittsburg, Pa.

ARCHITECTS

Wood, Donn & Deming
Bruce Price & DeSibour
McKim, Mead & White
Mowbray & Uffinger
Mowbray & Uffinger
Mowbray & Uffinger
Mowbray & Uffinger
Carlton Strong

Bernard R. Green, Supt.
S. F. Heckert
Palmer & Hornbostel
McClure & Spahr
Belquist & Lee
Walker & Morris
Walker & Morris
Janson & Abbot

ESTABLISHED 1876

INCORPORATED 1903

JAS. G. WILSON MFG. CO.

MANUFACTURERS OF

Rolling Doors and Shutters in Steel, Wood, and Bronze

3 West Twenty-Ninth Street

NEW YORK, N. Y.

TELEPHONE, 1160 MADISON SQUARE
CABLE, "LYDIAN, NEW YORK"BRANCH OFFICE
CHICAGO, ILL., 108 La Salle StreetFACTORY ADDRESS
MAIL, NORFOLK, VA.
TELEGRAPH, BERKELEY, VA.

PRODUCTS.

STEEL ROLLING DOORS and SHUTTERS, "SALAMANDER" ROLLING SHUTTERS, WOOD ROLLING DOORS, SWING SLIDING DOORS.

Also, WOOD ROLLING PARTITIONS, ROLLING BLINDS, VENETIAN AWNING BLINDS, INSIDE VENETIAN BLINDS, ENGLISH WOOD BLOCK FLOORING, and HYGIENIC WARDROBES, for pages of which see General Index.

*Send for Detail Sheets.*STEEL ROLL-
ING DOORS
AND
SHUTTERS.

Our Steel Rolling Doors (Fig. 1) and Shutters are made either from continuous corrugated steel sheets or interlocking slats. They are operated in different ways to suit varying conditions, viz., by spring-power, endless chain or screw gear, by hand-power or electric motors.

Send for Detail Sheets."SALAMAN-
DER" ROLLING
SHUTTERS.

"Salamander" Rolling Shutters (Fig. 2) consist of wooden slats covered with steel or bronze. They are particularly adapted for the finest class of Retail Store Work. See illustration below.

WOOD
ROLLING
DOORS.

Wood Rolling Doors (Fig. 3) are made (with or without light panels) of heavy wooden slats. All the connections are of bronze. Their use is recommended in Roundhouses and other places where steel doors would be affected by the injurious acid fumes and gases.

Send for Detail Sheets.

FIG. 1. NORTHERN PACIFIC RAILROAD SHED AT SEATTLE, WASH.

Showing Wilson's Self-Coiling Corrugated Rolling Doors. The bays are 19 feet wide, divided in center by hinged pilasters. See detail sheet



FIG. 2. TIFFANY BUILDING, NEW YORK

Fitted with Wilson's "Salamander" Rolling Shutters in Bronze. These shutters weigh half a ton each and are operated, in groups of five, by an electric motor. This represents the highest type of fireproof shutter



FIG. 3. WILSON'S WOOD ROLLING DOORS FOR ROUNDHOUSES

These doors weigh about 900 lbs. each, and are operated by a pull on an endless chain of 25 lbs. Thirty seconds time required for raising. Fitted with wicket door and wire-glass panels when required

SWING SLIDING DOORS.

Swing Sliding Doors (Fig. 4) are made of wood in various thicknesses, with or without light panels, and are covered with metal or not as desired. They are very easily operated by hand or chain gear and are fitted with automatic closing device and self-acting bolts.

Send for Detail Sheets.

This shutter (Fig. 5) is especially constructed to meet the requirements of the National Board of Fire Underwriters.

Made of interlocking steel slats; 20 gauge galvanized.

Referring to the adjoining detail illustration (Fig. 5) we note the following special features:

Fire stops—Each end of each slat is provided with a special malleable iron casting designed to take wear in grooves, to hold slats in place, to keep the joints of slats in close contact, to stiffen the shutter vertically and to act as a fire and smoke stop at the sides of shutter.

The shutter is hung upon steel shafts supported by cast-iron brackets bolted to face of wall of shaft. It contains a helical spring of sufficient strength to counterbalance shutter, which is required to be self-coiling and to operate automatically by fusible link device.

Baffle-Plates—Particular attention is called to the detail of this unique device for stopping fire and smoke from passing over the top of the shutter.

This is done by Baffle-plates three sixteenths inch thick, fastened to the shutter itself and extending the entire width of opening near the top. They are hinged in such a way and so formed that they roll up with the shutter, acting automatically, so that when shutter is pulled down the baffle-plates slide into position and effectually close the spaces on each side of shutter at the head of the opening.

Grooves—Grooves are about two inches deep by three sixteenths inch thick, supported by continuous angle-iron bolted to face of brick wall by three eighths inch bolts passing through wall and through slotted holes in angle-irons.

Expansion—Provision is made in all parts of the construction for expansion.

Most of our work can be installed by workmen of ordinary skill in the various building trades. Drawings and full directions for fitting are furnished with each shipment. We naturally prefer to install our own work and then to assume all responsibility for it.

Proper preparation should be made for our specialties. We cheerfully offer our services for the study of the particular requirements of each case, and furnish explanatory blue prints.

Full Detail Sheets of Standard Doors are on file in our office, and we are always pleased to send them to architects or contractors upon application.

For Venetian Blinds, Awnings, Rolling Partitions, and Hygienic Wardrobes, see index for our pages elsewhere in this edition of "SWEET'S" CATALOGUE.

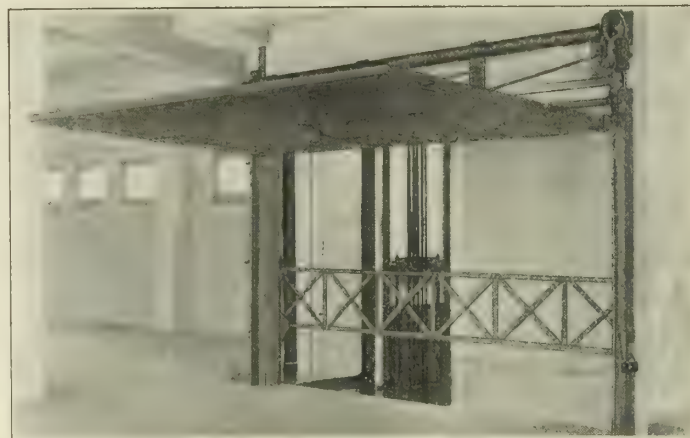


FIG. 4. SWING SLIDING DOORS, DUQUESNE FREIGHT SHEDS PENNSYLVANIA RAILROAD, PITTSBURG, PA.

Fireproof and automatic action with fusible link attachment

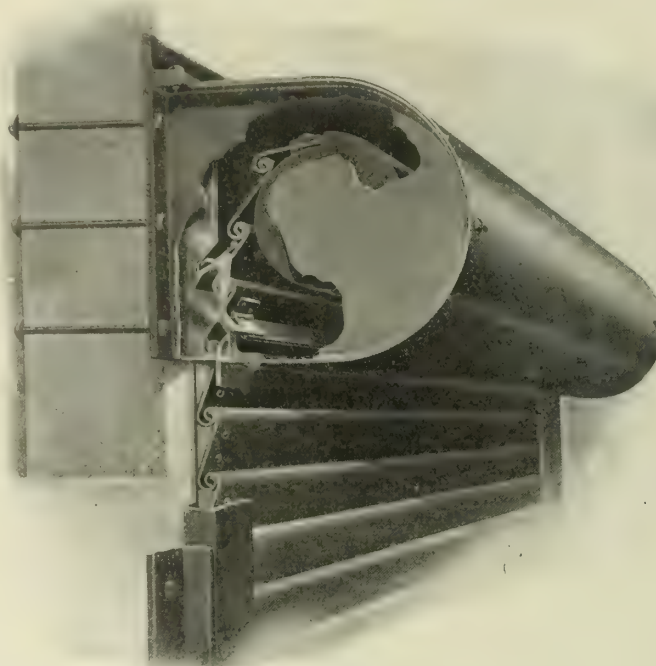


FIG. 5. DETAIL ILLUSTRATION OF STEEL ROLLING DOOR OR SHUTTER FOR ELEVATOR SHAFTS, ETC.

Constructed especially to meet the requirements of the National Board of Fire Underwriters

INSTALLA- TION.

CO-OPERATIVE SERVICE.

OTHER PRODUCTS.

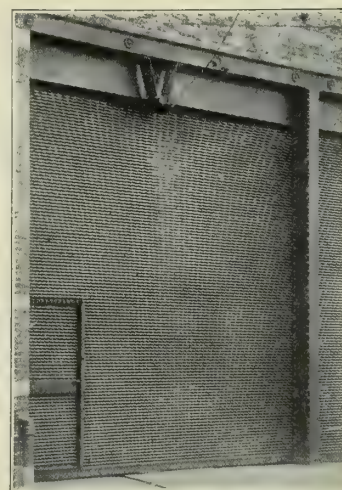


FIG. 6. WICKET DOORS
A small wicket door can be placed in any of our Rolling Shutters

CO-OPERATIVE
SERVICE.

Proper preparations should be made for our specialties, and we cheerfully offer the services of our draughtsmen and experts. We prefer to study the particular requirements of each case, and to furnish latest blue-print details applicable.

Full Detail Sheets of Standard Doors are on file in our office, and we are always pleased to send them to architects or contractors upon application.

ROLLING
STEEL DOORS
AND
SHUTTERS.

In selecting a Rolling Steel Door or Shutter the most important consideration is its style or construction, and the adoption of one exactly suitable for the purpose required. We have therefore given much space to the description of our special constructions, to the exclusion of illustrations showing the various methods of operating them.

INTERLOCK-
ING-SLAT
ROLLING
DOORS AND
SHUTTERS.

Interlocking Slat, Style No. 1 (Fig. 7), is designed to secure the maximum of lateral strength and resistance to wind pressure. A square foot of slat contains two square feet of steel disposed in such a way as to avoid all sharp bends, thereby adding greatly to the durability of the door. We use slats of this style in 22 and 20 U. S. gauge.

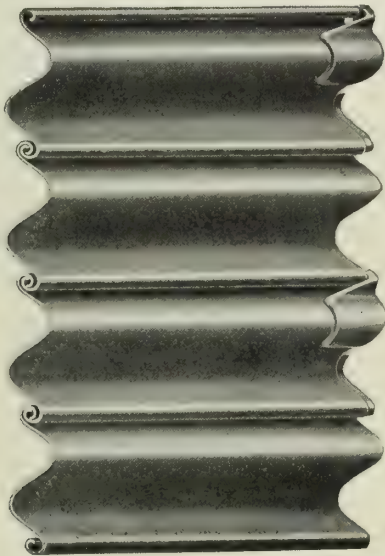


FIG. 7. INTERLOCKING SLAT,
STYLE NO. 1
Size of slat, 2½ inches wide



FIG. 8. INTERLOCKING
SLAT, STYLE NO. 2
Size of slat, 3 inches wide

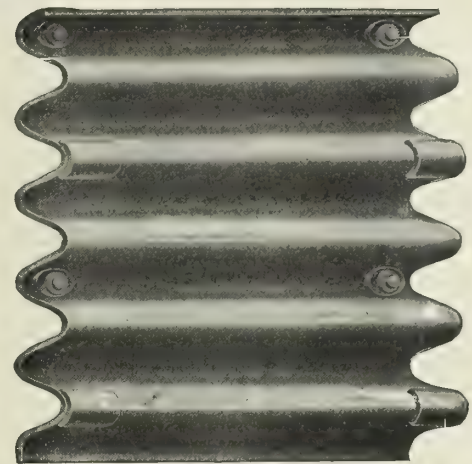
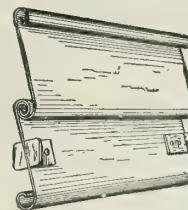


FIG. 9. CORRUGATED SHUTTER

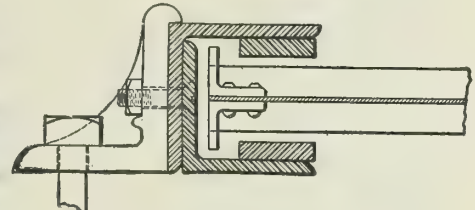
No. 2 Interlocking Slat (Fig. 8) is specially designed for extremely wide openings. The large rounded hooks give it great lateral strength and are shaped to provide a clear space between the outer and the inner hook, so that a violent blow from the outside sufficient to indent the outer hook would not penetrate to the inner hook and cause a stiff joint. We make our No. 2 Slat in 20, 18 and 16 U. S. gauge.

NEW ANCHOR
DEVICE.

These Anchors (Fig. 10) are placed on each side of the door two or three feet apart, and are most effectual in preventing the door being blown out by the wind in a heavy gale and also obviate the necessity of employing very deep grooves for this purpose.



Anchor on slat



Plan of Groove and Anchor

FIG. 10. NEW ANCHOR DEVICE

ADVANTAGES.

We ask that our construction be compared with other makes, and that the advantages which we believe our slats possess be duly considered before making a selection.

Wilson's Corrugated Rolling Door can readily be reached by the painter, and every nook and cranny receive its coat of paint when necessary, without trouble or difficulty.

Its simplicity of form affords no crevices for secret corrosion. It is air-tight and flame-proof, and retains its shape under intense heat without warping or twisting. No other freight-shed door can be so easily repaired and kept in order by any ordinary mechanic.

BURLINGTON VENETIAN BLIND CO.

MAIN OFFICE AND FACTORY

BURLINGTON, VT.

BRANCHES IN ALL PRINCIPAL CITIES

PRODUCTS.

Manufacturers of VENETIAN BLINDS, SLIDING BLINDS, WINDOW SCREENS, SCREEN DOORS.

VENETIAN BLINDS.

Our Venetian Blinds (Figs. 1 and 2) are attached to windows by brackets similar to a shade roller. Our method is patented and superior to all others. The slats are hung on interwoven ladder tape in various colors and operated by braided cords by which light and ventilation can be instantly controlled. They are made of any desired wood and finish. We recommend that these blinds be attached to sash stops, in which instance, in ordering, state the size of the openings. If it is preferred to hang them on the face castings, state the size of blind desired.

PRICES OF VENETIAN BLINDS.

Spruce, Whitewood, Linden or Yellow Pine Slats...2 $\frac{3}{4}$ " wide 2" wide		
Natural or Stained and Varnished, or painted dark colors	19c.	21c.
Painted in light colors or tints, or White Pine, Cypress or Plain Oak, varnished	21c.	23c.
Painted in Enamels, or Sycamore or Quartered Oak, varnished	24c.	26c.
Enameled, rubbed between coats	38c.	40c.

These prices are per square foot, and are subject to a discount, which will be quoted on request.

Add for rubbed finish on varnish 3c. per square foot.

For very large blinds we have a roller device (Fig. 2) employing aluminum bronze bands and fabric hand tape for operating in place of cords, and for which we make an extra charge. We can, if desired, furnish these blinds with tenoned slats to run in grooved guideways at the sides of the window, making an extra charge for the tenoning of slats and for the guideways, if furnished by us.

SLIDING BLINDS.

Sliding Blinds (Figs. 4 and 5) are usually made in three sections in height, the two upper ones having stationary slats and the lower one rolling slats, but they may be made in more or less sections, and more than one with rolling slats, if desirable. These sections may be at various elevations in the windows as suits best for admission or exclusion of light. They are made in two or more divisions of slats or panels, according to the width of openings; are made of any wood and with any finish desired. The grooved guideways (Fig. 3) in which the sections run take the place of the sash stops, and are usually 2 $\frac{3}{4}$ " wide, but if the blinds are in more than three sections, or more than one of the sections have rolling slats, then guideways wider than 2 $\frac{3}{4}$ " are necessary. In ordering, state the size of openings between jambs, and from stool to top jamb. We can make these blinds for segment top or swell windows, as well as for straight ones.

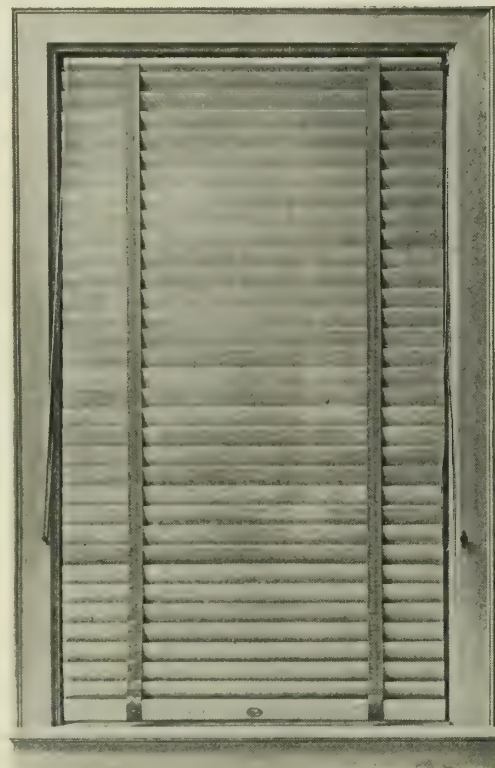


FIG. 1. BURLINGTON VENETIAN BLIND



FIG. 2. BURLINGTON VENETIAN BLIND WITH ROLLING DEVICE

PRICES OF
SLIDING
BLINDS.

White Pine, Spruce, Whitewood, N. C. Pine or Linden	3 Div.	4 Div.	5 Div.
Varnish Finish or painted dark colors	\$.95	\$1.15	\$1.35
Cabinet Finish or painted light colors	1.05	1.25	1.45
Painted Enamel Finish	1.15	1.35	1.55
Cypress or Plain Oak, Varnish Finish	1.05	1.25	1.50
Cypress or Plain Oak, Cabinet Finish	1.20	1.40	1.65
Sycamore, Quartered Oak, Ash, Varnish Finish	1.15	1.35	1.60
Sycamore, Quartered Oak, Ash, Cabinet Finish	1.30	1.50	1.75

The prices quoted are per lineal foot in height of woods mostly used. Discounts will be quoted on request.
Extra for swells \$2.00; for segment top \$1.00 per window.

WINDOW
SCREENS.

We make Window Screens in two styles: one style being for the inside of the window and operating in grooves similar to our Sliding Blinds; the frames being one half inch thick, of soft wood or ordinary hardwoods, and usually in a natural, varnish finish. The other style is used outside the window, operating on splines attached to the edges of blind stops, the frames being 7/8" thick, usually of soft wood, painted to match the sash color, but they may be made of hardwood if preferred. In ordering, give the width between points where the slides for inside screen are to be attached, or splines for outside screens; and height from stool to point you wish the top of the screens to reach.

PRICES OF
WINDOW
SCREENS.

Screens containing 6 square feet, or less, each..... \$1.00
For each additional square foot, or fractional part thereof, add 10
Swell or irregular shaped screens, subject to an extra charge, covering extra expense of manufacture. The above price is with 14 Mesh Black Wire Cloth; we can furnish any other kind desired at additional cost. The prices are subject to discount.

SCREEN
DOORS.

Our Screen Doors are mortised 1 1/8" frames, thoroughly made and intended to last a lifetime. Made of various woods, with arrangement of panels as desired. Unless otherwise ordered, frames are finished in varnish, natural color, and 14 Mesh Black Wire Cloth is used. Price depends on wood used and number of panels.
All our goods are made to order only. The installation of our blinds and screens is easily accomplished with but a few simple tools.
It will give us pleasure to forward our detail catalogue and to submit prices.

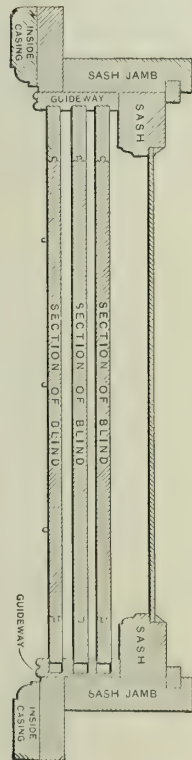


FIG. 3. DETAILS
OF GUIDEWAYS

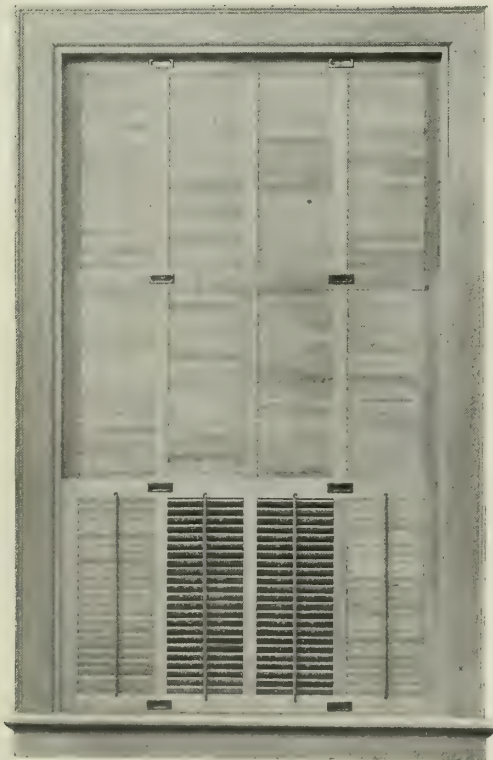


FIG. 4. BURLINGTON SLIDING BLIND

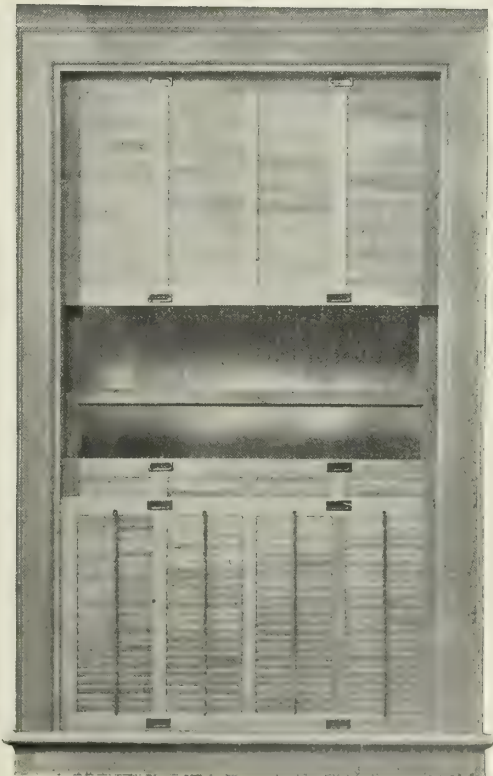


FIG. 5. BURLINGTON SLIDING BLIND

SWEDISH VENETIAN BLIND COMPANY

SOLE DISTRIBUTERS FOR UNITED STATES AND CANADA OF

Ericsson Venetian Blinds

1123 Broadway
NEW YORK, N. Y.

PRINCIPAL AGENCIES

PHILADELPHIA, PA., HEATON & WOOD, 1706 Chestnut Street
BALTIMORE, MD., J. M. ADAMS, 330 No. Charles Street
RICHMOND, VA., R. L. PETERS, 109 No. Eighth Street
ATLANTA, GA., EDWARD HAINES Co., 43 Spring Street
NORFOLK, VA., OLMSTEAD & MEYER Co., Charlotte and Bute Streets

BRIDGEPORT, CONN., A. SUNDSTROM, 13 Armstrong Place
SAN FRANCISCO, CAL., WILLIAMS & CARTER Co., 197 Jessie Street
SEATTLE, WASH., F. T. CROWE & Co.
TORONTO, CAN., F. H. HANCOCK, 1372 Bloor Street
HAMILTON, OHIO, HAMILTON SUPPLY Co., 15 Frechling Building

PRODUCTS.

VENETIAN BLINDS (imported) manufactured by P. Ericsson & Company, Gothenburg, Sweden. Established 1850.

DESCRIPTION.

Ericsson Venetian Blinds are constructed throughout of high-grade materials. The pulling cords run in glass hops, hence are not exposed to the slightest wear; when pulling stops, the blinds remain automatically at the height attained. Lath being of same length as the pulling head, the entire window is covered.

ADVANTAGES.

The laths are thinner than any others, but through our secret process they can not twist or warp even though exposed to the strongest rays of the sun. Our experience, extending over a period of fifty years, has thoroughly proven the truth of this statement. These Blinds being lighter than any others yet still retaining their strength, the objection of "clumsiness," characteristic of others, is removed.

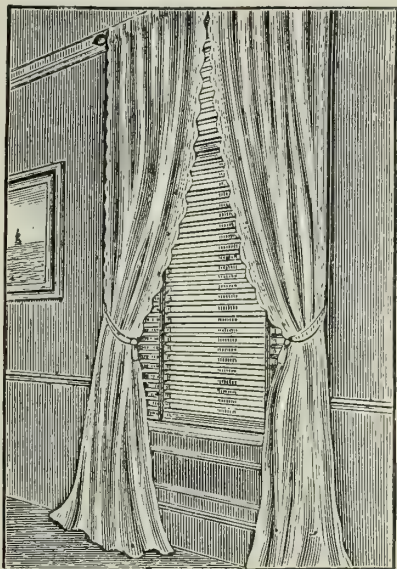


HOME OF THE ERICSSON
VENETIAN BLINDS,
GOTHENBURG, SWEDEN

PRICE-LIST

FEET	HEIGHT OF VENETIAN BLIND																		
	4	4 1/4	4 1/2	4 3/4	5	5 1/4	5 1/2	5 3/4	6	6 1/4	6 1/2	6 3/4	7	7 1/4	7 1/2	7 3/4	8	9	10
2	\$2.48	\$2.64	\$2.80	\$2.96	\$3.12	\$3.28	\$3.44	\$3.60	\$3.76	\$3.92	\$4.08	\$4.24	\$4.40	\$4.56	\$4.72	\$4.88	\$5.04	\$5.68	\$6.32
2 1/2	2.68	2.85	3.02	3.19	3.36	3.53	3.70	3.87	4.04	4.21	4.38	4.55	4.72	4.89	5.06	5.23	5.40	6.08	6.76
3	2.88	3.06	3.24	3.42	3.60	3.78	3.96	4.14	4.32	4.50	4.68	4.86	5.04	5.22	5.40	5.58	5.76	6.48	7.20
3 1/4	3.08	3.27	3.46	3.65	3.84	4.03	4.22	4.41	4.60	4.79	4.98	5.17	5.36	5.55	5.74	5.93	6.12	6.88	7.64
3 1/2	3.28	3.48	3.68	3.88	4.08	4.28	4.48	4.68	4.88	5.08	5.28	5.48	5.68	5.88	6.08	6.28	6.48	7.28	8.08
3 3/4	3.48	3.69	3.90	4.11	4.32	4.53	4.74	4.95	5.16	5.37	5.58	5.79	6.00	6.21	6.42	6.63	6.84	7.68	8.52
4	3.68	3.90	4.12	4.34	4.56	4.78	5.00	5.22	5.44	5.66	5.88	6.10	6.32	6.54	6.76	6.98	7.20	8.08	8.96
4 1/4	3.88	4.11	4.34	4.57	4.80	5.03	5.26	5.49	5.72	5.95	6.18	6.41	6.64	6.87	7.10	7.33	7.56	8.48	9.40
4 1/2	4.08	4.32	4.56	4.80	5.04	5.28	5.52	5.76	6.00	6.24	6.48	6.72	6.96	7.20	7.44	7.68	7.92	8.88	9.84
4 3/4	4.28	4.53	4.78	5.03	5.28	5.53	5.78	6.03	6.28	6.53	6.78	7.03	7.28	7.53	7.78	8.03	8.28	9.28	10.28
5	4.48	4.74	5.00	5.26	5.52	5.78	6.04	6.30	6.56	6.82	7.08	7.34	7.60	7.86	8.12	8.38	8.64	9.68	10.72
5 1/4	4.68	4.95	5.22	5.49	5.76	6.03	6.30	6.57	6.84	7.11	7.38	7.65	7.92	8.19	8.46	8.73	9.00	10.08	11.16
5 1/2	4.88	5.16	5.44	5.72	6.00	6.28	6.56	6.84	7.12	7.40	7.68	7.96	8.24	8.52	8.80	9.08	9.36	10.48	11.60
5 3/4	5.08	5.37	5.66	5.95	6.24	6.53	6.82	7.11	7.40	7.69	7.98	8.27	8.56	8.85	9.14	9.43	9.72	10.88	12.04
6	5.28	5.58	5.88	6.18	6.48	6.78	7.08	7.38	7.68	7.98	8.28	8.58	8.88	9.18	9.48	9.78	10.08	11.28	12.48
6 1/4	5.48	5.79	6.10	6.41	6.72	7.03	7.34	7.65	7.96	8.27	8.58	8.89	9.20	9.51	9.82	10.13	10.44	11.68	12.92
6 1/2	5.68	6.00	6.32	6.64	6.96	7.28	7.60	7.92	8.24	8.56	8.88	9.20	9.52	9.84	10.16	10.48	10.80	12.08	13.36
6 3/4	5.88	6.21	6.54	6.87	7.20	7.53	7.86	8.19	8.52	8.85	9.18	9.51	9.84	10.17	10.50	10.83	11.16	12.48	13.80
7	6.08	6.42	6.76	7.10	7.44	7.78	8.12	8.46	8.80	9.14	9.48	9.82	10.16	10.50	10.84	11.18	11.52	12.88	14.24
7 1/4	6.28	6.63	6.98	7.33	7.68	8.03	8.38	8.73	9.08	9.43	9.78	10.13	10.48	10.83	11.18	11.53	11.88	13.28	14.68
7 1/2	6.48	6.84	7.20	7.56	7.92	8.28	8.64	9.00	9.36	9.72	10.08	10.44	10.80	11.16	11.52	11.88	12.24	13.68	15.12
7 3/4	6.68	7.05	7.42	7.79	8.16	8.53	8.90	9.27	9.64	10.01	10.38	10.75	11.12	11.49	11.86	12.23	12.60	14.08	15.56
8	6.88	7.26	7.64	8.02	8.40	8.78	9.16	9.54	9.92	10.30	10.68	11.06	11.44	11.82	12.20	12.58	12.96	14.48	16.00
9	7.68	8.10	8.52	8.94	9.36	9.78	10.20	10.62	11.04	11.46	11.88	12.30	12.72	13.14	13.56	13.98	14.40	16.08	17.76
10	8.48	8.94	9.40	9.86	10.32	10.78	11.24	11.70	12.16	12.62	13.08	13.54	14.00	14.46	14.92	15.38	15.84	17.68	19.52

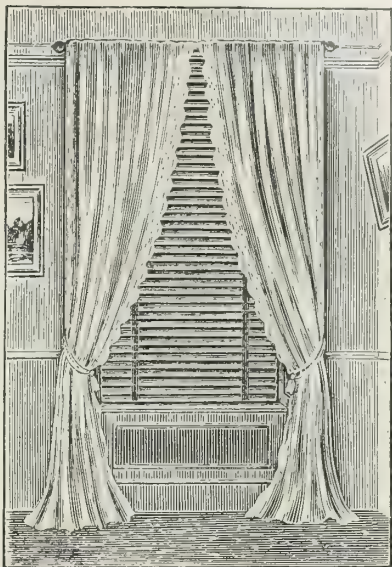
All List Prices subject to a Discount



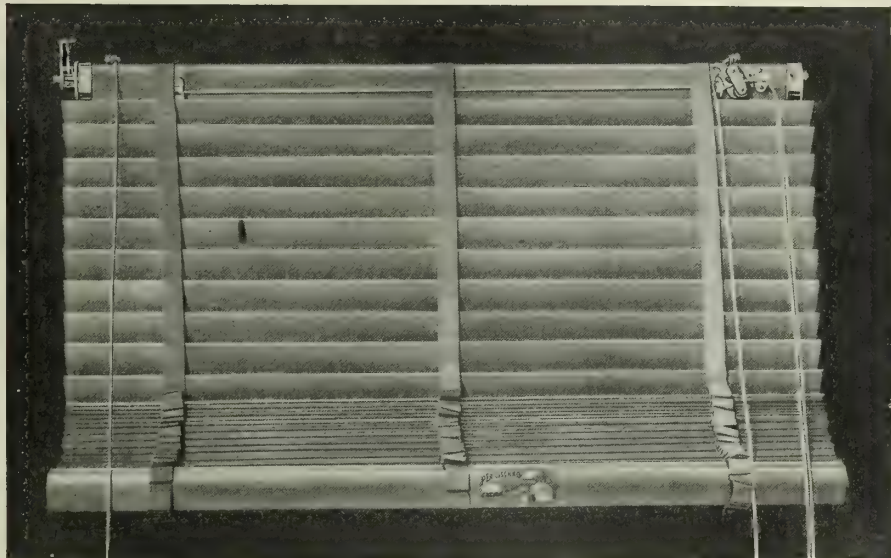
INTERIOR VIEW OF BLIND, "OPEN



UNIVERSITY CLUB BUILDING,
PHILADELPHIA, PA.
Furnished with Ericsson Venetian Blinds



INTERIOR VIEW OF BLIND, CLOSED



THE ERICSSON VENETIAN BLIND

Showing operation of automatic regulator, and glass hoops at top for reducing wear on pulling cord to a minimum

SPECIFICA-
TION FORM.

Furnish and set for all outside windows, where shown on plans, Ericsson Venetian Blinds, as manufactured by P. Ericsson & Company, Gothenburg, Sweden, for the SWEDISH VENETIAN BLIND COMPANY, New York, N. Y.

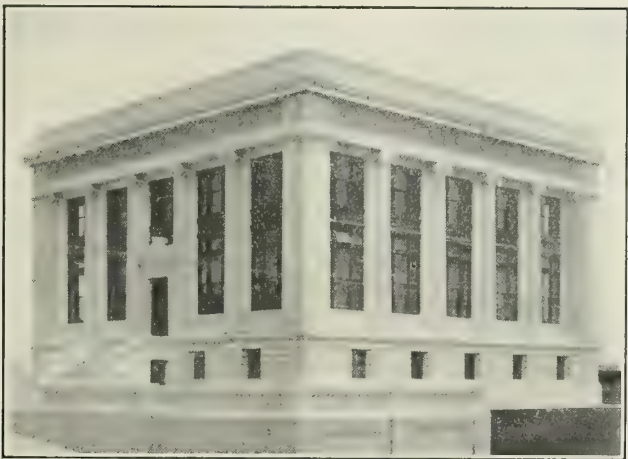
All Blinds throughout to be of the best grade, complete with all necessary cords, automatic stops and fittings, and to be furnished in colors to be selected by the owner.

AWARDS.

Ericsson Venetian Blinds have received the highest awards at the following exhibitions: Gothenburg, 1891 and 1894; Malmo, 1896; Stockholm, 1897; Gefle, 1901; Lund, 1907.

REFERENCES.

- De Lano & Aldrich, 4 East 39th Street, New York, N. Y.
- Residence, 58 East 66th Street, New York, N. Y.
- Paul E. Lindblad, 103 Park Avenue, New York, N. Y.
- Art Club, Philadelphia, Pa.
- University Club, Philadelphia, Pa.
- Heaton & Wood, Philadelphia, Pa.
- J. M. Adams, Baltimore, Md.
- R. L. Peters, 109 No. Eighth Street, Richmond, Va.
- H. J. White, Bedford, N. Y.
- Residence No. 1, Long Beach, L. I., N. Y.
- Gillespie & Carrel, 1123 Broadway, New York, N. Y.
- Metropolitan Life Insurance Co., San Francisco, Cal.
- Dr. R. F. Rabe, 471 Park Avenue, New York, N. Y.



METROPOLITAN LIFE INSURANCE CO. BUILDING,
SAN FRANCISCO, CAL.

Furnished with Ericsson Venetian Blinds



MEDALS AWARDED FOR
ERICSSON VENETIAN BLINDS

TABOR SASH FIXTURE CO.

MANUFACTURERS OF

“Tabor’s” Patented Window Specialties

61-71 Polk Street

NEWARK, N. J.

LONG DISTANCE TELEPHONE 259

NEW YORK SHOWROOMS
160 FIFTH AVENUE

REPRESENTED IN EVERY LARGE CITY IN THE UNITED STATES AND CANADA

PRODUCTS.

“Tabor’s” PATENT STRIPS and FIXTURES for REVOLVING REMOVABLE LOW-DOWN PIVOTED FACTORY and CASEMENT SASH; SELF-LOCKING ELEVATING HINGES for CASEMENT SASH; SELF-LOCKING ELEVATING CENTERS for VERTICAL PIVOTED SASH; RABBETED CENTERS for VERTICAL PIVOTED TRANSOMS and FACTORY SASH, and MONITOR SASH PIVOTS, in All Finishes; also, “Tabor’s” METAL WEATHER-STRIPS and AUTOMATIC DOOR BOTTOM.

The problem of a perfect window has been left for us to solve—we have solved it.

“Tabor’s” STRIPS AND FIXTURES.

“Tabor’s” Sash Strips are shown in Figs. 1 and 2, reference to which will show the manner of their operation.

They are adapted to the ordinary frame. The sash slides and revolves. All wear when revolving is taken by corrugated metal face-plates between the sash and hanging strips, which retain the sash in any desired position. It is weather-proof, the space between the edge of sash and pulley stile being entirely filled by the thicker edge of hanging strips. The space between the thin edge of hanging strips and pulley stile allows the strip to swing back with a hinge motion, unlocking the joint between the strip and the sash, when the sash may be adjusted to any desired position or turned entirely over for cleaning from the inside.

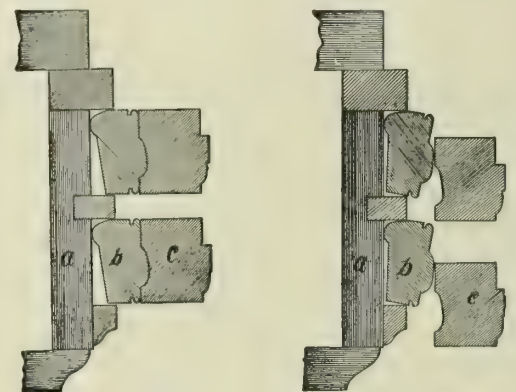


FIG. 1. (Closed) FIG. 2. (Open)

“Tabor’s” SASH STRIPS

A, side of frame; B, hanging strip;
C, sash stile

FOR WINDOWS WITH GRATES OR FIXED SCREENS.

For windows having gratings or fixed screens outside, as shown in Fig. 4, we have a “low-down” pivot with a device for locking the strip to the sash when closed. It is very substantial in construction and perfect in operation, and meets a long-felt want.

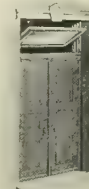


FIG. 3.

“Tabor’s” TRANSOM SASH FIXTURES



FIG. 4

“Tabor’s” SASH FIXTURES

Style 1 for Grated Windows



FIG. 5

“Tabor’s” SASH FIXTURES

For Cold-Storage and Brewery Windows

TRANSOM SASH FIXTURES.

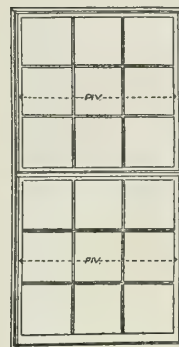
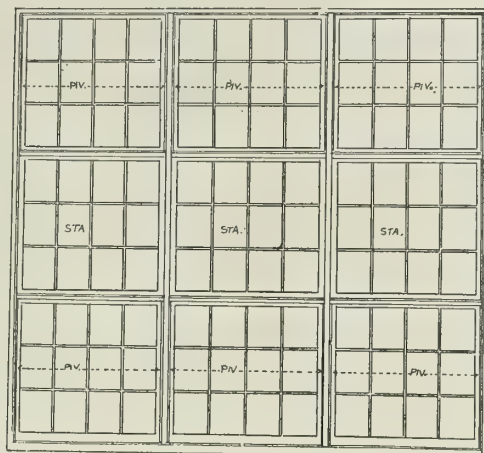
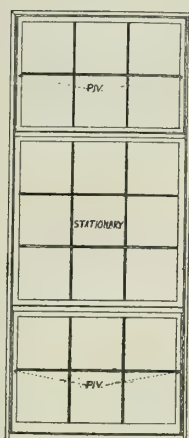
Our Transom Sash Fixture, as shown in Fig. 3, gives perfect control and eliminates the lift.

COLD-STORAGE AND BREWERY WINDOWS.

We have demonstrated very satisfactorily the application of our system to cold-storage and brewery work, using our weightless construction, and have perfected a device whereby each outer sash is operated by the adjacent inner one. The inside sash or sashes have our removable fixture to be used when cleaning. This window is shown in Fig. 5, and will be found available and very satisfactory wherever a multiplicity of sash is required.



FIG. 6
"TABOR'S"
SASH AND
FIXTURES
Style C for
plank frames
with transom
bars



TYPICAL PLANK FRAMES FOR CONCRETE AND MILL CONSTRUCTION IN
WHICH "TABOR" FIXTURES ARE BEING EXTENSIVELY USED



FIG. 7
"TABOR'S"
SASH
FIXTURES
Style D for
plank frames

PLANK FRAMES.

Our method of installing with the "Tabor" Fixtures one sash or more in a simple plank frame, as shown in Figs. 6 and 7, is proving a most successful substitute for the old box frame with cords, weights and pulleys. It is coming into very general use for office and public buildings and factories at no greater, and usually a smaller, cost.

The difference between the cost of a double-hung window and our plank-frame system is a saving of from 75 cents to \$2.50 per window, depending on the size of the opening and whether chain or cord is used.

"TABOR'S" FIXTURES FOR FRAMELESS WINDOWS.

We here illustrate in Fig. 8 the Frameless Window for cheap construction of wood or corrugated-iron structures. The studs are set at the proper distance apart and a girt cut in above and below. A sill is required to carry off the water. The boarding projects five eighths of an inch to form outside stops. The sashes are hung between studs and inside stops nailed in.

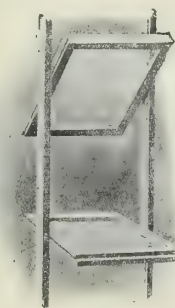


FIG. 8
"TABOR'S"
SASH
FIXTURES
Style E for
frameless win-
dow for cheap
construction



FIG. 9
"TABOR'S"
FIXTURES
Style F for ver-
tical pivoted
wood or
metal sash

VERTICAL PIVOTED SASH.

The application of our system to vertical Pivoted Sash, as shown in Fig. 9, is something which is entirely new, combining the excellent features of being absolutely weather-proof, self-locking, and allowing the sash to be turned all the way around.

FRENCH CASEMENT WINDOWS.

"Tabor's" Elevating Casement Window Fixtures, shown in Fig. 10, are weather-proof and automatic locking. They are very simple in construction, perfect in operation, made right- and left-hand, and for in or out swinging windows.

MONITOR SASH.

We also manufacture a low-priced pivot for Monitor or other sash where a gang operator is used. They are as simple and perfect in their way as our more expensive devices.

ADAPTED FOR METAL SASH.

CLEANING.

Any and all of "Tabor's" devices are adapted for use on metal sash.

Windows equipped with "Tabor's" Fixtures can be cleaned in one fourth of the time it takes to clean the old style, saving 75 per cent in time, with no danger to the operator.

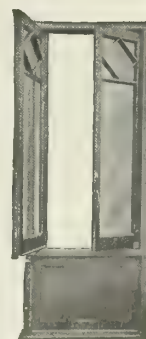


FIG. 10
"TABOR'S"
FIXTURES
For French case-
ment windows

“TABOR’S”
METAL
WEATHER-
STRIPS.

"Tabor's" Metal Weather-Strips for windows, details of which are shown in Fig. 11, are the perfection of simplicity. They are adapted to the old style of windows as well as to those equipped with "Tabor's" Strips and Fixtures.

These strips are positively weather-proof and will prevent the rattling of the sash.

FULL-SIZED
DETAILS.

We will supply, free of charge, full-sized details of "Tabor's" Sash Strips and Fixtures, and "Tabor's" Weather-Strip, showing clearly their method of application and operation.

GUARANTEE.

We fully guarantee the "Tabor" Fixtures, and will assume all expense of repairs for a term of five years from installation of goods.

We make but one condition, that our few and simple directions for installing and operating be carefully followed.

CO-OPERATIVE
SERVICE.

We claim the ability to solve any difficulty in sash installation that may arise on any type of building, our long and very large experience making us experts in this line.

We solicit inquiries and opportunities to submit details and figures for the solution of any sash-hanging problem.

REFERENCES.

We are prepared and shall be pleased to refer architects and others to our work upon many of the most notable buildings in this country.

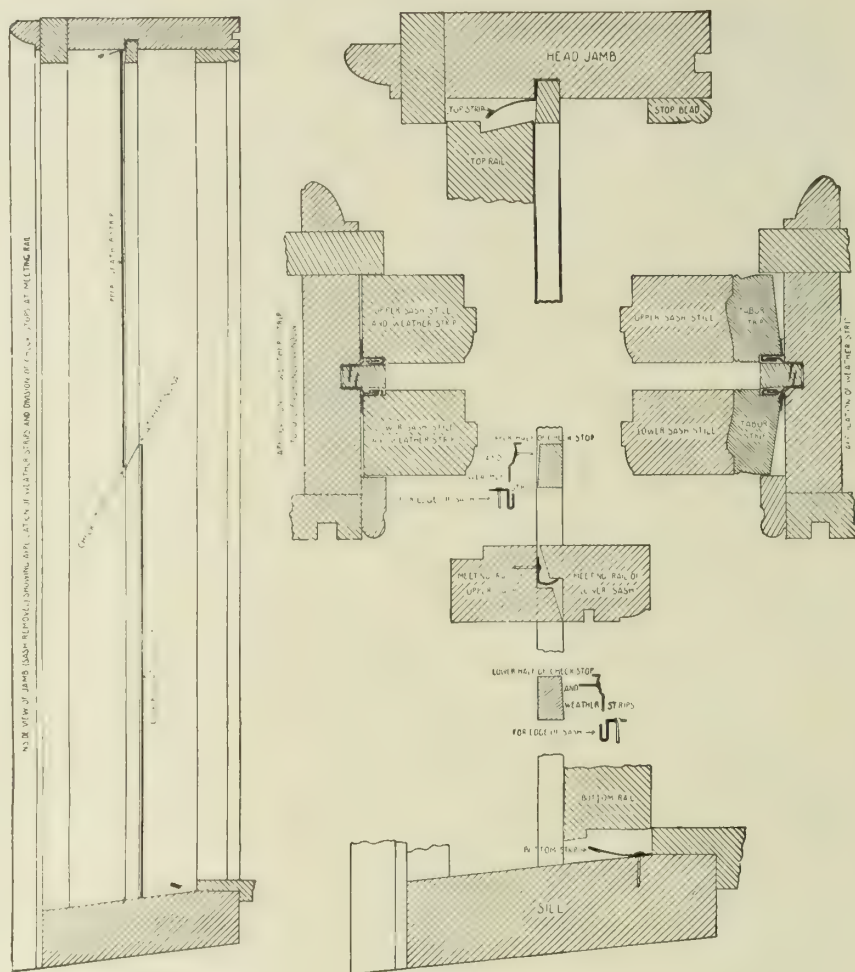


FIG. 11. DETAILS OF "TABOR'S" METAL WEATHER-STRIPS

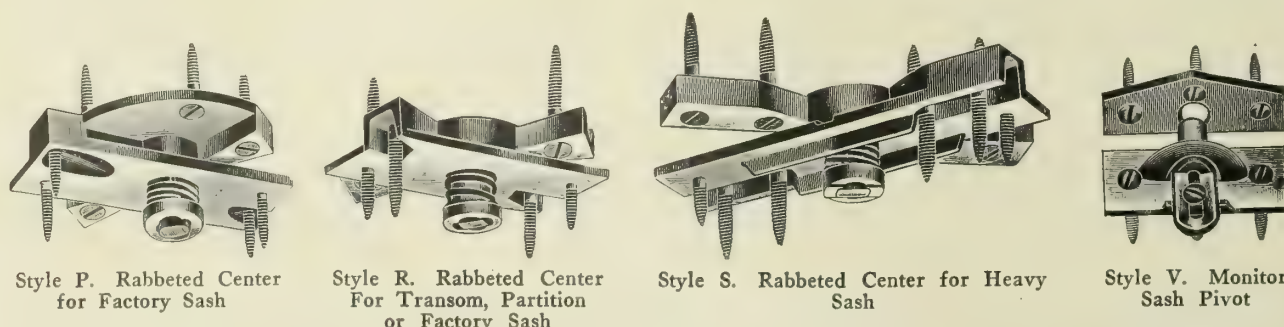


FIG. 12. "TABOR'S" RABBETED CENTERS FOR VERTICAL PIVOTED TRANSOMS AND FACTORY SASH

ESTABLISHED 1876

INCORPORATED 1903

JAS. G. WILSON MFG. CO.

MANUFACTURERS OF

Venetian Blinds and Awnings

3 West Twenty-Ninth Street
NEW YORK, N. Y.

TELEPHONE, 1160 MADISON SQUARE
CABLE, "LYDIAN, NEW YORK"

BRANCH OFFICE
CHICAGO, ILL., 108 La Salle Street

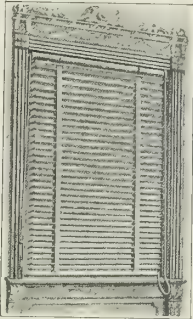
FACTORY ADDRESS
MAIL—NORFOLK, VA.
TELEGRAPH—BERKELEY, VA.

PRODUCTS.

SLIDING VENETIAN BLINDS, for inside and outside use; VENETIAN AWNING BLINDS; VENETIAN PORCH BLINDS; ROLLING BLINDS; STEEL ROLLING DOORS and SHUTTERS; "SALAMANDER" ROLLING SHUTTERS; WOOD ROLLING DOORS; SWING SLIDING DOORS; WOOD ROLLING PARTITIONS; ENGLISH WOOD BLOCK FLOORING, and HYGIENIC WARDROBES.

DESCRIPTION.

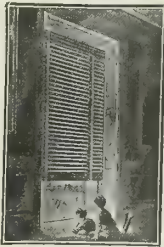
It would be difficult for one who has not seen Wilson's Modern Venetian Blinds to realize the vast improvement that has been made in the past few years in this very useful and charming piece of window furniture. The Venetian as now made is an ornament to the highest grade of dwelling and a source of comfort to the occupant. The ladder tapes may be of linen, silk, or bronze metal.



MODERN VENETIAN BLIND

SLIDING VENETIAN BLINDS.

Sliding Venetian Blinds, seen in the accompanying cut, are constructed on the modern principle, but they do not hang loose; the slats run in grooves provided in jambs, so that the wind can not disturb or rattle them. These blinds can be hung inside or outside of sash.



SLIDING VENETIAN BLIND

VENETIAN AWNING BLINDS.

Detail sheet of Venetian Awning Blinds, illustration of which is shown herewith, will be supplied upon request.

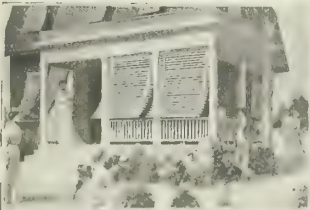


VENETIAN AWNING BLIND

VENETIAN PORCH BLINDS.

These blinds, as seen in the accompanying cut, are not usually in frames as in the Awning Blinds, and the arms are not jointed.

Upon application, detail sheet will be furnished.



VENETIAN PORCH BLINDS

OTHER PRODUCTS.

For Rolling Steel and Wood Doors and for Rolling Partitions and Wardrobes see index for our pages elsewhere in this edition of "SWEET'S" CATALOGUE.

C. H. BROWNELL

Manufacturer of Telephone Booths
PERU, IND.

PRODUCTS.

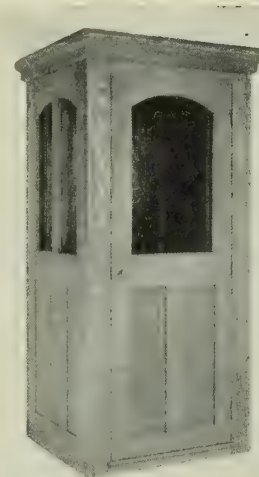
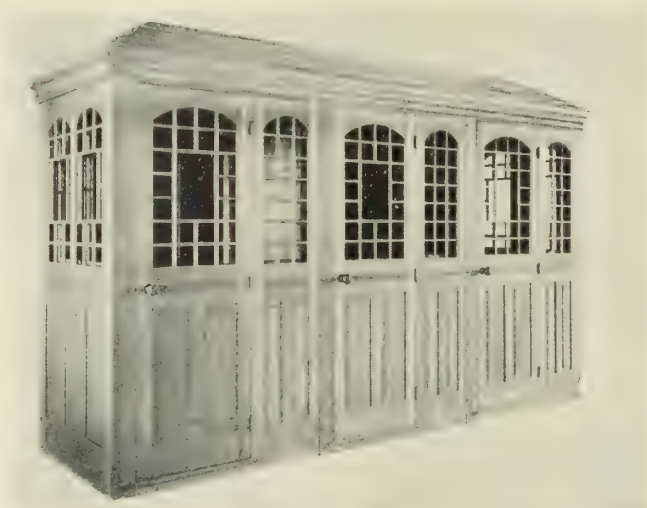
STANDARD TELEPHONE BOOTHS; BANK and OFFICE FURNITURE.



THE FACTORY



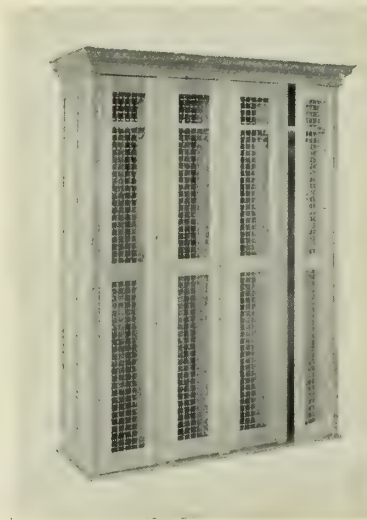
LUMBER YARDS



TELEPHONE BOOTHS



BANK AND OFFICE FIXTURES



LOCKERS

FACILITIES.

We have a new, up-to-date plant, modern machinery and skilled workmen for the production of high-grade woodwork of every description. Standard Telephone Booths and Accessories in great variety carried in stock. Special designs made to order. Estimates furnished on architects' plans for bank or office furniture. Correspondence solicited.

GULF RED CEDAR COMPANY

“Lebanon” Cedar

RICHMOND, VA.

BRANCH OFFICES

NEW YORK, N. Y., 90 West Broadway
PHILADELPHIA, PA., 459 North Second Street

BALTIMORE, MD., 106 Hanover Street
CHICAGO, ILL., 43 South Water Street

PRODUCT.

“LEBANON” RED CEDAR of finest quality, perfectly dried and carefully selected for all possible uses.

CHARACTER AND USES.

This superior wood claims many individual and distinct uses. The name “Lebanon” is given to it because of the likeness of its trees to the famous “Cedars of Lebanon.” Its delicate but pungent odor drives moths away and makes the preservation of the most valuable clothes possible and positive when used in the construction of chests and trunks or in the walls and ceiling of closets or wardrobe rooms. The dressed wood is soft and velvety when in an unvarnished state. It accepts a high polish when properly treated. It is most adaptable and desirable for closets and chests and is rich in its simple contrast when copper, nickel, brass or silver is used for its decoration.

The GULF RED CEDAR COMPANY provides the greater part of the wood employed in the 1,000,000,000 annual output of pencils in the World. The invariable straight grain and freedom from sap gives the “Lebanon” this position in the field of discriminating users. The soft but substantial quality of this cedar makes it the perfect wood wherever a superior red cedar is desired, whether it be in the much used pencil or in the walls and ceiling of a moth-proof chamber, without which no modern home is complete. The perfume of the “Lebanon” Red Cedar is most delicate, and while effective as a moth preventive does not leave a disagreeable odor in the protected garment as do camphor, carbolized balls, etc.

The superiority of the “Lebanon” Red Cedar over other grades on the market is conceded by the most prominent architects and builders in North America and Europe. Designers of modern homes should invariably include a “Lebanon” Red Cedar room in their plans.

SHIPPING FACILITIES.

We owe our ability to ship to users of red cedar, in quantities small or great, now and for many years to come, to the fact of our ownership and careful culture of extensive forests. Red Cedar, like many of its sister woods, is decreasing and is therefore difficult to secure at all times and in large quantities. In the straight-grained, knotless, sapless “Lebanon” we can promptly supply all demands. We receive monthly consignments from our forests, which wood we cut, dress and treat scientifically in the drying and in its preparation for the market.

SPECIFICATION FORM.

To avoid substitution architects should specify as follows:

“The cedar to be used in the construction of is to be known as the “Lebanon” Red Cedar and is to be furnished by the GULF RED CEDAR COMPANY of Richmond, Va.”

PRICES AND TERMS.

Prices and terms will be furnished upon application.

GEORGE MERTZ' SONS

Contractors, Builders, and Manufacturers of Fine Interior Hardwood Work
PORT CHESTER, N. Y.



PLANT OF GEORGE MERTZ' SONS, PORT CHESTER, N. Y.

SERVICES.

We are Manufacturers, Contractors and Builders who do very little subletting. The MASONRY, CARPENTRY, and METAL WORK is done under our own superintendence, with our own men, and we manufacture all the MILL and CABINET WORK at our plant.

COUNTRY RESIDENCES.

As Builders and Contractors our specialty is the erection of fine country residences. We will also undertake contracts for the interior cabinet work of any class of building. We also specialize on Stucco Houses.

TERRITORY.

Our operations are not governed by any territorial limitations within one hundred and fifty miles.

REFERENCES.

Our efforts with country houses have been attended with the greatest success, and we take pride in naming, among many others, the following prominent gentlemen for whom we have erected residences or their dependencies:

NAME	LOCATION	ARCHITECT
Mortimer Schiff	Oyster Bay, L. I.	C. P. H. Gilbert
Donald G. Geddes	Nassau, N. Y.	Barney & Chapman
Joseph Millbank	Greenwich, Conn.	Howard & Caldwell
H. W. Monroe	Tuxedo Park, N. Y.	Warren & Wetmore
John Magee	Mt. Kisco, N. Y.	Warren & Wetmore
G. Louis Boissevain	Mt. Kisco, N. Y.	George E. Wood
J. Borden Harriman	Mt. Kisco, N. Y.	Morgan, Howard & Waid
Martin J. Condon	Pelham Manor, N. Y.	Little & O'Connor
Tennis Court of John Jacob Astor	Rhinebeck, N. Y.	McKim, Mead & White
Hotel Gotham, Interior Woodwork of first floor and cafe	New York, N. Y.	Hiss & Weeks
Adolph Lewisohn	Ardsley, N. Y.	Coulter & Westhoff
Robert C. Fisher	Davenport Neck, New Rochelle, N. Y.	Henry Bacon
Thomas Hunt	Bernardsville, N. J.	Lord & Hewlett
H. R. Bishop	Chappaqua, N. Y.	Foster, Gade & Graham
John H. Flagler	Greenwich, Conn.	Frank A. Morre
Frank N. Hoffstot	Port Washington, L. I., N. Y.	Foster, Gade & Graham
Charles Hirschhorn	Greenwich, Conn.	Charles Volz
H. Bramhall Gilbert	Great Neck, L. I., N. Y.	Little & O'Connor



Residence of R. R. Colgate, Esq., Sharon, Conn.
J. WILLIAM CROMWELL, Architect



Residence of John Magee, Esq., Mt. Kisco, N. Y.
WARREN & WETMORE, Architects



Residence of Mortimer L. Schiff, Esq., Oyster Bay, L. I.
C. P. H. GILBERT, Architect



Residence of Adolph Lewisohn, Esq., Ardsley, N. Y.
COULTER & WESTHOFF, Architects

SOME OF THE HOUSES WHICH WE HAVE BUILT

RED GUM PRODUCERS

CARRIER LUMBER & MANUFACTURING CO., Sardis, Miss.

HIMMELBERGER-HARRISON LUMBER CO., Morehouse, Mo.

LAMB-FISH LUMBER CO., Memphis, Tenn.

CHARLES F. LUEHRMANN HARDWOOD LUMBER CO., St. Louis, Mo.

THREE STATES LUMBER CO., Memphis, Tenn.

PRODUCTS.

RED GUM, botanically known as *LIQUIDAMBA STYRACIFLUA*, and called by different names in different localities, such as SWEET GUM, GUM, GUM TREE, SATIN WALNUT, HAZELWOOD, and other local names.

DESCRIPTION.

Red Gum is a hardwood, growing plentifully in the Southern States. It takes a beautiful polish, showing rich coloring and offering a wide variety of color schemes when used architecturally. When properly dried and seasoned it will not warp, split or twist. The heart of the wood shows a wide range of figure. It is a few shades darker than new cut mahogany and choice pieces are frequently more highly figured. The color closely resembles both mahogany and the better examples of birch, but has a wider range of color and admits of the development of wider possibilities in decorative interior finish.

SUPPLY.

The supply of Red Gum is enormous. Large tracts of Southern forests are composed almost wholly of this wood, though the available quantity of the more handsomely marked wood, which is obtained from the heart of the tree is somewhat limited. The forests in the lower Mississippi Valley are apparently inexhaustible, and for years to come architects will be able to obtain all they want of this beautiful wood, no matter how large their requirements may be.

PREPARATION.

Architects have refused to specify Red Gum in the past because of its tendency to warp, split and twist, but that difficulty can be obviated by specifying one year's air drying before putting in dry kiln. New Red Gum weighs 4,750 pounds per 1000 feet. Air dried for one year it weighs a maximum of 3,300 pounds, and Gum Lumber weighing more than $3\frac{1}{3}$ pounds per foot contains astringent sap which causes warping. When this sap is thoroughly dried out the results are always satisfactory. Architects who may fear to use this beautiful wood because of unfortunate experiences in the past can secure perfect satisfaction by specifying that the lumber be purchased from firms having abundant supplies and means to carry and thoroughly season their lumber before shipment. In preparing this wood for market we make a specialty of chemically treating it, which prevents the dark stain to which it is sometimes subject.



RED GUM, SHOWING THE BEAUTY OF THE FIGURE OF THE WOOD

WHERE USED.

Red Gum has been introduced into Europe under the trade names of "Satin Walnut" and "Commercial Circassian Walnut," and is used by English and Continental architects and furniture designers. It is there considered as the natural successor of oak. It is probable that the constantly increasing cost of oak alone would have forced recognition of Red Gum in the same manner that oak was recognized and used when black walnut became more scarce and expensive. In Chicago a notable instance is the La Salle Hotel, whose architects, Holabird & Roche, specified its use practically throughout.

The use of Red Gum for the interior trim of a recently constructed and very handsome New York theater and as the trim of some of the new hotels has, because of its complete success from a structural standpoint, and its unusual beauty, encouraged other architects to specify it in recent important work. At much less than the cost of usable oak the designer of interior finish has at his disposal in Red Gum a material as dependable as oak, capable of developing softer tones and even more susceptible to a wide range of treatment.

USE IN NEW YORK, N. Y.

If further proof is needed of the esteem in which this wood is held for fine interior trim it can be found in the fact that the owners and architects of such recently erected New York apartment buildings as those illustrated herewith selected it in preference to all other varieties of hardwood for that purpose. Many of the most recently constructed apartment buildings are trimmed throughout with Red Gum, furnishing convincing testimony of its peculiar adaptability to the highest class of work. A few only are mentioned as showing the increasing popularity of Red Gum in New York. Greylock Dwellings, Broadway and 143rd Street, Schwartz & Gross, architects. A feature of these apartments is the dining-room, which has been trimmed entirely in Red Gum, including paneled doors, munioned doors, wainscot and panel backs. Except in the parlors, which are finished in white enamel, Red Gum has been used generally throughout this building. The Beaconsfield, Riverside Drive and 116th Street, Schwartz & Gross, architects. The Paterno apartments, 606 West 116th Street, Schwartz & Gross, architects. In addition to these, Red Gum has been used in many other important apartments recently erected in New York. It is conclusive that where Red Gum is once seen and specified its use increases. Its beauty is obvious and its peculiar adaptability is quickly appreciated.

USE IN PITTSBURG, PA.

The use of Red Gum in Pittsburg began three or four years ago and buildings finished with it have been subjected to every reasonable test and no deterioration has occurred in either the trim or the doors. Varying degrees of moisture have produced no greater effect on Red Gum than on any other wood used under the same conditions. It is estimated that buildings costing at least \$8,000,000, finished throughout in Red Gum, have been constructed in Pittsburg. Among the most prominent may be mentioned a row of elaborate apartment houses in the Oakland district, adjacent to the Carnegie Institution. These buildings alone cost about \$5,000,000. On Maryland Avenue are five large structures of high character, each representing an expenditure of \$100,000, in all of which trim and mouldings of Red Gum were used. A residence costing \$30,000, erected by Maj. Albert P. Birchfield, is finished in the upper part in Red Gum. On another street one hundred and four dwellings of modest character, intended to be sold on instalments and costing \$500,000, were finished entirely in Red Gum, stained differently in different buildings to secure varied effects.

FINISHING AND STAINING RED GUM.

In using Red Gum for interior trim an architect has a choice of many color schemes. Finished in the natural color it gives a satisfactory effect, since nearly all Red Gum has a pleasing figure which will be brought out by the filler and varnish.

Red Gum can be stained successfully and when properly done is very handsome. If different color schemes are desired any of the following stains may be employed with entire success: dark mahogany, Flemish brown, forest green, Mission and Dutch brown. When dark mahogany is used one of the most beautiful colors imaginable is produced. The stain



BELASCO-STUYVESANT THEATER,
NEW YORK, N. Y.

GEORGE KEISTER, Architect



ST. NICHOLAS TERRACE, 120TH STREET, NEW YORK, N. Y.



PATERNO APARTMENTS, 606 WEST 116TH STREET,
NEW YORK, N. Y.

SCHWARTZ & GROSS, Architects



HOTEL LA SALLE, LA SALLE AND MADISON STREETS,
CHICAGO, ILL.

HOLABIRD & ROCHE, Architects

is not sufficiently heavy to entirely eliminate the figure and the result is a dark mahogany finish with the original beautiful figure of the Red Gum plainly visible. When any of the other stains are employed similarly satisfactory and beautiful results are obtained.

For proper specifications and all matter pertaining to the finishing of Red Gum we refer to Berry Bros. Co., of Detroit, Mich., and the Standard Varnish Works of Chicago, Ill.



THE BEACONSFIELD APARTMENT, RIVERSIDE DRIVE AND 116TH STREET,
NEW YORK, N. Y.

SCHWARTZ & GROSS, Architects

FLOORING.

Red Gum may be considered as an excellent flooring material. If properly seasoned it will not shrink, and the manufacturer who understands his work will have his wood all shrunk before he sends it through the matching machine. It will not sliver. The wood has no grain, hence one part of the surface offers the same resistance as every other part and the floor wears smooth. Red Gum is tough and durable and selected stock can be used for flooring in the most expensive buildings. If finished in the natural color it will make a flooring pleasing to the eye and in every way desirable. As illustrating the durability of Red Gum the floor of the largest dancing pavilion in the world, situated at Sandusky, Ohio, may be mentioned. It covers an area of more than an acre. A floor as large as this, loaded with hundreds of people, is subjected to the maximum of strain and wear, but after four years of constant use it is as good as the day it was put down. The soil about the pavilion is sandy, and notwithstanding the extraordinary care exercised more or less sand gets on the floor. So far it shows no effect of this additional cause for wear and tear. The almost perfect wearing qualities of Red Gum led to its adoption for the flooring of another large dancing pavilion at Put-in-Bay, Ohio.

RED GUM FOR SIDING.

One of the most important points in the use of Red Gum as siding is that it contains no pronounced grain, in this respect being equal to yellow poplar. Red Gum siding is not streaked with pitch, nor are the cells filled with resinous compounds which prevent the

absorption of paint. It contains no acid or other ingredients injurious to nails. In practice it has been demonstrated that nails driven into Red Gum have been drawn wholly free from corrosion after years of service. But Red Gum should be primed as soon as put in place. While this recommendation might profitably be observed with any kind of siding it is almost imperative with reference to Red Gum. To popularize Red Gum with the building trade means perfect machine work and the application of practical knowledge in preparation.

TESTIMONIALS.

The two letters reproduced herewith testifying to the utility of Red Gum for building purposes are typical of many received by the manufacturers.

ST. LOUIS, MO.,
December 8, 1908.

Gentlemen—Answering your letter asking our opinion regarding the use of Red Gum:

We are pleased to inform you that from our experience with it we consider it is the best substitute for expensive hardwoods on account of the grain, the easy working qualities of the wood and the fine finish it is capable of receiving.

We believe the use of Red Gum will very shortly eliminate most of the high-priced hard woods from the market, not only on account of the low cost of Red Gum, but also because of the beautiful finish obtained, which, in our opinion, compares favorably with most of the standard hardwoods now in use. Yours respectfully,

BARNETT, HAYNES &
BARNETT.

ST. LOUIS, MO.,
February 15, 1909.

Dear Sir—Yours of the third inst. at hand, and in reply beg to state that the Red Gum used for finishing my house has been entirely satisfactory in every way and has been very much admired by many people. I think Red Gum makes an admirable interior finish.

Yours truly,
JAY HERNDON SMITH.

WHERE OBTAINABLE.

Architects desiring to see samples of Red Gum, both rough and finished, or who wish market prices of selected Red Gum, are invited to correspond with any of the following firms:

Carrier Lumber and Manufacturing Co., Sardis, Miss.
Himmelberger-Harrison Lumber Co., Morehouse, Mo.
Lamb-Fish Lumber Co., Memphis, Tenn.

Charles F. Luehrmann Hardwood Lumber Co., St. Louis, Mo.
Three States Lumber Co., Memphis, Tenn.



NEW BUILDING OF ELY-WALKER DRY GOODS CO.,
ST. LOUIS, MO.

EAMES & YOUNG, Architects



DINING-ROOM IN ONE OF THE GREYLOCK DWELLINGS, 143D STREET
AND BROADWAY, NEW YORK, N. Y. TRIMMED ENTIRELY
IN RED GUM

SCHWARTZ & GRO3S, Architects

THE ALFRED STRUCK CO., INC.

High-Grade Interior Trim

LOUISVILLE, KY.



PRODUCTS. We manufacture INTERIOR HARDWOOD TRIM of strictly high grade, including DOORS, MANTELS, STAIRWAYS, OFFICE and BANK FURNITURE and FIXTURES, made according to Special Designs of Architects.

FACILITIES. Located in the heart of the hardwood district, with direct access to the products of the largest mahogany plant in the world, our manufactory has direct advantages. Our plant is fully equipped with all necessary modern machinery and is 70 x 200 feet. Three floors and a basement afford ample area for our work. Nearly a half century of active operation has placed us in the foremost rank of manufacturers of our line.

OUTPUT. Our specialty is the manufacture of high-grade hardwood Doors, Mantels, Stairways, Office, Bank and Residence Fixtures, and all hardwood Trim made according to special designs of architects. Nothing in the line of special design is too elaborate for our undertaking and successful accomplishment. While we do not make office desks, or anything offered by the regular producer in the office line, in ordinary styles, we do include such articles of furniture and fixtures in our specialties from individual designs by architects.

Our Interior Trim, made according to architects' plans, is put together in the factory and carefully packed, enabling it to reach its destination without injury.

LUMBER. We turn out only superior work and are looking alone for first-class contracts.

We have in stock, and at our immediate command at all times, Plain Oak, Quartered Oak, Mahogany, Birch, Chestnut, Poplar, Gum, Maple and all other woods usually required for our products.

ESTIMATES. We will be pleased to pay expressage both ways on plans on which to make estimates; when the amount of work justifies it and is within reasonable distance, will send estimator when plans can not be sent.

REFERENCES. Among the many buildings for which we have furnished material are:

BUILDING	LOCATION	ARCHITECT
Audubon Building	New Orleans, La.	Kennedy & Adkins
First National Bank	Maysville, Ky.	Richards, McCarty & Bulford
State Institute for the Deaf	Indianapolis, Ind.	Robush & Woods
Fannie Goodwyn Institute	Memphis, Tenn.	Alsup & Woods
Lucy Brinkley Hospital	Memphis, Tenn.	Jones & Furbinger and Myer J. Sturm
Lincoln Bank Building	Louisville, Ky.	McDonald & Dodd
Carnegie Library (Fixtures)	Louisville, Ky.	Pilcher & Tachau
J. Ross Todd	Louisville, Ky.	Carrère & Hastings; Arthur Loomis, Associate
S. Thurston Ballard	Louisville, Ky.	McDonald & Dodd
County Court House	Winfield, Kan.	P. H. Weathers
County Court House	Chandler, Okla.	P. H. Weathers
County Court House	Guthrie, Okla.	P. H. Weathers
Convention Hall	Guthrie, Okla.	P. H. Weathers
C. B. Atkins	Knoxville, Tenn.	Leon Beavers
B. F. Stevens	Martinsville, Va.	Chas. H. Wray

ESTABLISHED 1876

INCORPORATED 1903

JAS. G. WILSON MFG. CO.

MANUFACTURERS OF

Rolling Partitions, Wardrobes, and Floors

3 West Twenty-Ninth Street

NEW YORK, N. Y.

TELEPHONE, 1160 MADISON SQUARE
CABLE, "LYDIAN, NEW YORK"BRANCH OFFICE
CHICAGO, ILL., 108 LA SALLE STREETFACTORY ADDRESS
MAIL, NORFOLK, VA.
TELEGRAPH, BERKELEY, VA.

PRODUCTS.

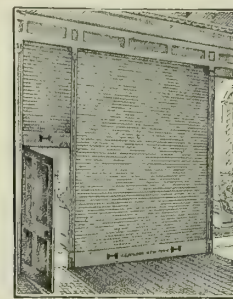
We are manufacturers of ROLLING PARTITIONS, HYGIENIC WARDROBES, and WOOD BLOCK FLOORS. We also manufacture ROLLING DOORS and SHUTTERS in STEEL, WOOD, and BRONZE; also, VENETIAN BLINDS and AWNINGS.

ROLLING
PARTITIONS.

Rolling partitions have become a very necessary feature in the construction of church and school buildings, and over ten thousand of these buildings have our partitions in use.

The cuts in the margin show partitions coiling overhead.

A blackboard surface can be furnished on one side of partition.



ROLLING PARTITIONS

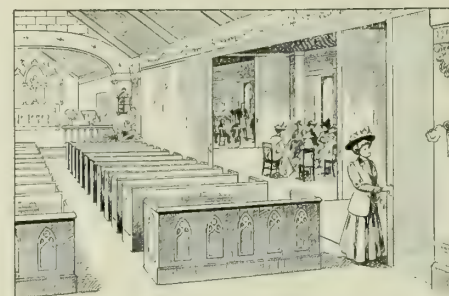
VERTICAL
ROLLING
PARTITIONS.

Vertical Rolling Partitions coiling either on one or both sides of opening. A 50-foot space can be closed without the use of movable posts.

HYGIENIC
WARDROBES
FOR SCHOOLS.

These Wardrobes are made in several styles, the rolling fronts coiling either overhead or at side, and having blackboard surface on them or not, as desired. Perfect ventilation, economy of space.

Send for detail sheet.



VERTICAL ROLLING PARTITIONS

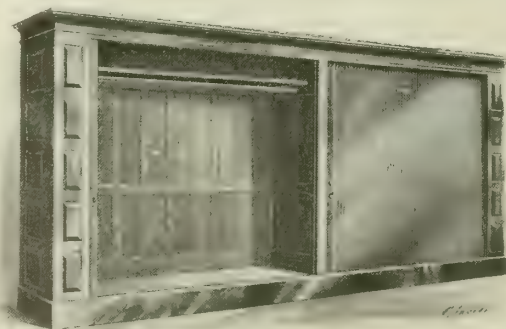
WOOD BLOCK
FLOOR (ENG-
LISH
METHOD).

Indestructible, perfectly solid, noiseless and fireproof, possessing complete sanitary advantages of imperviousness to dry rot, vermin and dirt, disease germs and damp. The English Block Floor is the very highest type of floor known.

WARDROBES
FOR
RESIDENCES,
HOTELS,
OFFICES.

Made in red cedar, standard design and quality. Height about 7 feet 6 inches; depth, 16 to 24 inches, and in lengths from 6 to 15 feet. Backs are in plain panels. Rolling fronts coiling at the side. The insides are unfinished. The outsides are finished in any color or style desired.

These Wardrobes can readily be taken apart and moved from place to place.



RED CEDAR WARDROBES

OTHER
PRODUCTS.

For Rolling Steel and Wood Doors, Rolling Partitions, and Venetian Blinds, see index for our pages elsewhere in this edition of "SWEET'S" CATALOGUE.

J. M. ADAMS

Contractor for Fine Floors of Hard Wood

330 North Charles Street

BALTIMORE, MD.

TELEPHONES

BRANCH OFFICE

WASHINGTON, D. C., 1126 Connecticut Avenue

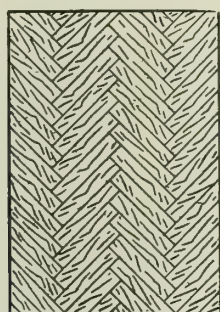
PRODUCTS.

FLOORS of selected HARD WOOD laid, smoothed and polished, in new or old buildings; STRIP FLOORS, BLOCK FLOORS, WOOD CARPET, and plain and elaborate PARQUETRY DESIGNS; also STEEL-WOVEN FLOORS laid over concrete in fireproof buildings.

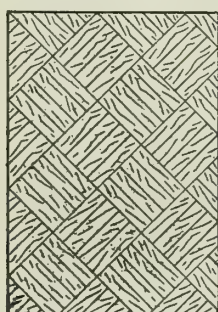
Thicknesses: $\frac{5}{16}$ " (square-edge) and $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ ", $\frac{13}{16}$ ", and $\frac{9}{8}$ " (tongue-and-groove).

WOODS USED.

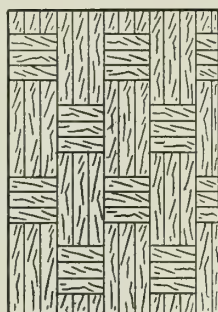
Quarter-sawed Indiana White Oak, Mahogany, Walnut, Maple, White Mahogany, Teakwood, Tigerwood, English Oak, Mahajua and other domestic and foreign woods, the Oak being in greatest demand.



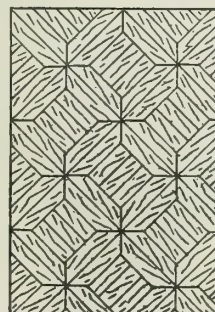
No. 285



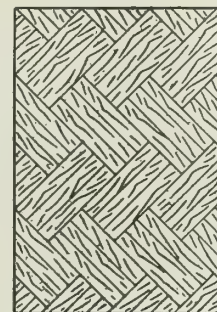
No. 164



No. 197



No. 530



No. 256

A FEW DESIGNS

PRICES.

Designs shown above range in price from 30 to 40 cents a square foot for $\frac{5}{16}$ -inch thickness, and from 45 to 55 cents for the $\frac{13}{16}$ -inch, for floors of quartered White Oak laid, smoothed and polished. Exact prices depend on number, size and shape of rooms, and upon various other conditions.

UNDER-FLOORS.

These should be $\frac{7}{8}$ inch thick, tongue-and-groove, thoroughly dry, not over 3-inch face, No. 2 Hard Pine, or similar wood, laid smoothly and blind- and face-nailed solidly to every joist bearing. If finish floors are to be of strips or of designs paralleling base line of the room (like No. 197 above) lay under-floors diagonally. For diagonal designs (like Nos. 285, 164, 530 or 256, above) lay under-floors parallel with base line.

ESTIMATES.

Upon receipt of blue-prints or complete measures of rooms, sketches are prepared, carrying out the architect's ideas or suggesting suitable designs, and exact figures are quoted covering cost of finished floors.

FACILITIES.

A force of men skilled in this special work is employed constantly both in Baltimore and Washington. Men promptly sent to execute contracts elsewhere as occasion requires. Flooring used is of the highest grade only, and is the product of the Wood-Mosaic Flooring & Lumber Company's mills and factories. (See their pages in General Index.) Contracts taken for a floor in one room or for floors throughout entire houses, apartment or other buildings.

TERRITORY.

Contracts solicited for work to be done in Baltimore, Washington, Richmond, Norfolk, Savannah, and the South. Many references can be given for work done in this field during the past fifteen years.

HEATON & WOOD

Parquetry Floors

1706 Chestnut Street
PHILADELPHIA, PA.

MEMBERS AND DIRECTORS OF
WOOD MOSAIC FLOORING COMPANY
NEW ALBANY, IND., AND ROCHESTER, N. Y.

PARIS OFFICE
64, RUE TAILBOUT

PRODUCTS.

HARDWOOD FLOORS, PARQUETRY FLOORS, FIREPROOFED WOOD FLOORS, and WOOD FLOORS for Fireproof Buildings; SPECIAL FLOOR FINISHES.

FACILITIES.

We have the largest factory devoted exclusively to the manufacture of parquetry floors in this country. We represent also the largest as well as the most celebrated factory in Europe. Only the latest and most accurate machinery is used in our factories, and we have a large, well-trained force of experienced workmen.

REFERENCES.

We have furnished flooring in the finest residences, hotels, public buildings, etc., all over America, as far west as the Pacific Coast, and in the South American States. We illustrate a few representative buildings in which we have worked:



WHITE HOUSE, WASHINGTON, D. C.,
"FIRST HOME IN THE LAND"



HOTEL BELLEVUE-STRATFORD,
PHILADELPHIA, PA.

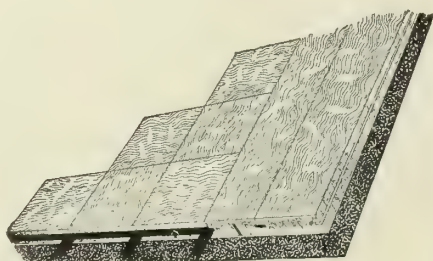


RESIDENCE OF THE LATE MRS. WM. ASTOR,
NEWPORT, R. I.



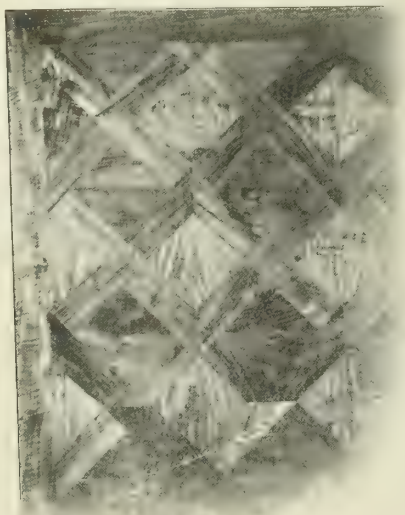
SECTION OF WOOD BLOCK FLOORING

Laid in Mastic on Concrete Foundation,
Fireproof Construction



STEEL-WOVEN WOOD BLOCK
FLOORING

Laid in Vanderbilt Memorial Room, St.
Luke's Hospital, New York, N. Y.,
twelve years ago. Fulfilled
every expectation



SIMPLE AND ARTISTIC DESIGNS
FROM RARE AND SELECTED
WOODS



LOUIS XV PARQUETRY, FINEST FLOORING
IN THE WORLD

DESCRIPTION.

Wood Block Flooring (construction patented) laid in special bituminous cement directly upon a concrete surface. The blocks are dipped in the bitumen while it is in a heated and liquid state and are then placed permanently in position.

DESIGN.

Used either in squares or herringbone design $1\frac{3}{16}$ ", $1\frac{1}{8}$ ", and $1\frac{3}{8}$ " thickness and usually of oak or pine of selected grade.

ADVANTAGE.

Owing to each block being tongued and grooved throughout (sides as well as ends) it prevents all unevenness usual with floors laid in mastic, and remains perfectly level, as it does not allow any buckling between the different pieces or any looseness in the blocks. The floor is sanitary, damp-proof, elastic, and most durable. It is also noiseless, as the mastic absorbs all sound.

ADAPTABILITY.

It is particularly well adapted for residences, hotels, banks, libraries, theaters, office buildings, railway stations, schools, etc.

PRICE.

These floors range in price approximately from 50 to 60 cents per square foot.

SPECIAL MASTIC.

The above features, together with a mastic tried under the severest test, insure absolutely perfect satisfaction. A composition may appear good to cement with; but, unless the ingredients are such that it will withstand extreme heat and cold, such as are to be found during the American summers and winters, it is only a question of time when the composition loses its elasticity and tenacity, allowing the blocks to work loose. We have made numerous experiments with different kinds of composition, and have found our Special Mastic far superior to many things before used in this line.

CEMENT SPECIFICATIONS.

The concrete foundation to receive these floors shall be provided and laid by the mason, viz., one part Portland cement to three of sand floated to a dead level, one inch thick and free from lumps and hollows. Cement should be subdivided into sections to prevent warping. This floating shall be brought up to within exactly (insert the thickness of the wood to be used) of the finished level of wood block flooring, but the contractor for this work shall inspect same and shall not lay the flooring until the foundation is dry and in perfect condition to receive the flooring.

SPECIFICATIONS FOR FLOORS.

Floors to be composed of selected (oak, maple or pine) blocks each about thick by long, according to HEATON & WOOD's patented system of Wood Block Flooring, and bedded in their special mastic composition. After floors are laid, smoothed and finished, they shall be guaranteed for a period of one year after completion. This flooring shall be provided and laid by HEATON & WOOD, 1706 Chestnut Street, Philadelphia, Pa.



GIRARD TRUST COMPANY BUILDING,
PHILADELPHIA, PA.

McKIM, MEAD & WHITE and FURNESS, EVANS & Co.,
Architects



UNITED STATES MARINE CORPS BUILDING,
PHILADELPHIA, PA.

PENN BRIDGE Co., Builders. RANKIN, KELLOGG &
CRANE, Architects



SOLDAN HIGH SCHOOL, ST. LOUIS, MO.

HIRAM LLOYD Co., Builders. W. B. ITTNER, Architect



INTERNATIONAL BUREAU OF AMERICAN
REPUBLICS, WASHINGTON, D. C.

KELSEY & CRET, Philadelphia, Architects
NORCROSS BROS. & Co., Builders

THE BUTTLE PARQUET FLOOR CO.

MANUFACTURERS OF

Parquet Floors, Wooden Carpets, Grilles, and Floor Sundries

GENERAL OFFICE

607 West Forty-Third Street

NEW YORK, N. Y.

TELEPHONE, 3595 BRYANT

NEW YORK SALESROOM

47 WEST 34TH STREET

TELEPHONE, 3595 BRYANT

BROOKLYN SALESROOMS

155 LAWRENCE STREET

TELEPHONE, 4178 MAIN

1234 BEDFORD AVENUE

TELEPHONE, 2641 BEDFORD

PRODUCTS.

We make a specialty of "THIN" PARQUET FLOORING, $\frac{3}{8}$ or $\frac{5}{16}$ inch in thickness; we also make the heavier or "THICK" FLOORING, $\frac{7}{8}$ inch in thickness.

We make and sell all kinds of FLOOR SUNDRIES, including FINISHES, CASTER CUPS, and FLOOR DUSTERS.

PARQUET FLOORS.

The "Buttle" Floors are superior, because of the selection of the woods and our facilities for producing the best work. In the manufacture of floors we are specialists with an experience of over a quarter of a century.

Parquet Floors are supplied in our standard patterns, or special designs will be made to order.

Where a new house is being built we can take charge of the floor question throughout; where a house is being decorated, we can make the floors harmonize with their surroundings. We can repair an old hardwood floor or lay a new parquet floor over it at practically the cost of a good carpet.

We can also furnish all kinds of finishes for floor repolishing.

PRICES.

Cost of material and labor being variable, prices can be given but in a general way. Our new book of floor designs in color and price-list will be furnished upon application.

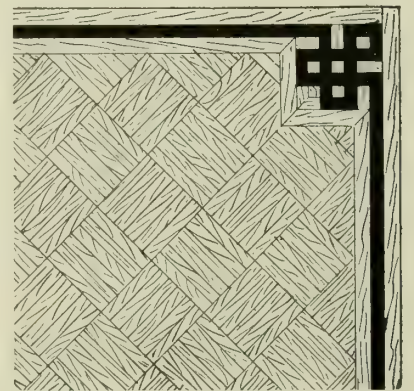
"Thin" Flooring, material only, can be supplied at from 10 cents per square foot up, and costs when laid and polished from about 20 cents per square foot up, while "Thick" Flooring, material only, can be supplied at from about 20 cents per square foot up, and costs when laid and polished from about 40 cents per square foot up.

FACILITIES.

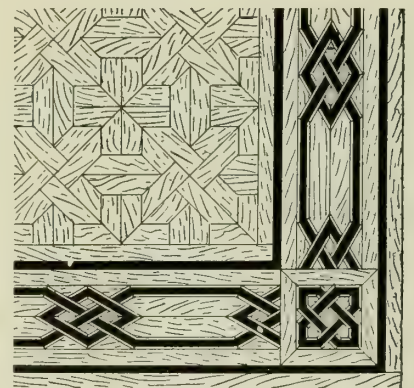
We carry a large stock of Flooring at our New York warehouse, ready for immediate shipment. We can deliver anywhere and in any quantity.

CO-OPERATIVE SERVICE.

Architects' designs will be followed in the most faithful manner. Correspondence will be promptly replied to, and estimate and plan for approval will be furnished free of charge, based upon the needs of each case. Upon application we will send illustrations and samples of our goods, together with catalogue and all desired information.



DESIGN OF PARQUET FLOORING



DESIGN OF PARQUET FLOORING

THE TERWILLIGER MANUFACTURING CO.

MANUFACTURERS OF
Hardwood and Parquet Floors

11 West Thirtieth Street
NEW YORK, N. Y.

TELEPHONE, 1887 MADISON SQUARE

BRANCH
BROOKLYN, N. Y., 302 Fulton Street
TELEPHONE, 2334 MAIN

PRODUCTS. We manufacture all kinds of HARDWOOD, PARQUET and WOOD-CARPET FLOORING, WAINSCOTS, GRILLE WORK, and CEILINGS.

SERVICES. Our thirty-five years' experience has enabled us to become competent judges of matters pertaining to floors, and we will promptly and cheerfully reply to all inquiries regarding them, furnish sketches of appropriate designs to harmonize with various styles of decorations, and state the cost for the work laid and finished, or for the materials only. We have every facility for filling all contracts promptly anywhere.

LAYING AND FINISHING. We prefer to lay and finish our floors ourselves, but where this is impracticable we can furnish the material and supply such instructions, working plans, etc., as will enable any carpenter of ordinary ability to lay them.

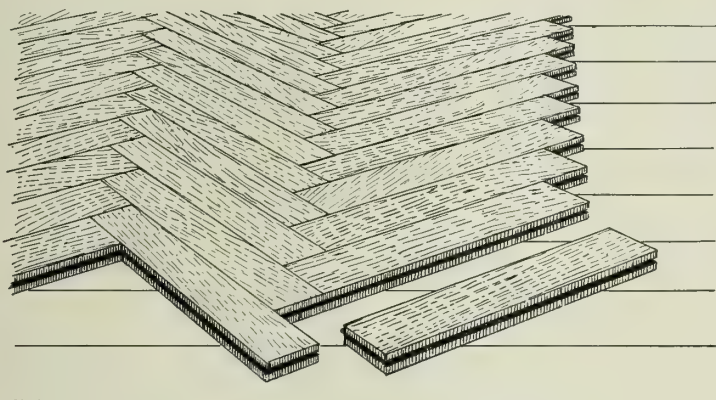


FIG. 1. PARQUET FLOOR

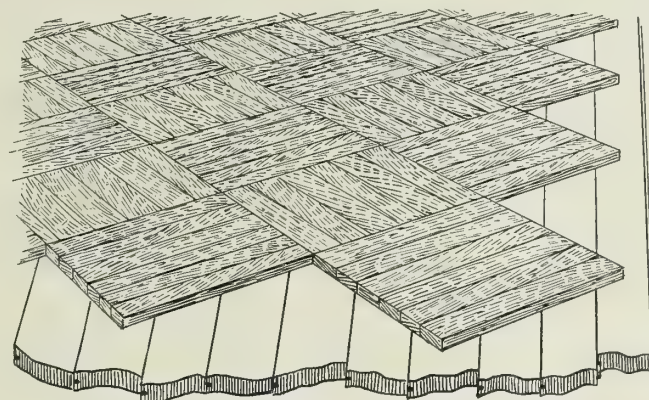


FIG. 2. WOOD CARPET

PARQUET FLOOR. The above illustration (Fig. 1) represents a $\frac{7}{8}$ -inch Parquet Floor, Herringbone design. It consists of $2\frac{1}{2}'' \times 24'' \times \frac{13}{16}''$ pieces, each strip laid separately, tongued and grooved on sides and ends and blind-nailed. This style is usually laid over rough diagonal "builder's floor."

PRICE. Approximate price, for material and labor, 40 cents per square foot.

WOOD CARPET. The above illustration (Fig. 2) shows a $\frac{3}{8}$ or $\frac{5}{16}$ inch Parquet Floor. Each block is laid separately and nailed through the surface, and should be laid over a comparatively firm and solid floor.

PRICE. Approximate price, for material and labor, 25 cents per square foot.

REPRESENTATIVE CONTRACTS. The following are a few representative buildings wherein our floorings have been specified and used:

The Prasada House, New York, N. Y.

Charles Romeyn, Architect

Clarence Mackay's Residence, Roslyn, L. I.

McKim, Mead & White, Architects

New York Telephone Building, New York, N. Y., Cyrus L. W. Eidlitz & McKenzie, Architects

Woolsey Hall, Yale College, New Haven, Conn.

Carrère & Hastings, Architects

W. K. Vanderbilt's Residence, Oakdale, L. I.

Hunt & Hunt, Architects

CATALOGUE. Catalogue sent on application.

WOOD-MOSAIC CO.

MANUFACTURERS OF

Hardwood Flooring, Lumber and Veneers

FACTORY, LUMBER YARDS, SAW MILL, VENEER MILLS
AND LUMBER SALES OFFICE
NEW ALBANY, IND.

PARQUETRY FACTORY, FLOORING SALES OFFICE AND
DISTRIBUTING DEPOT
ROCHESTER, N. Y.

PRINCIPAL FLOORING AGENCIES

ATLANTA, GA., EDWARD HAYNES LUMBER Co., 43 Spring Street
BALTIMORE, MD., J. M. ADAMS, 330 North Charles Street
BOSTON, MASS., R. T. ADAMS & Co., 24 Bromfield Street
BUFFALO, N. Y., STEVENS FLOOR Co., 658 Main Street
CINCINNATI, OHIO, MOORES-CONEY Co., Union Trust Building
CLEVELAND, OHIO, CLEVELAND HARDWOOD FLOOR Co., 39 Taylor
Arcade
HAMILTON, ONTARIO, CAN., THOMAS C. WATKINS
LOUISVILLE, KY., H. M. ENGLEMAN, 515 Third Avenue
MILWAUKEE, WIS., JOHN DOUBRAWA & SON, 633 East Water Street
MONTREAL, CAN., MONTREAL WOOD-MOSAIC FLOORING Co., 730 St.
Catherine Street, West
NEWARK, N. J., R. A. DORRILL, 280 Bank Street
NEW HAVEN, CONN., W. H. MALAY, 69 Orange Street
NEW YORK, N. Y., WOOD-MOSAIC Co., 9 East 32nd Street

PHILADELPHIA, PA., HEATON & WOOD, 1706 Chestnut Street
PITTSBURG, PA., EMPIRE FLOORING Co., 905 Manufacturers Building
PROVIDENCE, R. I., ARDREY & ADAMS, 107 Washington Street
ROCHESTER, N. Y., ABNER ADAMS Co., 58 East Avenue
ST. JOHN, N. B., CAN., HAMILTON & GAY, 86 Erin Street
SALT LAKE CITY, UTAH, J. P. PAULSON, 170 West Second South
Street
SAN FRANCISCO, CAL., HARDWOOD INTERIOR Co., 873 O'Farrell
Street
SCRANTON, PA., WILLIAMS & McANULTY, 129 Wyoming Avenue
SPRINGFIELD, MASS., J. F. LAWSON & Co.
SYRACUSE, N. Y., ABNER ADAMS Co., 121 New Rosenbloom Building
TOLEDO, OHIO, E. G. McFILLLEN, 25 North Erie Street
WASHINGTON, D. C., J. M. ADAMS, 1126 Connecticut Avenue
WILKESBARRE, PA., WILLIAMS & McANULTY, 18 South Main Street

THERE ARE MANY SMALLER AGENCIES AND THE LIST IS GROWING

PRODUCTS.

We are manufacturers of high-grade ORNAMENTAL WOOD FLOORING; PARQUETRY, WOOD CARPET, TONGUE and GROOVE FLOORING and STEEL WOVEN FLOORING for Fireproof Buildings. We also saw and carry on hand a full stock of INDIANA HARDWOOD, making a specialty of INDIANA QUARTERED WHITE OAK LUMBER and SAWED VENEERS.

TIMBER SUPPLY.

Indiana white oak is the high standard by which all white oak is judged. Having our own timber and sawmill in the Southern Indiana white oak belt, we are in the favored position of always having an unlimited supply of thoroughly seasoned lumber ready for our dry-kilns of 400,000 feet capacity.

FACILITIES.

We have, at New Albany, Ind., a large band-saw mill and lumber yard, also a large electrically driven flooring factory and a storage house with a capacity of a million feet of flooring. A Baetz Heater keeps the air circulating rapidly and maintains the temperature at 90 degrees, so that the flooring is never exposed to variations of temperature until it is shipped.

At Rochester, N. Y., is situated our flooring sales office and parquetry factory, where dry-kilns, storage rooms and a large force of skilled mechanics and cabinet makers give every opportunity for thorough work and prompt shipments. This is the *only large parquetry factory located in the East.*

STOCKS ON HAND.

Our standard sizes are always kept in stock and we maintain on hand for immediate shipment a great many designs in parquetry. We have our stock of materials so arranged that it is rarely the case that we can not fill a complicated order for a special design in less than a week.

ORDERS THROUGH AGENTS.

Where we have agents they will be glad to give estimates on floors laid, finished and polished. They are floor specialists and have forces of expert floor layers. They can give perfect satisfaction with the minimum of trouble and expense to the purchaser.

DIRECT FACTORY ORDERS.

Where we have no agents orders are filled direct from the factory. A sketch, giving accurate measurements, should be sent to us. We will then furnish a colored floor plan with exact estimate of cost of flooring required. The goods are carefully prepared and crated for

freight shipment. Instructions and laying plans accompany all orders shipped. These instructions in laying and finishing will enable any good carpenter to lay our flooring satisfactorily.

If desired, we will include in our estimate cost of the best finishing materials, special nails, etc., and will ship same with order.

INDIANA
LUMBER

Architects looking for the real old Indiana white oak can find it by specifying our Indiana stock. We carry a full stock of this wood in lumber and veneers. We also carry poplar, ash and other Indiana hardwood lumber.

HARDWOOD
FLOORING.

We are prepared to fill orders for high-grade Ornamental Flooring of all kinds, from thoroughly seasoned lumber of our own cutting. Every truck load is tested for percentage of moisture before it leaves the kiln.

ORNAMENTAL
FLOORING.

Whenever a fine ornamental hardwood floor is wanted, our goods, being of the very highest class, will be found satisfactory. We are equipped to carry out any decorative scheme demanded by architect or decorator. We carry about thirty high-grade fancy cabinet woods. We can supply natural wood to match any color effect except bright blue. Fancy parquetry or wood-mosaic flooring is shown in great variety in our various catalogues.

STRIPS.

We make a very high grade of Tongue and Groove Flooring, $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{5}{8}$ ", $\frac{13}{16}$ ", $\frac{9}{8}$ " thick. We cut out all small defects so that the floor may be laid as nearly as possible without waste, to cover actually the space in square feet for which orders are given.

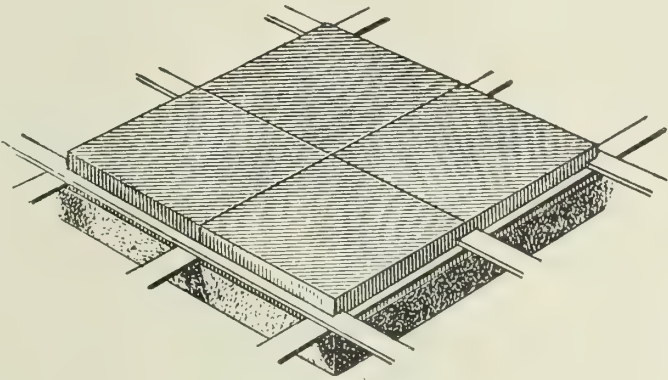
Thin parquetry strips ($\frac{5}{16}$ " square edge) are made in two widths, 2" and $1\frac{1}{3}$ ". When an imitation of a tongue and groove floor is desired the 2" width is supplied. For true parquetry effect we always recommend the $1\frac{1}{3}$ ". The narrower the pieces the more is the Mosaic effect preserved, and the $1\frac{1}{3}$ " width is still wide enough to show the grain or figure of the wood.

In thick strips the waste of lumber caused by the tongue makes the price of the narrower width almost prohibitive, unless in small quantities of colored woods for border strips. In the thin square edge strips we do not have this waste, and we sell the 2" and the $1\frac{1}{3}$ " for the same price per square foot, but we recommend the $1\frac{1}{3}$ ".

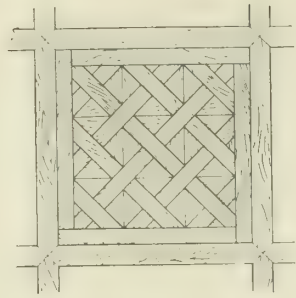
STEEL
WOVEN
FLOOR.

Owing to the peculiar construction of our Steel Woven Floors in not being cemented to the concrete, but woven together with steel bands, variations of temperature act on the whole floor at once. Compression wall-strips take up any expansion of the whole field and no cracks show between individual blocks. These facts make it greatly superior to floors glued or cemented to the concrete, as atmospheric changes tend to tear them from the foundations. We consider the Steel Woven Patent the only perfect floor for use in fireproof buildings.

This Flooring in the Baltimore Bar Library is as good to-day as when it was first laid. It was flooded for forty-eight hours during the great fire. The fact that it came through such a test unharmed so impressed the United States Government that the fine offices in the New York Customs House, the finest public building in the country, were floored with Wood-Mosaic Steel Woven Flooring.

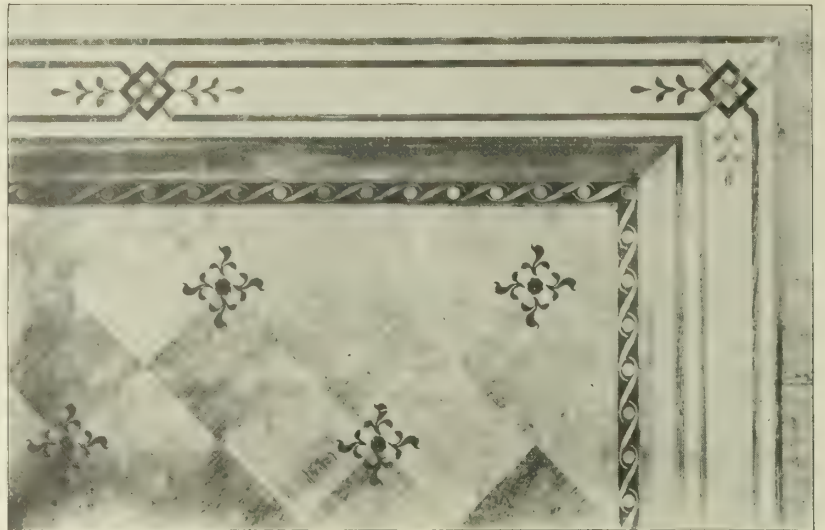


CONSTRUCTION OF STEEL WOVEN FLOOR
Made of 4" Quartered White Oak Parquetry Blocks



FONTAINEBLEAU OR
VERSAILLES DESIGN IN
PARQUETRY AS LAID IN
THE FINEST OF THE
FRENCH PALACES

Made in Oak, Teak, English
Oak, Prima Vera, etc.



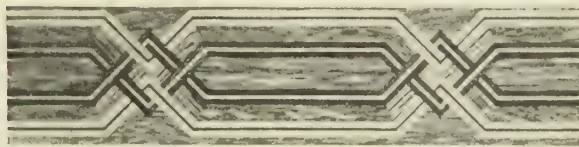
FANCY EUROPEAN DESIGN IN THREE-PLY WOOD MOSAIC



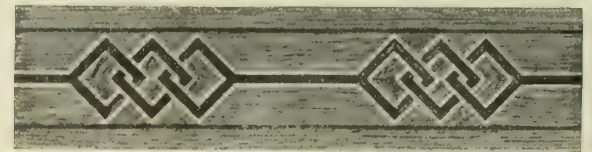
No. 643. 12-inch. Oak and Walnut



No. 625. 10-inch. Oak, Mahogany and Maple



No. 636. 12-inch. Oak, Mahogany and Maple



No. 640. 12-inch. Oak, Maple and English Oak



No. 615. 8-inch. Oak and Mahogany



No. 638. 12-inch. Oak and Rosewood



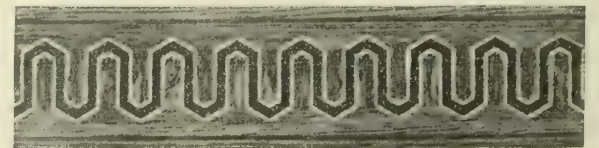
No. 619. 8-inch. Oak, Cherry and Maple



No. 626. 10-inch. Oak and Walnut



No. 628. 12-inch. Oak and Mahajua



No. 639. 12-inch. Oak, Mahogany and Maple



No. 618. 8-inch. Oak and Cherry.



No. 629. 12-inch. Oak and Walnut

SPECIMEN DESIGNS IN PARQUETRY BORDERS

AERTIGHT METAL WEATHERSTRIP COMPANY

Rooms 8103-8110 Metropolitan Building, 1 Madison Avenue

TELEPHONE, 2900 GRAMERCY

NEW YORK

AGENCIES

CLEVELAND, OHIO, CLEVELAND BUILDING SUPPLY Co., Garfield Building

DENVER, COLO., GEORGE W. SUMMERS & Co., 703 Railroad Building

KANSAS CITY, MO., JACQUES STEEL Co., R. A. Long Building

PRODUCTS.

Manufacturers of "THE STANDARD" and "THE AERTIGHT" METAL WEATHERSTRIPS for Doors and Windows; also, "THE STANDARD" HOLLOW METAL PARTING BEAD.

DISTINCTIVE FEATURES.

Our Strips do what we claim for them: they prevent leakage of air, dust, and rain. "The Standard" Weatherstrip, patented January 6, 1903, and February 23, 1904, is thoroughly inter-locking. The edges being folded they fit neatly into each other, keeping true and guiding the sash into place, thus accomplishing all the good expected of a practical strip.

They are easily adjusted to new and old windows, conforming to the warping or swelling of the sash, reducing friction to a minimum and contributing to a noiseless and free running window.

The treatment of Casement Windows by this system renders them absolutely air-tight and waterproof. In years of experience we have not failed to give relief in a single instance.

"THE STANDARD" HOLLOW METAL PARTING BEAD.

This is a device of special interest to architects and builders. It is a decidedly progressive step in window construction, being practical and a substantial improvement. For fireproofing purposes, it is far in advance of anything hitherto used; it is of benefit to wooden windows and indispensable when kalamein windows are installed. Samples will be sent on application.

FACILITIES.

All our devices are installed by experts selected for their thorough knowledge of the business. We have a thoroughly equipped plant, capable of filling the largest contracts regardless of distance from the main office, and our agencies being established will very soon place representatives in every large city.

PRICES.

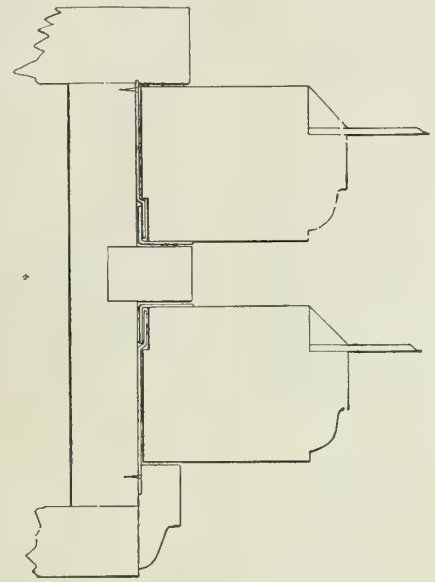
The cost is governed by conditions, but is extremely reasonable in all cases; our policy being to get financial results from a large volume of business and work well done.

CO-OPERATIVE SERVICE.

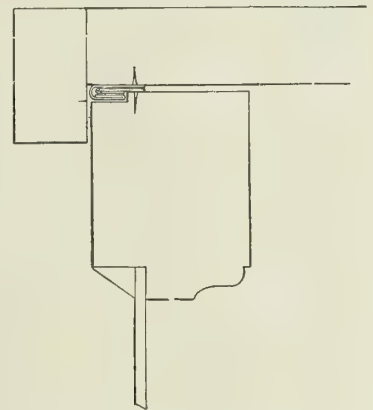
We shall be pleased to submit estimates. A letter from out-of-town patrons giving the sizes with a description of the windows, whether double-hung, casement, or pivot, will in ordinary cases give us sufficient information on which to base an intelligent estimate.

REFERENCES.

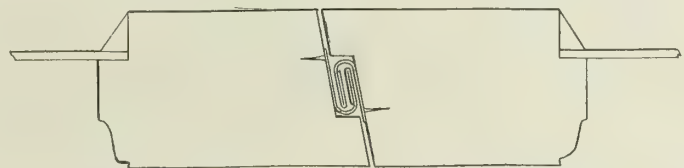
References from a number of prominent architects and builders; further information and details furnished on application.



JAMB PLAN OF A DOUBLE-HUNG WINDOW



JAMB PLAN OF A CASEMENT WINDOW



CROSS-SECTION THROUGH MEETING-RAIL, CASEMENT WINDOW

ATHEY SANITARY EQUIPMENT COMPANY

Manufacturers of Cloth-Lined Weather-Strips

1907 Michigan Avenue
CHICAGO, ILL.

PRODUCTS.

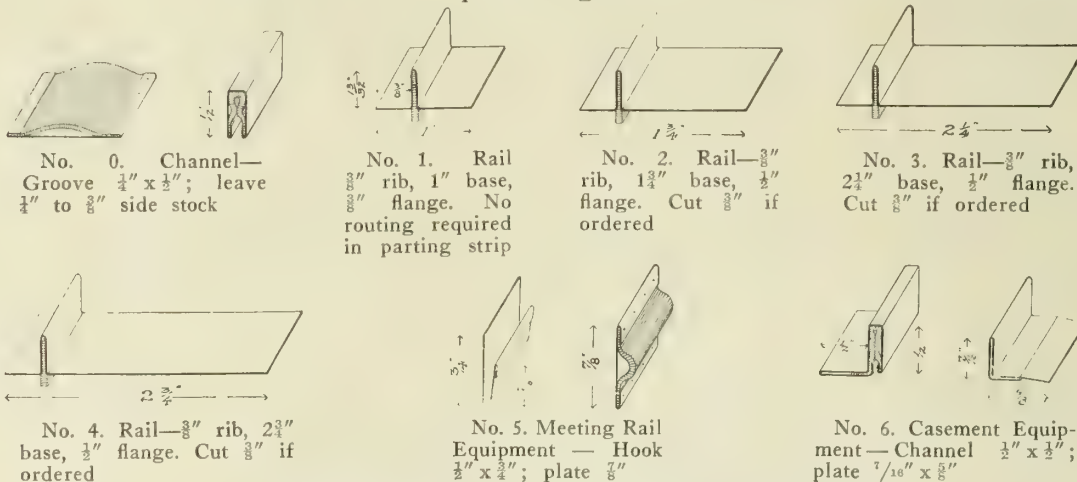
Manufacturers of the "ATHEY" CLOTH-LINED METAL WEATHER-STRIP; "ATHEY" SYSTEM of DUST-PROOFING; "ATHEY" SELF-CLOSING SHOWCASE DOOR ATTACHMENT; "ATHEY" BALL-BEARING STEEL EXTENSION DRAWER-SLIDE.

"ATHEY" CLOTH-LINED METAL WEATHER-STRIP.

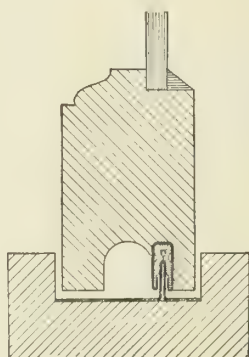
The "Athey" Cravenetted Cloth-Lined Metal Weather-Strip is the only metal weather-strip that can combine dust-proofing with weather-proofing. From the illustrations it will be noted that each channel is lined with cloth. This cloth is Cravenetted Windsor Cloth (billiard cloth). The chemical treatment which this cloth undergoes is similar to the way sail cloth for the British Navy and the uniforms of the Army for service in India are treated. This process makes the cloth proof against mildew or rot. Tests of running eight thousand feet of striping through a section of "Athey" Cloth-Lined Channel have been made, the result showing no wear whatever.

ADVANTAGES.

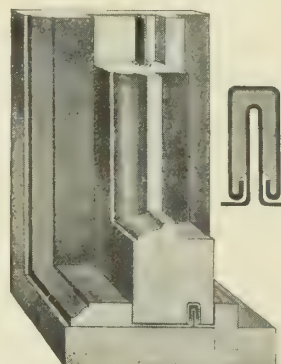
The Cloth-Lined Channel makes the "Athey" Metal Weather-Strip the only thorough protection against dust and draughts. All other metal weather-strips admittedly only stop part of the air leakage around the windows. The construction of all other metal weather-strips proves this assertion on the face, as no other weather-strip admits of packing between the tongue and groove. Windows equipped with the "Athey" can not stick or work hard under any conditions, and no other weather-strip can do away with all rattling. The efficiency of the "Athey" Metal Weather-Strip is well shown by its advantages in lack of noise and insulation over other metal weather-strips, or unprotected windows. The Cloth-Lined Channel forms a positive guide for the sash.



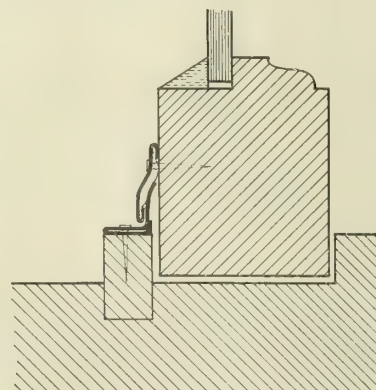
DETAILS OF CLOTH-LINED WEATHER-STRIP EQUIPMENT
(Patents applied for)



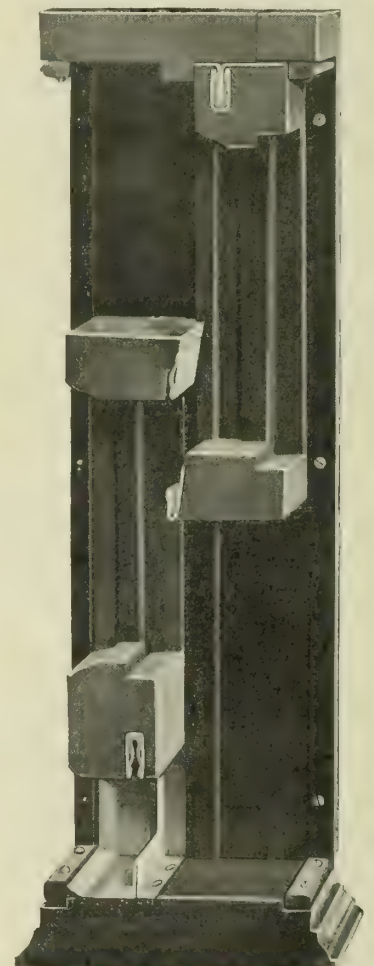
Absolutely no leakage with our Cloth-Lined Channel Equipment



Corner section fitted with Cloth-Lined Equipment



No. 30. Applied without removing the sash



Section of complete window fitted with our Cloth-Lined Equipment

Note air-tight connections throughout, without friction or binding movement

DETAILS OF DIFFERENT TYPES OF INSTALLATIONS

PLAIN
EQUIPMENT.

We also manufacture the ordinary plain metal weather-strip in sizes and shapes shown in the accompanying cuts.

SELF-CLOSING
SHOWCASE
DOOR
ATTACHMENT.

This equipment is used in connection with the "Athey" Dust-Proof for automatically closing showcases. Careless clerks can not leave showcases open. This device has been adopted by Marshall Field & Company, Mandel Brothers and the United Cigar Stores. The sliding doors run on ball-bearing tracks.

BALL-BEARING
STEEL EXTEN-
SION DRAWER-
SLIDE.

Where perfect working slide drawers are required the "Athey" Ball-Bearing Steel Extension Drawer-Slide makes a perfect working drawer under any conditions of loading or extension.

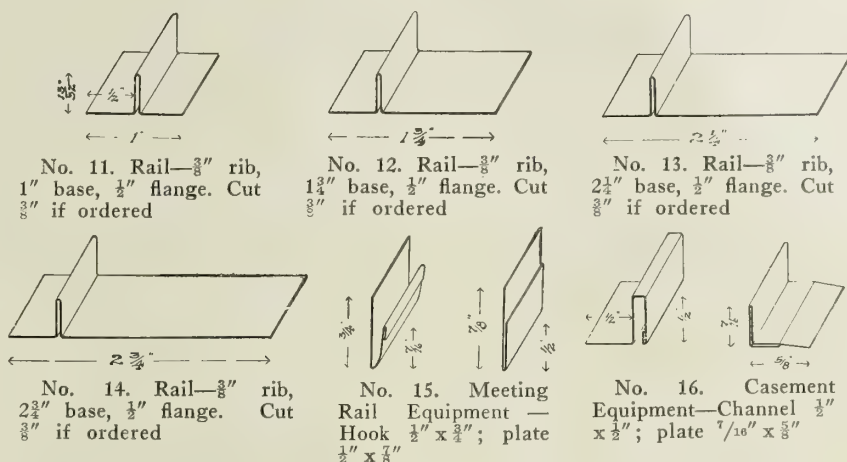
DUST-
PROOFING.

Quotations will be made on receipt of dimensions of drawers and openings.

We manufacture under the "Athey" patent another system of Dust-Proofing for application to showcases, wall-cases, drawers, etc. Architects will find this of special interest in the building of fine equipment for commercial uses as well as for built-in wardrobes and cedar-lined chests, in high-class homes.

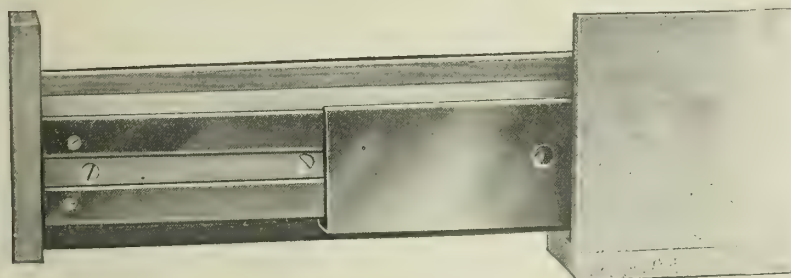
CO-OPERATIVE
SERVICE.

We are establishing first-class agencies in all principal cities. Write us for full particulars.



DETAILS OF PLAIN METAL WEATHER-STRIP EQUIPMENT
(Patents applied for)

Nos. 11 to 16 correspond in size with Nos. 1 to 6, but are not cloth-lined

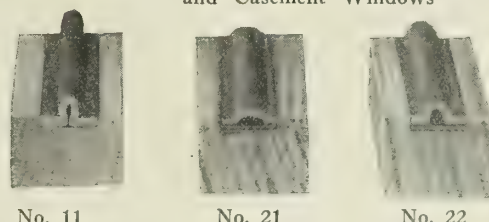


BALL-BEARING STEEL EXTENSION DRAWER-SLIDE



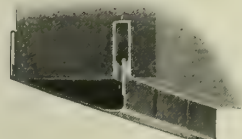
No. 1 No. 2

As applied to the edge of Doors and Casement Windows



No. 11 No. 21 No. 22

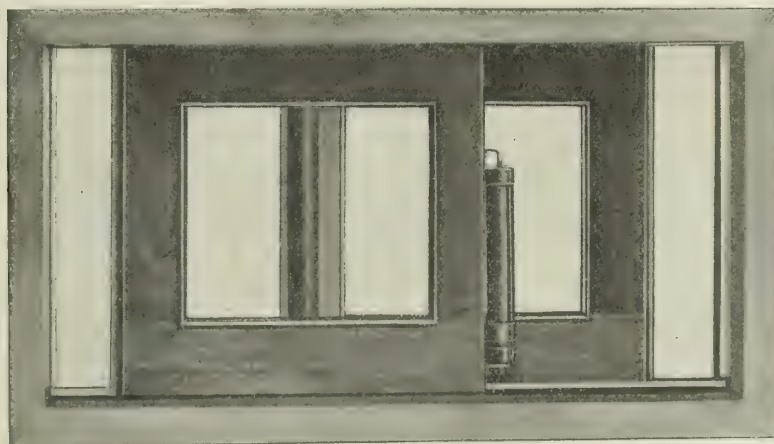
As applied on the Fronts of Drawers
DUST-PROOFING STRIPS
(Patents applied for)



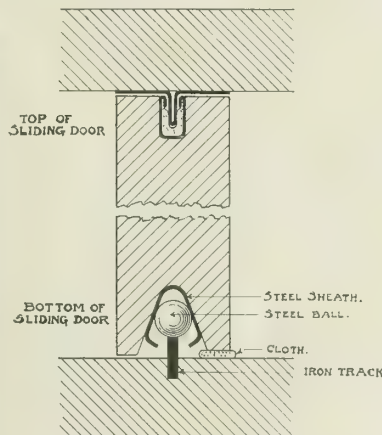
NO. 20. STRIP IN POSITION



NO. 6. STRIP APPLIED TO WINDOW CASEMENT
(With cloth lining)



SPRING-ROLLER, SELF-CLOSING SHOWCASE DOOR ATTACHMENT



BALL-BEARING TRACK FOR SLIDING SHOWCASE DOOR
Sectional view

CHAMBERLIN METAL WEATHER STRIP COMPANY

234-236 West Fort Street

DETROIT, MICH.

TELEPHONE, MAIN 3112

BRANCH OFFICES

NEW YORK, N. Y., 1165 Broadway
 PHILADELPHIA, PA., 708 Real Estate Trust Building
 BOSTON, MASS., 53 State Street
 BALTIMORE, MD., 441 Equitable Building

WASHINGTON, D. C., 218 Bond Building
 NEWARK, N. J., 54 Clinton Street
 ST. LOUIS, MO., 4230 Olive Street
 CLEVELAND, OHIO, Builders' Exchange

PITTSBURG, PA., 138 Ninth Street

LICENSEES

CHICAGO, ILL., 570 Old Colony Building
 SYRACUSE, N. Y., 941 University Building
 HARTFORD, CONN., 409 Connecticut Mutual Building
 NEW HAVEN, CONN., 87 Orange St.
 PORTLAND, ORE., 571 Washington Street
 DES MOINES, IOWA, 513 Fleming Building
 SEATTLE, WASH., Alaska Building
 SAN FRANCISCO, CAL.
 ST. JOSEPH, MO., 414 Francis Street
 LOUISVILLE, KY., 303 Tyler Building
 MANCHESTER, N. H., 1061 Elm Street
 ATLANTA, GA., 90 Edgewood Ave.
 ALBANY, N. Y., 80 and 82 State St.
 WICHITA, KAN., 19 Sheetz Bldg.
 DENVER, COLO., 444 Equitable Bldg.
 HELENA, MONT., 709 Ninth Street



OFFICE AND FACTORY OF
 "CHAMBERLIN" METAL WEATHER STRIP COMPANY

LICENSEES

INDIANAPOLIS, IND., 631 Newton-Claypool Building
 BUFFALO, N. Y., 504 D. S. Morgan Building
 ROCHESTER, N. Y., 720 Granite Bldg.
 ELMIRA, N. Y., 179 State St.
 MINNEAPOLIS, MINN., 1036 Security Bank Building
 DAYTON, OHIO, 925 Reibold Bldg.
 FORT WORTH, TEX., East Fourth and Terry Streets
 OKLAHOMA CITY, OKLA., 615 Majestic Building
 CINCINNATI, OHIO, Room 17, Fostick Bldg.
 DAVENPORT, IOWA, 1829 Washington Street
 KANSAS CITY, MO., 622 Finance Building
 OMAHA, NEB., 318 South Nineteenth Street
 CHEYENNE, WYO., Box 462

PRODUCTS AND SERVICES.

Manufacturers of the "CHAMBERLIN" METAL WEATHER STRIP for Windows and Doors, made of heavy sheet zinc, copper, brass, and bronze.

Consulting Engineers, specializing on HEATING and VENTILATING problems as modified by the elimination of heat losses around windows.

"CHAMBERLIN" LEAKAGE STOP SYSTEM.

The application of "Chamberlin" Metal Weather Strips on sliding and casement windows eliminates 95 per cent of the heat losses around windows. Exhaustive tests presented before the American Society of Heating and Ventilating Engineers prove that the heat loss around windows in a fifteen mile an hour wind is responsible for 25 per cent of the radiation used in the usual American practice.

After wide experience the foremost heating engineers have accepted the figures given in the copyrighted table herewith and are specifying radiation in most of the important new buildings after having deducted from the old figures the amount of radiation noted for the windows protected by the "Chamberlin" Leakage Stop System.

GUARANTEE OF NO COST.

This company will undertake to apply the "Chamberlin" system of window leakage stop to any new building in any part of the country and guarantee that it will be possible to reduce the size of the heating plant, as figured for protected windows, sufficiently so that the money saved on the heating plant will pay the entire cost of the "Chamberlin" Metal Weather Strip installation for the building.

An engineering department is maintained at the main office at Detroit, Mich., and this department will make figures of the square feet of radiation where "Chamberlin" Metal Weather Strips are used, and we will guarantee the accuracy of our figures, as well as that the saving on the heating contract will pay for the "Chamberlin" installation that makes the radiation saving possible.

RADIATION
REDUCTION
SCALE.

SINGLE CASEMENT WINDOWS								DOUBLE-HUNG AND DOUBLE-CASEMENT WINDOWS							
Height in inches	Widths								Widths						
	24	30	36	42	48	54	60		24	30	36	42	48	54	60
30	1.46	1.63	1.8	1.95	2.12	2.27	2.43	.....	.....	.....	.....	.....	.....	.....	.....
36	1.63	1.8	1.95	2.12	2.27	2.43	2.6	.....	.....	.....	.....	.....	.....	.....	.....
42	1.8	1.95	2.12	2.27	2.43	2.6	2.76	.....	.....	.....	.....	.....	.....	.....	.....
48	1.95	2.12	2.27	2.43	2.6	2.76	2.93	2.28	2.50	2.76	3.	3.25	3.5	3.75	
54	2.12	2.27	2.43	2.6	2.76	2.93	3.1	2.43	2.68	2.92	3.17	3.41	3.65	3.9	
60	2.27	2.43	2.6	2.76	2.93	3.1	3.26	2.6	2.85	3.09	3.33	3.6	3.82	4.07	
66	2.43	2.6	2.76	2.93	3.1	3.26	3.42	2.76	3.	3.25	3.5	3.75	4.	4.23	
72	2.6	2.76	2.93	3.1	3.26	3.42	3.59	2.92	3.17	3.41	3.65	3.9	4.14	4.39	
78	2.76	2.93	3.1	3.26	3.42	3.59	3.75	3.09	3.33	3.6	3.82	4.06	4.28	4.55	
84	2.93	3.1	3.26	3.42	3.59	3.75	3.92	3.24	3.49	3.73	3.98	4.22	4.47	4.71	
90	3.1	3.26	3.42	3.59	3.75	3.92	4.08	3.41	3.65	3.9	4.14	4.39	4.63	4.88	
96	3.26	3.42	3.59	3.75	3.92	4.08	4.25	3.6	3.82	4.06	4.28	4.55	4.8	5.04	
102	.....	.....	.....	.....	.....	.....	.....	3.75	4.	4.23	4.47	4.7	4.95	5.2	
108	.....	.....	.....	.....	.....	.....	.....	3.9	4.14	4.39	4.63	4.88	5.12	5.37	

NOTE—In addition to amount shown on scale, omit 75 per cent of amount usually added for unusual or northern glass exposure.

SPECIFICA-
TION.

Double-Hung Window—A zinc or bronze strip covering full width of sash runway, having longitudinal raised bearing points or corrugations to take up side play and reduce side friction. A sealing rib having a beaded edge extending $\frac{3}{8}$ -inch at right angles from strip into a groove in the sash. One edge of strip to extend into a small groove in parting stop, the other edge extending under movable or blind stop. Head and sill to have same equipment minus the corrugations. Meeting-rails to have two members, male and female, one bent back upon itself, the other forming a hook so they will interlock when window is closed.

Casement Windows—To be treated in special manner which varies with difference of construction. Manner of treatment in accordance with the requirements of the "Chamberlin" Leakage Stop System in any special instance will be shown on application.

INSTALLA-
TION.

"Chamberlin" Strip is not sold to the trade, but is installed in every instance by our experienced workmen, of whom we have a number in every section of any importance throughout the United States.

"Chamberlin" Metal Weather Strip can be applied to any and all classes of windows, such as straight windows, swell windows, casement windows, transoms, and doors. No special preparation of the casing or sash need be called for in the plans or specifications. We take the window as it is found and guarantee the proper installation and working of the strip.

ESTIMATES.

Estimates and samples will be furnished from our nearest branch office or licensee. Heating figures and guarantees from Detroit office only.

FACILITIES.

With our headquarters and factory, together with branch offices and licensees in thirty-five different cities throughout the country, we manufacture and install more weather-strips than all other like concerns in the world, which statement a record of more than 4,000,000 windows equipped should verify. Our arrangement of branches and licensees brings us into close touch with patrons wherever located.

SUMMARY.

To epitomize, "Chamberlin" Metal Weather Strip proves its wide usefulness and money-saving principle by: (1) Strengthening and adding life to the window; (2) preventing the admission of winter blasts and cold; (3) keeping out dust, dirt, and annoying outside noises; (4) saving from one fifth to two fifths of the fuel bills; (5) in new buildings, reducing the size of the heating plant; (6) obviating all need for double windows; (7) lasting a lifetime.

CAUTION.

Beware of Weather-Strip imitations that have neither the efficiency nor the financial responsibility enabling them to contract on the guarantee of our specific radiation saving.

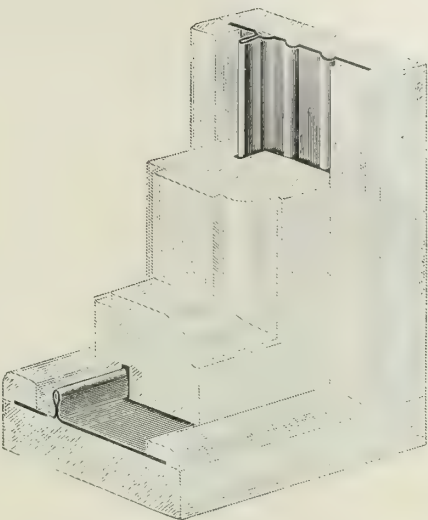


FIG. 1. "CHAMBERLIN" CORRUGATED METAL SIDE STRIP IN PLACE
Showing its relation to grooved lower sash. Upper sash equipment is same, except reversed

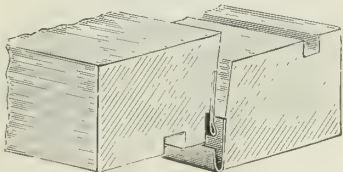


FIG. 2. "CHAMBERLIN" MEETING-RAIL
(Patented)

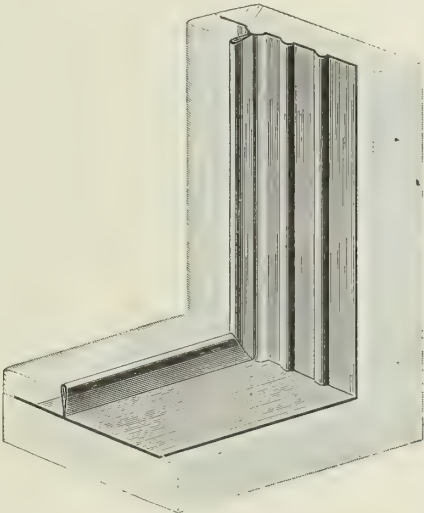


FIG. 3. APPLICATION OF STRIPS AT SIDE AND SILL OF WINDOW
Notice corner joint
Corrugations make a close-fitting sash, friction is reduced, side play avoided and easy sliding assured

CHAMPION METAL WEATHER-STRIP AND PARTING BEAD CO.

179 Summer Street
BOSTON, MASS.

AGENCIES

NEW YORK, N. Y., PITT BALANCE DOOR CO., 136-138 West 24th Street

PORTLAND, ME., ROSCOE S. DAVIS, 121 Exchange Street

DALLAS, TEX., B. BLANKENSHIP, 603 Scollard Building

WESTERN NEW YORK and PENNSYLVANIA, FOSTER & GLIDDEN ENGINEERING CO., 730 Main Street, Buffalo, N. Y.

PRODUCTS.

"CHAMPION" METAL WEATHER-STRIP and PARTING-BEAD for windows; AUTOMATIC "NO-DUST" STRIP for bottom of doors; AUTOMATIC SPRING STRIP for sides and top of doors; SPECIAL FORMS of METAL WEATHER-STRIPS adapted to the various details of Casement Windows swinging in or out.



FIG. 1. SIDE STRIP

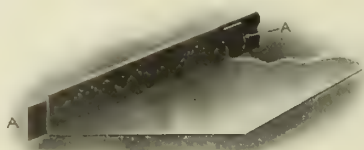


FIG. 2. SECTION OF SILL-PIECE
A Galvanized Steel Spline

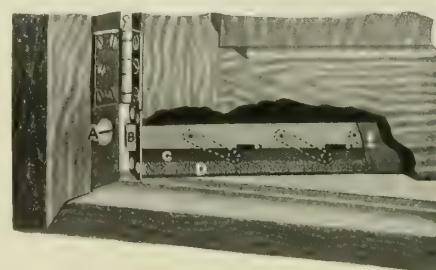


FIG. 3. DOOR STRIP

DISTINCTIVE FEATURES.

The "Champion" is distinct from every other metal weather-strip in that it is a practical combination of a metal weather-strip and parting-bead. It consists of a single piece of metal formed so as to incase the parting-bead and also provide a projecting rib which fits a groove made in the edge of the sash. (Figs. 1 and 4.) This combination is important, because—

It affords the most complete protection against wind, rain, dust, soot, and everything which wind can carry and distribute.

The results obtained are permanent, and there is no joint between the weather-strip and parting-bead by which air and dust can be admitted back of the strip itself. It protects the parting-bead from shrinkage and decay and from loosening or coming out at the bottom.

The "Champion" is applied with screws and the adjustment is automatic, so that it can be removed and replaced by any one, when necessary. The householder will, therefore, meet no difficulty when he has broken glass or cords to repair.

It provides a smooth surface for the window to run in at all points of contact (including parting-bead), which insures easy running.

The sill-piece has a galvanized steel spline folded within the zinc, which makes it rigid, so that it can not be accidentally crushed or bent over. (Fig. 2.)

ADAPTABILITY.

The "Champion" Metal Weather-Strip in its various forms can be applied to any style of window new or old.

INSTALLATION.

This Weather-Strip should be applied only by our own skilled mechanics; we guarantee every order we install ourselves.

AUTOMATIC "NO-DUST" WEATHER-STRIP.

This strip is applied to the bottom of door, and is invisible, and will not disfigure the finest work. It is controlled by an adjusting-screw inserted in the jamb, which throws down the strip when the door is shut, making a tight joint on the bottom. Invaluable for doors and French windows in exposed positions on seashore and mountain. (Fig. 3.)



FIG. 4. STRIPS IN PLACE

GEORGE W. GOLDEN

MANUFACTURER OF

Golden's Metal Weather-Strip

15-19 Gilman Street
DETROIT, MICH.

TELEPHONE, MAIN 4299

AGENCIES

BALTIMORE, MD., F. W. BURGESS, 371 Drexel Building, Philadelphia, Pa.
BUFFALO, N. Y., GOLDEN METAL WEATHER-STRIP Co., 101 West 42nd Street, New York, N. Y.
CHICAGO, ILL., W. L. VAN DAME, 29 Lake Street, Chicago, Ill.
CINCINNATI, OHIO, PURSELL & GRAND, Mercantile Library Building, Cincinnati, Ohio
CLEVELAND, OHIO, W. H. TAYLOR & Co., New England Building, Cleveland, Ohio
FORT WAYNE, IND., W. A. FORD, 933 Edgewater Avenue, Fort Wayne, Ind.
GRAND RAPIDS, MICH., F. H. McDONALD, The Gilbert, Grand Rapids, Mich.
KANSAS CITY, MO., McREE GREEN, 4633 Delmar Boulevard, St. Louis, Mo.
NEW YORK, N. Y., GOLDEN METAL WEATHER-STRIP Co., 101 West 42nd Street, New York, N. Y.
ROCHESTER, N. Y., MATTHEWS & BOUCHER, Rochester, N. Y.

PHILADELPHIA, PA., C. CHESTER, 316 Drexel Building, Philadelphia, Pa.
SAN FRANCISCO, CAL., J. M. BORN, 2512 Mission Street, San Francisco, Cal.
SPRINGFIELD, ILL., ILLINOIS METAL WEATHER STRIP Co., Ferguson Building, Springfield, Ill.
ST. LOUIS, MO., McREE GREEN, 4633 Delmar Boulevard, St. Louis, Mo.
ST. PAUL, MINN., FRYE & JENKINS, Globe Building, St. Paul, Minn.
SYRACUSE, N. Y., LEO H. BLADEN, Dillaye Building, Syracuse, N. Y.
TOLEDO, OHIO, A. A. BLOOD, 931 Oakwood Avenue, Toledo, Ohio
TORONTO, ONT., P. V. WOODARD, Peterkin Building, Toronto, Ont.
DENVER, COLO., J. S. ADDITION, Charles Building, Denver, Colo.

PRODUCT.

"GOLDEN'S" METAL WEATHER-STRIP for Windows and Doors.

"GOLDEN'S" METAL WEATHER- STRIP.

"Golden's" Weather-Strip is the only interlocking all-metal weather-strip on the market. It is made in zinc, copper and bronze. As shown in Fig. 1, one strip of metal is attached to the groove in the jamb where the parting strip is inserted; the other and corresponding piece is fastened to the edge of the sash—one interlocking the other and really locking sash to the frame. Keeps out dirt, soot and draughts. Prevents rattling of windows. Can be applied to any window or door, old or new.

OTHER ADVANTAGES.

"Golden's" Metal Weather-Strip is the only strip which allows for shrinkage, swelling and warping of sash without binding or interference. It is invisible, indestructible, prevents rattling of windows, and keeps the house free from dirt, soot, dust and draughts. "Golden's" Strip will outlast a dozen installations of rubber or felt strips and is twice as effective.

STRIP FOR DOORS AND CASEMENT WINDOWS.

Doors and casement windows are equipped with a spring strip of bronze, which is attached to frame. The strip allows for contraction and expansion, and is guaranteed to give satisfaction on any casement window or on sides and top of any door.

PRICES.

Prices will be quoted and all desired information given upon application.

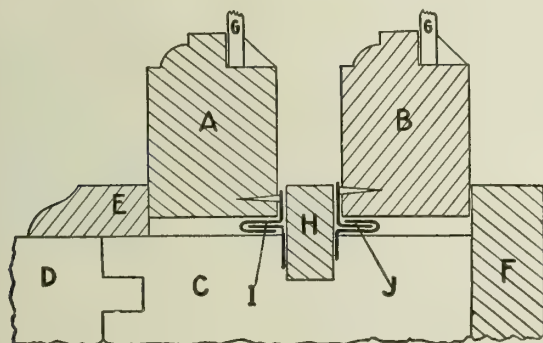


FIG. 1. SECTION OF WINDOW JAMB AND SASHES

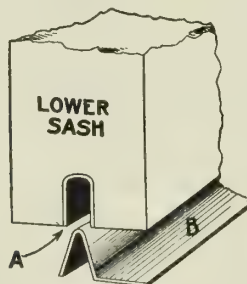


FIG. 2. METHOD OF FITTING BOTTOM OF SASH

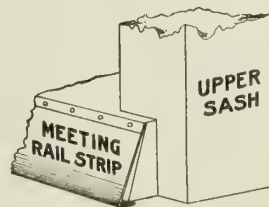


FIG. 3. MEETING-RAIL STRIP

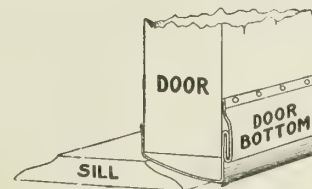


FIG. 4. "GOLDEN'S" AUTOMATIC DOOR BOTTOM

A—End view of lower sash; B—Lower end of upper sash; C—Window-jamb; D—Inside jamb lining; E—Inside stop; F—Outside blind stop; G—Glass; H—Parting strip; I—Metal Weather-Strip in lower sash; J—Metal Weather-Strip in upper sash.

THE INTROSTILE & NOVELTY COMPANY

Manufacturers of Door-Bottom Appliances

MARIETTA, OHIO

PRODUCTS. Manufacturers of the INTROSTILE; also, the O-K WEATHER-STRIP.

THE INTROSTILE. This is an automatic device for attaching to the bottom of doors and hinged windows, eliminating the necessity of thresholds.

It completely closes the aperture under the door or window and can be used with a threshold if desired.

DESCRIPTION. The Introstile is made of sheet metal. It is composed of an operating strip which is encased in a hood, a heel-plate and a face-plate.



MECHANISM OF THE INTROSTILE

The operating strip is $\frac{7}{16}$ of an inch wide at the top edge and $\frac{7}{8}$ of an inch deep. Three adjustable spring bearings are pocketed within its walls and an adjustable roller bearing is attached to one end. A slide at the bottom edge admits a felt buffer.

The hood, which is fastened in the groove in the door bottom, is formed of galvanized iron. It is equipped with three flat springs which are riveted to the top of the hood at a sufficient angle to prevent buckling. The free ends of the springs are rounded and interlock with the spring bearings in the operating strip.

The felt buffer is made of hard white felt and clamped in a stiff metal cap-strip.

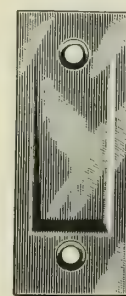
The heel-plate is formed with an inclined depression which serves as a track for the roller bearing.

The face-plate covers the end of the groove at the front edge of the door.

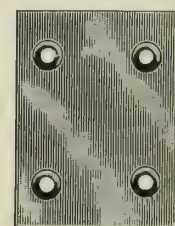
The finish of the several parts is oxidized copper and lacquer.

INSTALLATION.

A groove $\frac{9}{16}$ of an inch wide and $\frac{7}{8}$ of an inch deep is plowed in the door bottom. The device is inserted and the flanges of the hood are securely fastened to the groove walls. A mortise is made in proper position in door casement to admit the heel-plate. The face-plate is applied over the end of the groove at the edge of the door.



HEEL-PLATE



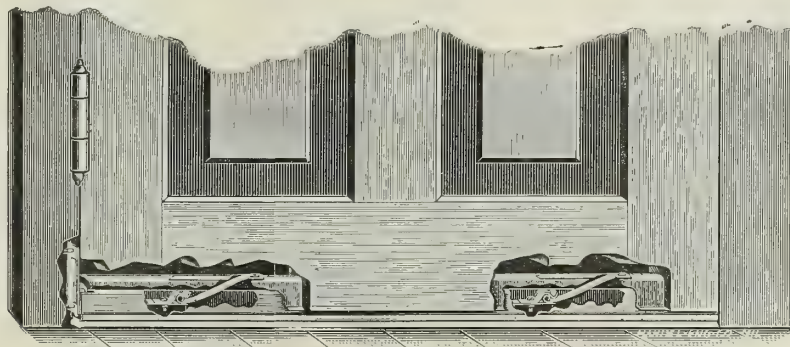
FACE-PLATE

ADJUSTMENT.

The adjustment is made in the spring bearings, by which means the strip can be given any required drop not exceeding $\frac{3}{4}$ of an inch. The range of drop is from $\frac{1}{8}$ to $\frac{3}{4}$ of an inch. The strip can be adjusted for a slanting drop at either end when necessary.

OPERATION.

The roller bearing strikes the incline of the heel-plate when the door reaches the closing point, which imparts a forward and downward movement of the strip toward the floor. When the door opens the flat springs at once raise the strip into its groove flush with the door bottom. This automatic operation is noiseless and absolute.



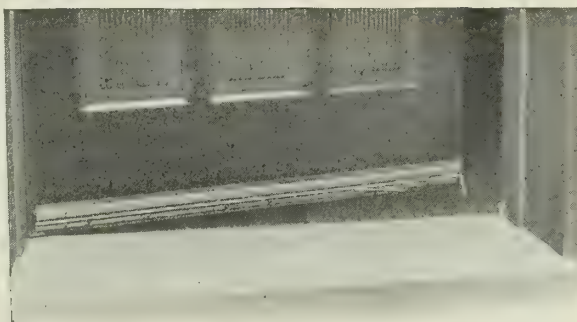
DOOR BROKEN AWAY TO SHOW INSTALLATION OF INTROSTILE

ADVANTAGES.

It supplants the threshold under interior doors, making possible smooth floors from room to room, which is especially desirable with hardwood and parquet flooring. It cuts off draughts and dust, deadens sound, and is a fire retardant. It strengthens the door bottom, prevents doors binding at the bottom, and does not alter the appearance of the door. It has been in use for the past eight years in all classes of buildings, both old and new. Its utility and durability have been firmly established.

ORDERS.

The Introstile is made in stock lengths of the even numbers from 16 to 56 inches. It is shortened to fit intermediate widths of doors. Price is based on the lengths. Orders, small or large, are given prompt attention. Estimates on large contracts gladly given. We solicit correspondence with architects, contractors and all others interested.

O-K WEATHER-STRIP ON DOOR
Shows construction and method of attachingTHE O-K
WEATHER-
STRIP.

This strip is made of sheet steel and sheet bronze. It is equipped with heavy felt for a buffer which is attached to the metal in such a way that it can not become loose. The strip is strongly constructed in every detail. It is easily and quickly applied to the surface of the door. The screws are concealed.

It is simple, durable, efficient, and handsome in appearance.

ENDORSE-
MENT.

It has been used for six years in nearly every state of the Union and in Canada. All architects and contractors who are not already familiar with the merits of this strip should write for further particulars.

THE NATIONAL METAL WEATHER STRIP CO., INC.

113-117 Erie Street, West

NORTH SIDE, PITTSBURGH, PA.

BELL TELEPHONE, 2264 CEDAR

BRANCH OFFICES

NEW YORK, N. Y., ALL METAL WEATHER STRIP Co., INC.
 PHILADELPHIA, PA., Builders Exchange
 BALTIMORE, MD., THE M. SOLMSON FLY SCREEN Co.,
 Bayard and Nanticoke Street
 PITTSBURGH, PA., 120 Sixth Street
 CLEVELAND, OHIO, 4038 Superior Avenue
 COLUMBUS, OHIO, S. H. SHEARER, 40 Board of Trade Building

MILWAUKEE, WIS., NATIONAL METAL WEATHER STRIP Co.,
 521 Jackson Street
 GRAND RAPIDS, MICH., GRAND RAPIDS SCREEN Co.
 MINNEAPOLIS, MINN., JOHN B. HARKER & Co., 802
 Lumber Exchange
 INDIANAPOLIS, IND., 64, 65 Lombard Building
 CHICAGO, ILL., 207 Baltimore Building

PRODUCTS.

Manufacturers of the "NATIONAL" and "COLUMBIA" ALL-METAL WEATHER-STRIPS of the Interfitting Type, for all styles of Windows, Doors, or other Openings, either Sliding, Pivoted or Hinged; also, SPRING WEATHER-STRIPS for Pivoted and Double-Hung Windows.

ADAPTABILITY.

Interfitting Strips are particularly adapted for use on doors, pivoted and double-hung windows, and casements, when the openings are square.

Spring Strips are adapted for use on doors, casements, pivoted windows of circular or irregular shaped openings, and on the bottom of doors.

"NATIONAL" ALL-METAL WEATHER- STRIP.

This is the highest type of weather-strip. It insures perfect protection from the elements, taking all play and rattle out of windows and doors. It is applicable to openings made of wood, metal-covered wood, or solid or hollow metal. It is non-corrosive, made from zinc, copper or bronze, and will outlive the life of a building.

"NATIONAL NO. 1."

This type (Figs. 1 and 2) makes a complete system of protection. It covers the entire run of the window-frame and enters the parting-bead, thus preventing any dust or cold from getting back of the strip. The inner edge of the strip extends under the stop-bead of the sash and is fastened with small nails or screws which are entirely concealed by this bead.

"NATIONAL NO. 2."

This strip (Fig. 4) is of smaller dimensions than No. 1. It is constructed of heavy metal and the prongs of the frame member are single, but have greater thickness than in No. 1. The base of the frame member is double thickness, giving ample metal for countersinking flat-head screws.

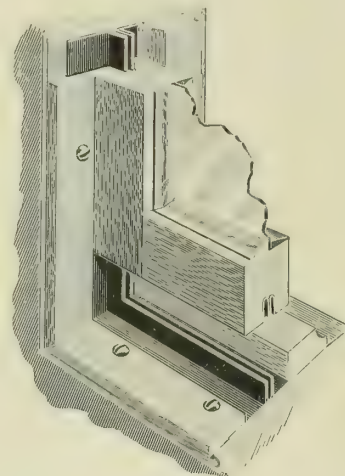


FIG. 1. "NATIONAL NO. 1"
Applied to Window

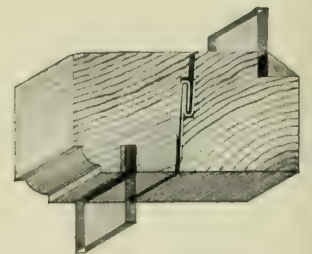


FIG. 2. "NATIONAL"
MEETING RAIL

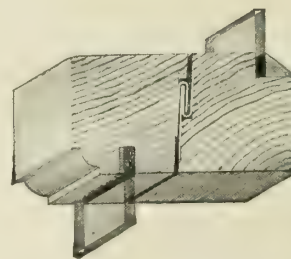


FIG. 3. "NATIONAL"
MEETING RAIL

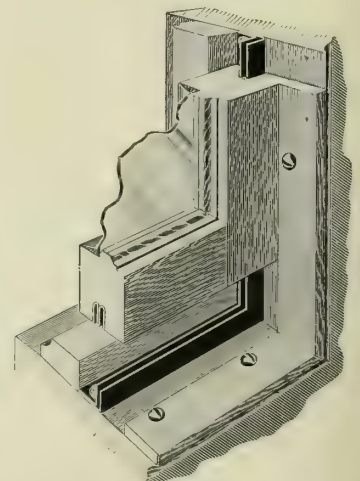


FIG. 4. "NATIONAL NO. 2"
Applied to Window

"COLUMBIA
NO. 1."

This strip (Fig. 5) is of simple construction consisting of frame member with flat base having raised rib designed to enter the groove in sash. Being simple in construction it is somewhat cheaper than the "National."

"COLUMBIA
NO. 2."

Frame member same as "Columbia No. 1," but has metal member sleeve set into the groove in the sash, so bent as not to retard sliding of the window caused by shrinkage or swelling of the wood.

CASEMENTS.

Fig. 6 shows one of the many methods of applying All-Metal Weather-Strips to casements, using a single prong strip of "National No. 2" type.

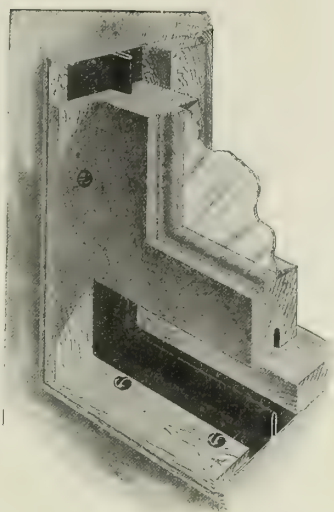


FIG. 5. "COLUMBIA NO. 1"

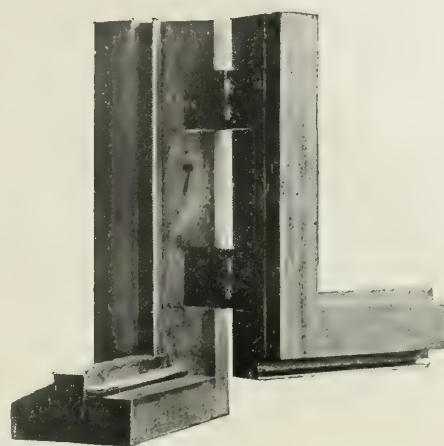


FIG. 6. "NATIONAL NO. 2"
Applied to Casements



FIG. 7. CITY INVESTING BUILDING, NEW YORK, N. Y.
Weatherstripped with "National" All-Metal Weather-Strips
Largest weather-strip contract ever made



FIG. 8. METROPOLITAN BUILDING, NEW YORK, N. Y.
Weatherstripped with "National" All-Metal Weather Strips

REFERENCES.

Metropolitan Life Insurance Buildings and Tower, New York, N. Y.
City Investing Building, New York, N. Y.
Hotel Astor, New York, N. Y.
World Building, New York, N. Y.
Royal Insurance Building, New York, N. Y.
No. 60 Wall Street, New York, N. Y.
City Club, New York, N. Y.

Prominent buildings in which "National" Metal Weather-Strips are applied:

Manhasset Apartments, New York, N. Y.
Stuyvesant Theater, New York, N. Y.
Brooklyn Club, New York, N. Y.
Times Building, New York, N. Y.
Keyser Building, Baltimore, Md.
American Central Life Building, Indianapolis, Ind.
First National Bank Building, Cincinnati, Ohio

Residence of S. A. Weller, Zanesville, Ohio
Masonic Temple, Minneapolis, Minn.
Residence of C. D. Velie, Minneapolis, Minn.
John W. Thomas & Co. Building, Minneapolis, Minn.
Carnegie Technical Schools, Pittsburgh, Pa.

Commonwealth Building, Pittsburgh, Pa.
Union Station, Pittsburgh, Pa.
Outlook Building, Columbus, Ohio
Residence of Geo. W. Dittman, Cincinnati, Ohio
German House, Indianapolis, Ind.
Ancient Accepted Scottish Rite Building, Indianapolis, Ind.
Lemcke Building, Indianapolis, Ind.

C. S. RUTTER

"Rutter's" Metal Weather-Strip

505 Hale Building
PHILADELPHIA, PA.

BOTH TELEPHONES

PRODUCTS. Manufacturers of "RUTTER'S" METAL WEATHER-STRIP.

ADAPTABILITY. This improved weather-strip is adapted for use on all windows, doors and other openings where it is desired to keep out draft, dust and dirt, and as a preventive of rattling of windows and doors.

FOR "AUSTRAL" WINDOWS. We carry special sections of Weather Strip necessary for equipping "Austral" Windows.

CONSTRUCTION. The construction is shown in the accompanying illustration.

This strip is the only one having a solid sill strip. It is more effective than any other strip and will outlast the windows.

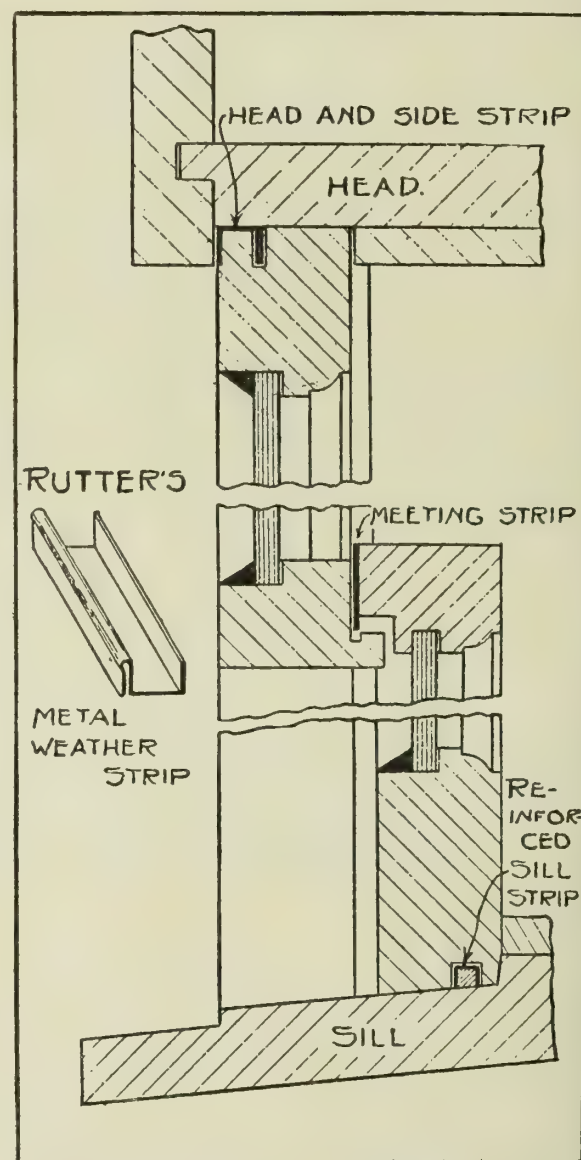
It in no way interferes with sash cords, burglar alarms, or with removing or replacing the sash. It is made of metal and is therefore practically indestructible and requires no repairs whatever, unlike the various wood, felt and rubber strips, which last for only one season and then require renewing.

COST AND INSTALLATION. The cost of this strip compared with its service is but trifling. We would be glad to quote prices on application. They can be installed by any first-class carpenter without any trouble whatever. A saving of 20 per cent in cost of heating is obtained by the use of our weather-strip.

GUARANTEE. We guarantee all our weather-strips to be perfect and made from first-class material, and where properly installed to do all we claim for them.

REFERENCES. We have installed these strips in a large number of residences and other buildings, and they all have given perfect satisfaction.

We would be pleased to furnish a list of these upon application.



DETAILS OF "RUTTER'S" METAL WEATHER-STRIP

TABOR SASH FIXTURE CO.

MANUFACTURERS OF

"Tabor's" All-Metal Weather-Strips; "Tabor's" Patented Window Specialties

61-71 Polk Street

NEWARK, N. J.

LONG DISTANCE TELEPHONE 259

NEW YORK SHOWROOMS

160 FIFTH AVENUE

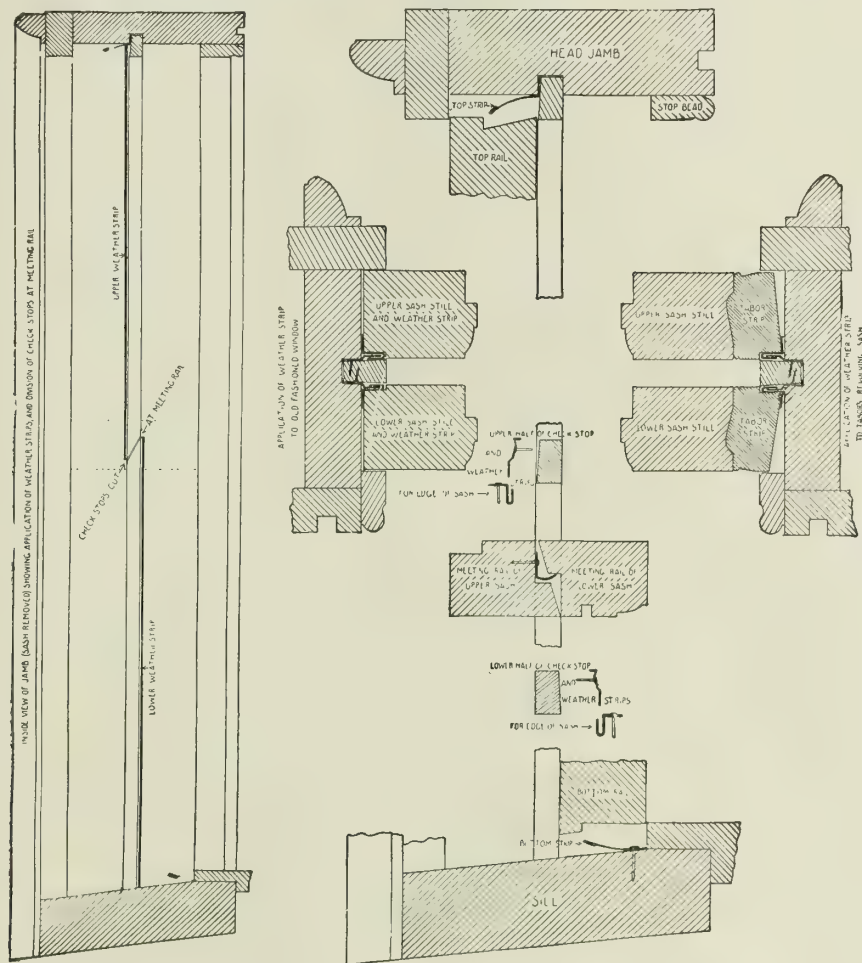
REPRESENTED IN EVERY LARGE CITY IN THE UNITED STATES AND CANADA

PRODUCTS.

"TABOR'S" METAL WEATHER-STRIPS for Windows; AUTOMATIC WEATHER-STRIPS for bottom of Doors; METAL WEATHER-STRIPS for sides and top of Doors; METAL WEATHER-STRIPS adapted to In- and Out-Swinging Casement Windows.

"TABOR'S" METAL WEATHER-STRIPS.

"Tabor's" Metal Weather-Strips for windows or doors (details of which are shown in the figure) are the perfection of simplicity.



DETAILS OF "TABOR'S" METAL WEATHER-STRIPS

ADAPTABILITY.

They are adapted to the old style of windows as well as to those equipped with "Tabor's" Strips and Fixtures. These strips are positively weather-proof and will prevent the rattling of the sash.

POINTS OF EXCELLENCE.

The spring on the sill is non-crushable, eliminates the dirt-catching pocket formed by a struck-up strip, and adjusts itself to a sash out of square.

At the meeting-rails a one-member spring is used, avoiding the crushing and tearing off so common to interlocking strips.

The side strips are on parting bead and are removed with the same, giving free access to the pockets in jambs.

FULL-SIZED DETAILS.

Estimates, information and full-sized details given on application.

THE E. T. BURROWES CO.

MANUFACTURERS OF

Wire Insect Screens and Screen Doors

PORTLAND, ME.

BRANCH OFFICES AND SALESROOMS

NEW YORK, N. Y., 225 Fifth Avenue
CHICAGO, ILL., 335 Marquette Building
PHILADELPHIA, PA., 708 Real Estate Trust Building
ST. LOUIS, MO., 900 Lincoln Trust Building
BOSTON, MASS., 434 Exchange Building
CLEVELAND, OHIO, 1026 Rose Building
CINCINNATI, OHIO
PITTSBURG, PA., 1405 Arrott Building
WASHINGTON, D. C., 414 Colorado Building



FACTORIES AND HOME OFFICES
OF THE E. T. BURROWES CO.

BRANCH OFFICES AND SALESROOMS

DETROIT, MICH., 502 Chamber of Commerce Building
KANSAS CITY, MO., 309 Commerce Building
SEATTLE, WASH., 430 Arcade Building
ATLANTA, GA., 507 Prudential Building
SAVANNAH, GA., 16 East Bryan Street
CHARLOTTE, N. C., 702 North Poplar Street
JACKSONVILLE, FLA., 56 Mutual Life Building
BIRMINGHAM, ALA., 1720 First Avenue
NEW ORLEANS, LA.

PRODUCTS.

WIRE WINDOW and DOOR SCREENS, with Frames of Wood or Metal; SLIDING, FULL-LENGTH, HINGED, TOP-HUNG, HAIL-STORM, CELLAR, CAGE, TRANSOM, SKYLIGHT, VENTILATOR, or PORCH SCREENS. Also, SCREENS of any shape, material, or finish.

WOOD-FRAME SCREENS.

For outside use, selected and kiln-dried Michigan pine, well painted and varnished, ensures best results. We will make frames of any kind of wood or finish.

NEW CENTURY SLIDING SCREENS.

Burrowes New Century Sliding Screens (wood frames) are adjustable. They overcome inequalities in width of window frames and are easily adjusted to fit frames that are "out of square." Two adjustable sliding shoes of metal in groove in left side are opposite two elliptical balance springs in groove in right side. Screens slide on the slide mouldings without unnecessary friction. The metal shoes and springs form the only bearing. Made for use outside or inside of sash.

WIRING WITHOUT TACKS.

Burrowes Lock-Strip Method of fastening the netting securely holds every strand of wire, without tacks; makes the netting taut and firm; can never sag or pull away; adds strength and durability.

METAL-FRAME SCREENS.

Frames of our all-metal screens may be made of solid bronze. If of steel, they are pickled and tinned to prevent rust. The corners are electrically welded; the frame work is neat, inconspicuous, strong and rigid. The netting is stretched smooth and taut and is neatly soldered to the frames; easily rewired in case of accident. Metal sliding screens have rustless brass guides, with springs to hold the screen at any height.

BURROWES NETTINGS.

Burrowes Rustless Copbronze Nettings are more than 93 per cent pure bronze; are stiff, springy, absolutely rustless; require no care or attention and, barring accident, will last a lifetime, in any climate. Carried in stock in 14, 16, and 18 mesh; also, a specially heavy weave for doors. Other and finer weaves made to order.

Burrowes Enameled Galvanite Netting is heavily coated with a non-rusting alloy of zinc and tin and then enameled jet black.

FINISHES FOR FRAMES.

We have 72 standard finishes for wood frames, but guarantee to finish any order to match samples furnished. Metal frames may be finished any color, and the enamel is baked for hours, at a temperature ranging from 200 to 450 degrees.

SCREEN DOORS.

Burrowes Screen Doors are made as simple or elaborate as desired. We guarantee to match the wood and finish, finish of hardware, and style of architecture on the house doors which they cover. Special hardware, grilles, guards, guard-rods, carvings, carved mouldings, cylinder locks, push and pull plates, bronze pulls, liquid or pneumatic checks, when desired.

MADE ONLY TO ORDER.

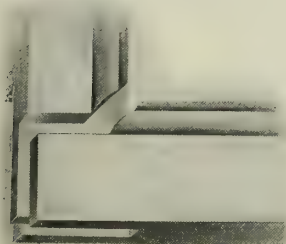
All goods made to order for any kind of window or door opening. Satisfaction guaranteed.

SENT ON TRIAL.

Goods sent on thirty days' trial may be returned if not satisfactory.

FREIGHT PAID.

We allow freight charges on all orders of reasonable size, in the United States and Canada. No charge for packing or carting.



BURROWES CORNER CON-
STRUCTION



SCREEN DOOR
LOCK



TOP-HANGER
SCREEN



SWINGING, OR
HINGED SCREENS



SLIDING SCREEN AT
LOWER SASH
May also be used at
upper sash



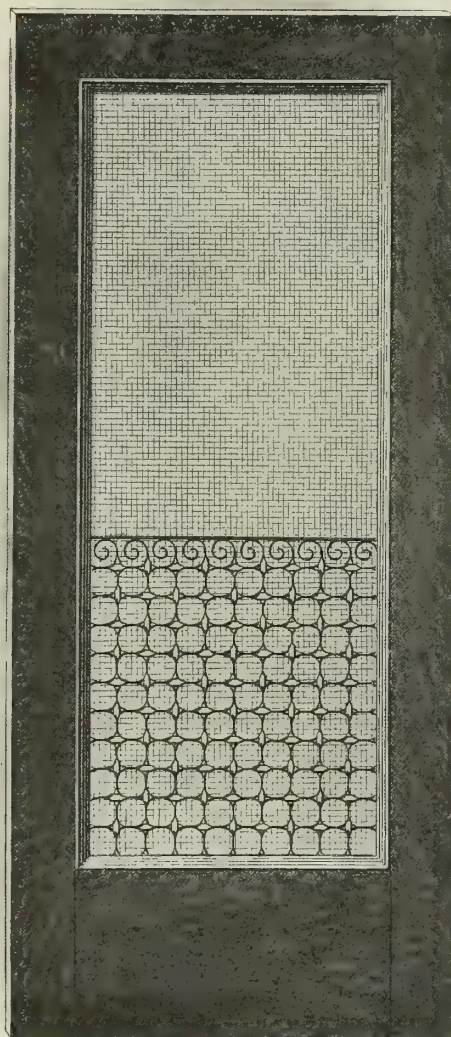
SECTION OF
NEW CENTURY
SLIDING
SCREEN

Showing adjustable
shoe

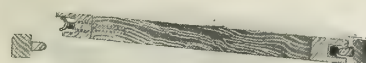


SECTION OF
NEW CENTURY
SLIDING
SCREEN

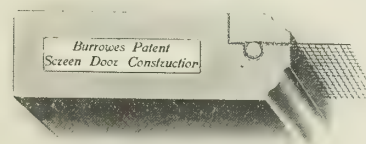
Showing elliptical
balance spring



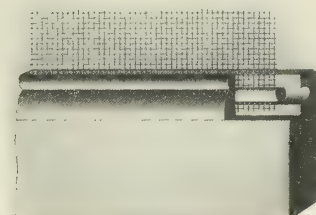
SINGLE PANEL DOOR WITH GRILLE



SECTIONAL VIEW OF NEW
CENTURY
Showing manner of removing from
window



BURROWES SCREEN DOORS
Wired without tacks



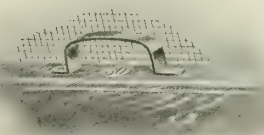
BURROWES PATENT
LOCK-STRIP METHOD
Wiring without tacks



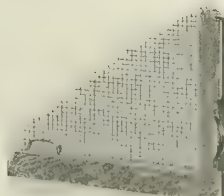
NUMBER
TACK
Bronze Metal



ORNAMENTAL DOOR,
CARVED RAIL,
MOULDINGS AND
GRILLE



SCREEN LIFT AND NUMBER
Attached to frame



FRAME BROKEN
AWAY AT RIGHT
Showing spring attached



ROD GUARD
Used on any style of
door

THE CINCINNATI FLY SCREEN COMPANY

MANUFACTURERS OF

"Cincinnati Rustless" Insect Screens

1122-1136 Evans Street

CINCINNATI, OHIO

TELEPHONE, 1033 WEST

PRODUCTS.

"CINCINNATI RUSTLESS" INSECT SCREENS, with metal or wood frames, for WINDOWS, DOORS, and VERANDAS.

DESCRIPTION, "RUSTLESS" METAL-FRAME WINDOW SCREEN.

The "Cincinnati Rustless" Metal-Frame Window Screen frame is made in two sections, of either galvanized steel or copper, telescoping one into the other, and is held in place by screws (see Figs. 1 and 2). This, when assembled, forms a square box section with beaded corners, making the strongest possible section. It is weather-proof and presents no sharp edges to the wire, the same being held and securely clamped between the two members. Each corner of the screen is reinforced by two internal angle-strips of steel, fitting snugly into the recesses of the members and by an external corner-piece fitting accurately to the frame on both faces and securely fastened. Every piece is made by forming presses in specially constructed dies. As these are adjusted to the thousandth part of an inch, the members fit with absolute precision. The method of holding the netting gives sufficient tension and a secure fastening without danger of shearing or breaking. By removing the screws and slipping the section apart the netting can be easily and quickly renewed. This construction affords an exterior alike on both sides, being pleasing to the eye and free from exposed mechanism and gaping joints.



FIG. 1. CORNER OF "RUSTLESS" METAL FRAME

Showing reinforced corner, patented reserve-motion spring and wrought lift

MATERIALS.

The metal used in the "Cincinnati Rustless" Window Screen is re-dipped and annealed special steel and solid copper. The special steel frame is particularly recommended except for places where it is exposed to sea air. It is stiffer than copper and by special treatment is made quite rust-proof. It is the ideal screen material for general practice. Steel frames are heat-enameled with black japan for appearance and as an additional preservative. The enameling is done before the parts are assembled, thereby affording covering for all interior as well as exterior surfaces.

Screen Slides for metal frames are invariably made of solid copper and are of small dimensions. They will remain unimpaired as long as the building lasts.

NETTING.

Only one grade of netting is used in connection with our metal-frame screen. It is the genuine bronze

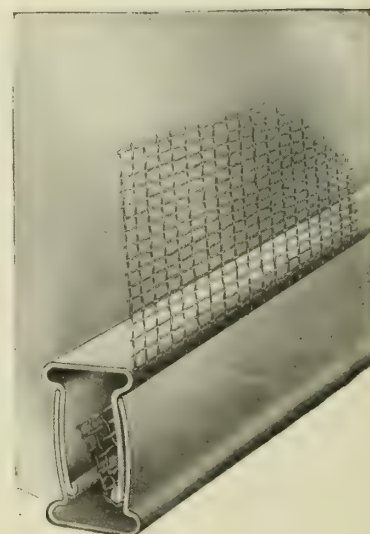


FIG. 2. SECTION OF "RUSTLESS" METAL FRAME

Showing method of wiring and the well-placed joints

90 per cent copper, and is the highest grade produced. Being free from paint it admits the greatest amount of light and air and is practically indestructible. For wood screens, where a slight saving in cost is often desirable, we recommend our "Standard Rustless" netting which is a hard-drawn steel wire netting galvanized with an alloy of non-rusting metals. This netting has proved very durable and is exceedingly strong and serviceable.

SPRINGS.

Particular attention is called to the spring used in all our screens, whether of wood or metal. It is infinitely superior to any form of elliptic spring, is held in place by its own elasticity, and has sufficient reserve motion to adapt itself automatically to every inequality of the frame and loss of resiliency.

**WOOD-FRAME
SCREENS.**

Our "Cincinnati Rustless" Wood-Frame Screens are made of air-seasoned genuine Northern White Pine. The corners are framed together by interlocking mortise and tenon joints, glued and wedged (See Fig. 3). The netting is secured by means of a groove and lock-strip. Wood screens made by us twenty years ago are still giving good service.

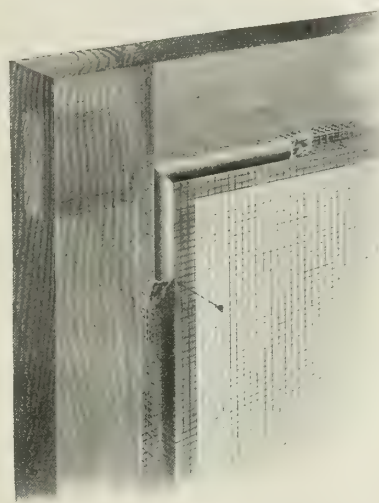


FIG. 3. CORNER OF WOOD-FRAME
SCREEN

Showing interlocking mortise and tenon
joints

**SCREEN
DOORS.**

All our Screen Doors are made in our own factory, from the best of materials and show the best of workmanship. They will be made in any of the various hardwoods and in any design desired. All painted doors are made of genuine air-seasoned Northern White Pine.

Except where it is absolutely necessary to match the surrounding woodwork, a grained or painted white pine door is in every way preferable.

**VERANDA
SCREENS.**

These screens, unless otherwise specified, are made in units of a suitable size for storage in the house. Each member is made as light as is consistent with strength, is well braced and so fitted that the whole can be dismantled or assembled by a handy man.

**MADE TO
ORDER ONLY.**

All screens are made to order exclusively, to your individual measurements and to fit any size or style of opening. Metal screens of circular plan or with segment tops can be furnished in our patented pattern.

**MEASURE-
MENTS.**

"Cincinnati Rustless" Screens can be measured for and installed by any intelligent carpenter. Complete forms for self-measurement and a book of instructions for installation furnished upon request. In these cases, of course, no charge for installation is made.

AGENTS.

Resident agents are to be found in the principal cities. They will furnish complete information, measure for and install screens complete.

ESTIMATES.

Estimates will be furnished gratis, upon request.

GUARANTEE.

The "Cincinnati Rustless" Screens are guaranteed to be well and accurately made from the very best materials. Any defect attributable to us will be promptly rectified.

TRADE-MARK.

The name "CINCINNATI FLY SCREEN CO." is stamped on each screen, without which the screen is not genuine. To avoid substitution architects should specify that screen must be so stamped.

THE HIGGIN MANUFACTURING CO.

Window and Door Screens

NEWPORT, KY.

SALES AGENCIES

ALBANY, N. Y.
ATLANTA, GA.
BIRMINGHAM, ALA.
BOISE, IDAHO
BOSTON, MASS.
BUFFALO, N. Y.
BUTTE, MONT.
CHARLOTTE, N. C.
CHICAGO, ILL.
CINCINNATI, OHIO
CLEVELAND, OHIO
DALLAS, TEX.

DENVER, COLO.
INDIANAPOLIS, IND.
KANSAS CITY, MO.
LEXINGTON, KY.
LOS ANGELES, CAL.
LOUISVILLE, KY.
MACON, GA.
MEMPHIS, TENN.
MINNEAPOLIS, MINN.
NEW ORLEANS, LA.
NEW YORK, N. Y.
OKLAHOMA CITY, OKLA.

PATERSON, N. J.
PHILADELPHIA, PA.
PITTSBURG, PA.
RICHMOND, VA.
ROCKFORD, ILL.
SAN ANTONIO, TEX.
SEATTLE, WASH.
SHREVEPORT, LA.
SYRACUSE, N. Y.
TOLEDO, OHIO
WAYNESBURG, PA.

PRODUCTS.

Manufacturers of the "HIGGIN" METAL-FRAME WINDOW SCREENS, which are made to order, and WOOD-FRAME DOOR SCREENS.

"HIGGIN" METAL-FRAME WINDOW SCREEN.

The "Higgin" Metal-Frame Window Screen is made entirely of metal and is adapted for use on either wood or metal window-casings. It is especially adapted for fire-proof buildings. It is set just outside the upper sash and requires only $\frac{9}{16}$ inch space, which includes the guide strips or channels in which the screen slides.

The screen (Fig. 1) is made with an inside frame of $\frac{1}{4}$ -inch rod (made of galvanized steel or of copper). Around this the wire netting is drawn, stretched perfectly tight and is held securely by the outside mouldings. The netting can not pull out or get loose, and there are no sharp edges bearing against it with a tendency to cut it as it expands or contracts with changes in the atmosphere. In the "Higgin" Screen round surfaces only bear against the netting. The mouldings are made from open-hearth basic steel thoroughly galvanized and finished in baked enamel, which may be black or in color; or from copper in various finishes.

It is designed for use on sliding, bow, casement, oval, round and pivoted windows. Each style has its own special fittings looking to security and convenience in use. The sliding screens have side springs so as to be easily removed from the window and replaced. The guide strips are made of copper. The bottom mouldings are perforated so as to allow for perfect drainage. Each screen is numbered so as to identify it with the opening for which it has been made.

The accompanying illustration (Fig. 2) gives a very fair idea of its appearance when in place. This is the sliding screen which can be thrown to the top of the window, thus providing for top ventilation if desired.

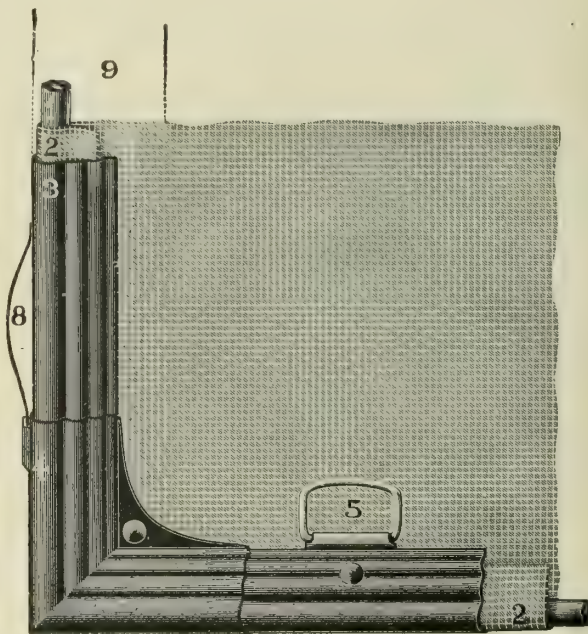


FIG. 1. SECTION OF SCREEN, SHOWING CONSTRUCTION

One half actual size

ADVANTAGES.

The "Higgin" Metal-Frame Window Screen possesses many points of superiority over any other screen. It is strong, durable and efficient; is unaffected by changes in the weather, therefore will never shrink, swell nor warp. It occupies but little space in the window, is always in working order, and can be easily removed and replaced. It effectually keeps out mosquitoes as well as flies, is an ornament to any house, and is adapted for use on either wood or metal casings.

WOOD-FRAME
SCREEN
DOORS.

Our line of high-grade Screen Doors includes frames made of the best grades of white pine, quartered oak, cherry and mahogany.

WIRE
NETTING

The Netting used in both screens and doors is made of solid bronze wire and is usually 14, 16 or 18 mesh.

COPPER
GRILLE.

We constantly have in stock a large assortment of Copper Grille Work in various designs to protect the netting. In Fig. 3 is shown a pair of doors equipped with heavy twisted copper grille, with double scroll top.

HARDWARE.

The hardware used on our doors has been especially designed for that purpose, and is of high grade and exceptionally fine finish.

INSTALLA-
TION.

Any competent carpenter can satisfactorily install the "Higgin" Screen.

PRICES.

Propositions for screening residences will be promptly furnished on application.

HOW
ORDERED.

Propositions are submitted, without charge, by salesmen; or from the home office on approximate measurements of the openings to be screened; or from plans drawn to scale. Instructions as to measurements and full information will be mailed on application.

FACILITIES.

Our extensive plant is centrally located, and prompt deliveries can therefore be made to all parts of the United States. Our facilities are constantly being increased to meet the growing demand for our product.



FIG. 2. "HIGGIN" SLIDING WINDOW SCREEN



FIG. 3. "HIGGIN" SCREEN DOORS

HYDE-MURPHY COMPANY

Makers of Automatic Fly-Escape Screens

RIDGWAY, PA.

REPRESENTATIVES

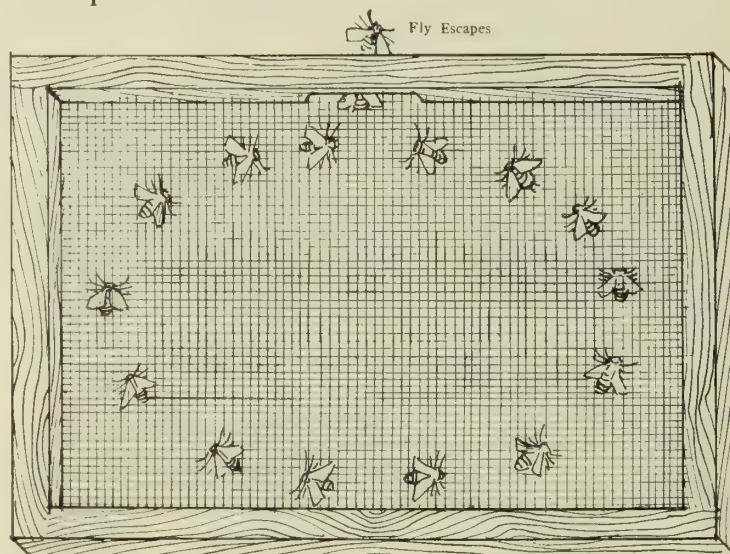
RIDGWAY SUPPLY CO., 18 East 42nd Street, New York, N. Y.

PRODUCTS.

We manufacture Patent AUTOMATIC FLY ESCAPE SCREENS for Windows and Doors; the only screens on the market that provide escape for the insects.

ADVANTAGE.

The special advantage of our patented screens is graphically illustrated by the adjoining cut. On darkening the room the insects naturally fly to the screens and speedily find their way out, relieving the apartment of their obnoxious presence in a short time. This is attested unanimously by the users of our screens. On the other hand the darkness of the opening from the outside prevents them entering through it from that side. The great comfort secured in this way is so positive and self-evident as to instantly demonstrate the value of this device to every one.



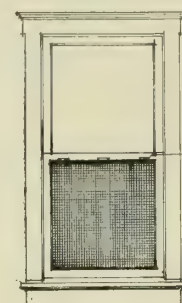
FLY-ESCAPE SCREEN

STYLES.

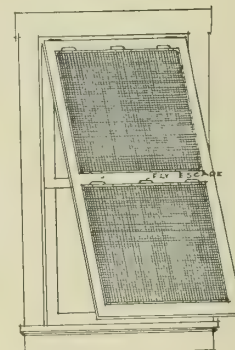
These screens are made for every kind of window, straight or curved, to slide up-and-down or hinged at top or sides; and for doors of all descriptions in single or double folds. The illustrations show a few of the several kinds, and also the details of construction.

WOOD.

Our screens and doors are built of best quality white pine, well painted and varnished for outside work and filled and varnished for inside work. We also build screens and doors of ash, oak and other hardwoods to match with the trim of the house. The runners are of hardwood. All our lumber is air-seasoned and kiln-dried selected stock. The frames are mortised and tenoned together, pinned and glued, accurately made and smoothly finished. Grooves and runners fit properly together.



REGULAR STYLE
SLIDING SCREEN
To cover upper or
lower sash



SCREEN HUNG
AT TOP

To cover entire window

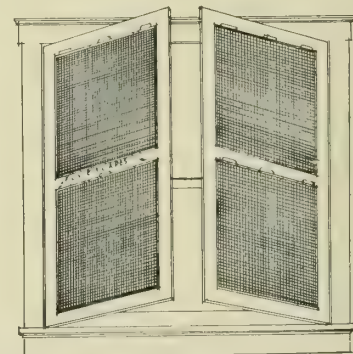
Notice the Fly Escapes

SPRING.

The sliding screens are held in place by an improved rustless spring at the side. To insert the screen it is only necessary to push the spring hard against the one runner and then to slip the screen over the runner opposite. Can be removed in one second.

**WIRE
NETTING.**

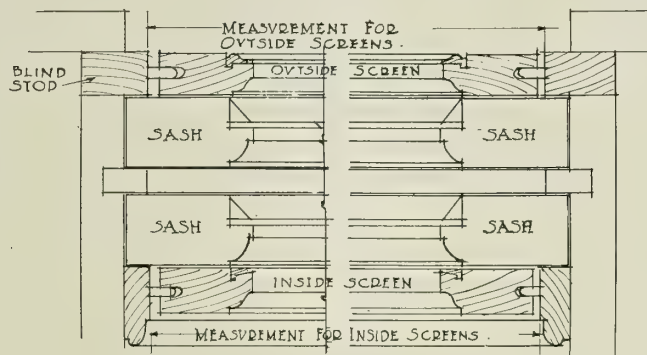
For our standard screens we use only the best quality real bronze wire in No. 14, 16 and 18 mesh; and a heavier wire when required for specially large screens and doors. This netting is securely fastened by a strong plug moulding, no nails being used to hold the wire, and it will last for fifty years unless broken by violence.



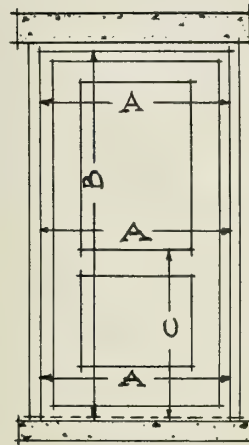
SCREEN HUNG AT SIDE

To cover entire Window.
Notice the Fly Escapes

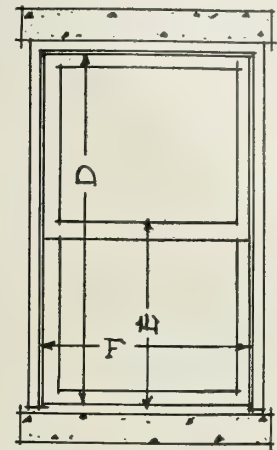
For a cheaper line of screens we use the best grade of rustless coated and black japanned wire-cloth. The cloth is in all cases stretched taut and securely fastened.



PLAN OF WINDOW

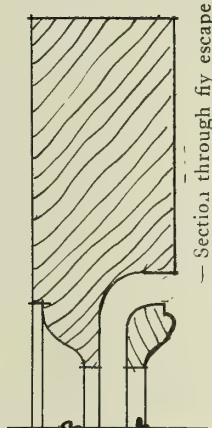
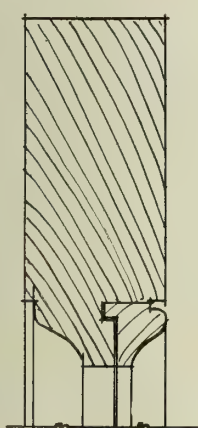


To be taken between wood jambs, and wood or stone sill



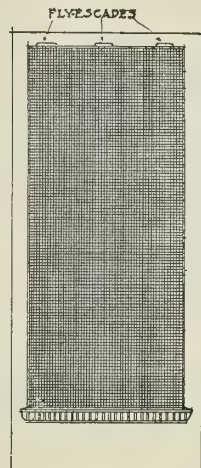
To be taken between outside sash stops or inside stop beads

DIMENSION DIAGRAMS

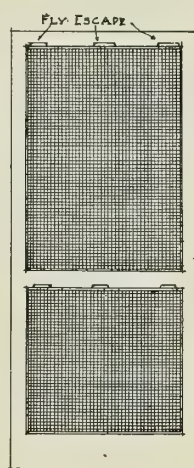


DETAIL SECTIONS

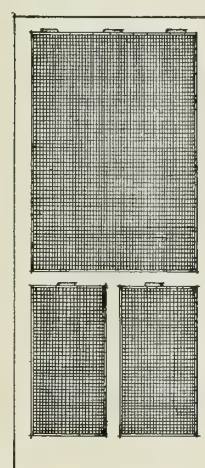
Show method of fastening wire, and construction of Fly Escapes



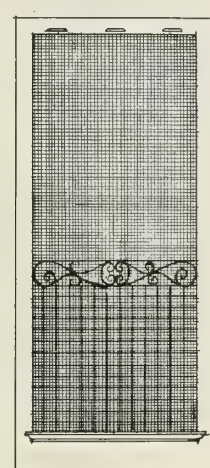
ONE-PANEL DOOR



TWO-PANEL DOOR



THREE-PANEL DOOR



TWIST-METAL SCREEN PANEL

HARDWARE.

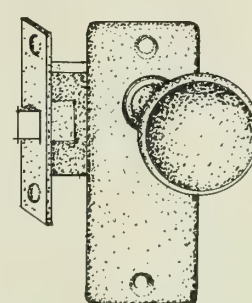
We furnish substantial, neat hardware for screens and doors; strong spring hinges and catches, rim or mortise latches as desired, white, black or metal finish knobs. Doors can be furnished with protective grilles of various designs, as shown in illustration. All screens are supplied with neat brass identification number tacks.

FACILITIES.

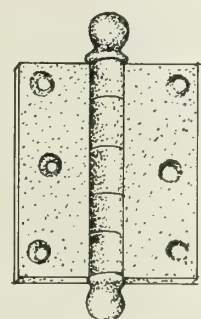
We have the largest Interior Wood Trim plant in Western Pennsylvania, of up-to-date equipment in machinery, dry-kilns, etc.; with a large stock of air-seasoned pine and hardwood constantly on hand. All screen work is made to order. Prompt execution and delivery are guaranteed.

ESTIMATES.

Price-list, estimates, sketches for special work, and any additional information desired are promptly sent on request.



MORTISE LATCH
Inside stop-off. Outside key



FIVE-KNUCKLE BUTT

KANE BLIND AND SCREEN COMPANY

HOME OFFICE AND FACTORY

KANE, PA.

AGENCIES IN ALL PRINCIPAL CITIES

PRODUCTS.

"KANE" RUST-PROOF DOOR and WINDOW FLY SCREENS.

GENERAL
DESCRIPTION.

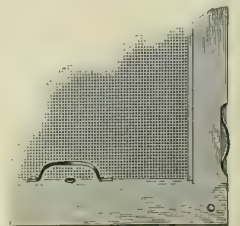
The "Kane" Wire Screens are adapted for private residences, apartments, hotels, hospitals, banks, offices and other public and private buildings. They are made with wood frames only, finished to harmonize with their surroundings, are handsome and substantial, yet inconspicuous.

We build screens for irregular openings such as circle, oval or gothic tops; for bow windows, circular porches, etc., and guarantee them to fit and give satisfaction.

CORNER CON-
STRUCTION.

Our Window Screens are made with groove and tenon joints, and in addition to being glued all our outside screens have the corners reinforced with specially constructed rivets.

Experience has proved that after a certain amount of exposure the glued corners loosen, and are then easily split or broken and the whole screen ruined. The special rivet employed in the "Kane" screens absolutely prevents this. Samples of this corner construction are sent on request.



CORNER OF
SCREEN, SHOW-
ING RIVETED
JOINT AND
FRICTION
SPRING

STANDARD
SLIDING
SCREENS.

These are made the size of the lower sash, and can be used to screen either the lower or upper sash by simply sliding them up or down. They are held in position by means of springs in the grooved edge of screens, which bear against slide mouldings that are fastened to the window frame. A slight lateral pressure permits instant removal of screens.

Brass or Bronze Lifts are furnished with all Standard Sliding Screens.

FULL
SCREENS.

Screens covering the whole window may be hung with hinges at the side, or with top hangers to swing out at the bottom. They are simple and easily removed.



NUMBER
TACK

NUMBER
TACKS.

All screens are supplied with Bronze Number Tacks, with Duplicate to fasten to the window frame.



SLIDING SCREEN AT LOWER SASH



SLIDING SCREEN AT UPPER SASH



TOP HANGER SCREEN

METHOD OF
FASTENING
NETTING.

On all "Kane" Screens the edges of the netting are forced into a groove in the frame, and every strand is held securely by means of a protruding lip on the lower edge of the moulding.

WIRE
CLOTH.

The Wire Cloth used in our screens is of the highest quality, and evenly woven. Unless otherwise specified it has 14 meshes to the inch. An extra heavy grade is sometimes used on doors and cellar windows. 16 and 18 mesh are also kept in stock.

We use three different grades of wire cloth, as follows: Steel Wire Enamelled Black, Steel Wire Galvanized and Enamelled Black, Bronze Wire, made from Genuine Bronze Metal, which will not rust or corrode in any climate.

SCREEN
DOORS.

Our Screen Doors are made in wood of finish and style to conform to their surroundings. They are elegant in appearance and substantial, having mortise-and-tenon joints, glued and tightly wedged.

GRILLES
AND
GUARDS.

Grilles of brass, bronze or copper, of all kinds and styles, are furnished when required. They add much to the service and beauty of screen doors.

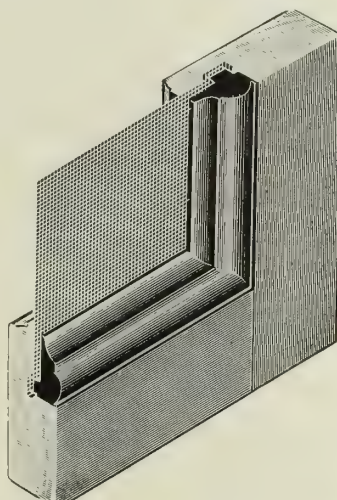
HARDWARE.

We keep on hand a large and varied stock of hardware for both windows and doors. Our Screen Door Locks and Hinges are of neat and substantial design. We also carry Door Checks of all standard makes.

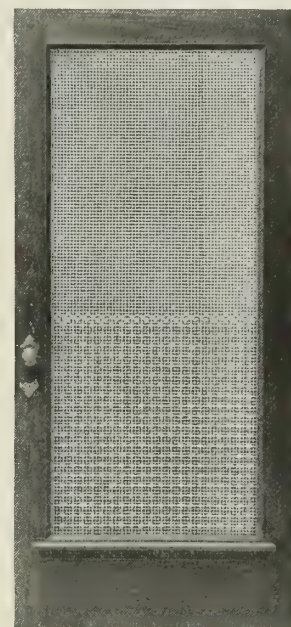
ESTIMATES,
ETC.

Our representatives are always pleased to call and make estimates when practicable. When this is not practicable, send us approximate list of requirements and we will forward estimates by return mail, accompanied by instructions for measuring.

Catalogues and samples on application.



CORNER OF SCREEN, SHOW-
ING METHOD OF FAST-
ENING THE WIRE



SCREEN DOOR WITH
GRILLE



DOUBLE SCREEN DOOR



SCREEN DOOR LOCK



DOUBLE CASEMENT DOOR

PHENIX MANUFACTURING CO.

SOLE MANUFACTURERS OF THE

“Phenix” Rust-Proof Fly Screens and Reversible Window Frames

22 to 46 Center Street
MILWAUKEE, WIS.

TELEPHONE, NORTH 141

PRODUCTS.

The “PHENIX” WIRE FLY SCREENS for WINDOWS and DOORS; WIRE VERANDA ENCLOSURES and WINDOW AWNINGS; “PHENIX” COMBINED WINDOW SCREENS and AWNINGS; STORM WINDOWS and ENCLOSURES, REVERSIBLE or REVOLVING WINDOW FRAMES for all REGULAR and BALCONY WINDOWS; “PHENIX” FASTENERS, HANGERS and HINGES for WINDOW SCREENS and STORM SASH; PORTABLE WIRE SCREEN GARDEN HOUSES, BRICK MOULDS, etc.

“PHENIX” WINDOW SCREENS.

The “Phenix” Window Screens are made both in full and half lengths, from seasoned woods, and are wired with either rust-proof or copper-bronze wire cloth. For ideal ventilation the full length screens are recommended.

“PHENIX” COMBINED WINDOW SCREENS AND AWNINGS.

The “Phenix” Combined Window Screens and Awnings consist of a screen for the full length of the window, hung with a “Phenix” Hanger and Fastener No. 1 and the awning attached directly to the screen sash. The awning is operated from the inside of the building by means of a cord and patent cord sockets running through the screen sash. With this device it is not necessary to open the screens to raise or lower the awnings.

“PHENIX” HANGERS AND FASTENERS.

“Phenix” Hangers and Fasteners facilitate the hanging or removing of screens and storm sash, as the whole operation can be done from inside the room. The screens and sash are hung from the top and fastened at the bottom with a lock that draws them up firmly to the building. There is also an attachment that extends the screen or sash so that the windows can be cleaned; or, in the case of storm sash, for ventilation.

“PHENIX” REVERSIBLE WINDOWS.

The “Phenix” Reversible Windows are designed for the home to make window cleaning easy. They swing into the room, opening, closing and locking like a door. When swung in, the upper and lower sashes can be cleaned with perfect ease and facility on both sides without disturbing the cords and weights, which are separated from the reversing devices. These windows are perfectly air-tight and storm, dust, and weather proof.

PROVISIONS IN PLANS.

In detailing window-frames in which “Phenix” Hangers are to be used, allow one inch face margin for the hanger parts.

For Reversible Window-Frames it is necessary to have the opening between the studs twelve inches wider than the width of the glass, i. e., a 24-inch glass would require a clear opening of 36 inches between the studs.

INSTALLA- TION.

All of our products can be satisfactorily installed by any average local contractor or agent.

ORDERING.

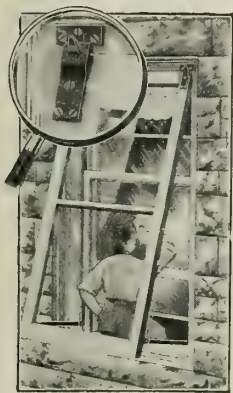
As none of our goods are carried in stock, shipments of all orders will be made from ten to twenty days after receipt, according to their size.

CLASS OF WORK.

We cater to the best class of order work only, and are always open for large or small contracts of that kind.

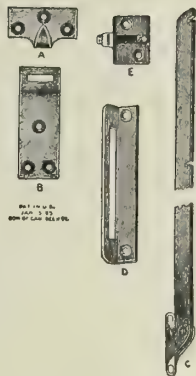
CO-OPERATIVE SERVICE.

Upon application of any architect or contractor we furnish Request Forms, with directions to fill in requirements from which estimates and specifications in detail will be made up and submitted by return mail. Upon receipt of plans with memorandum of requirements we perform the same service.



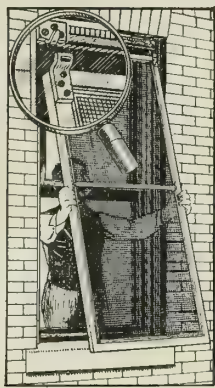
"PHENIX" STORM SASH

Showing ease of cleaning windows or sash extended for ventilation



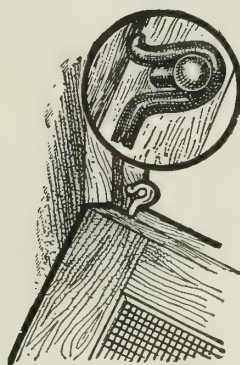
"PHENIX" HANGER AND FASTENER

Solves the problem of hanging and fastening entire window screens and storm windows

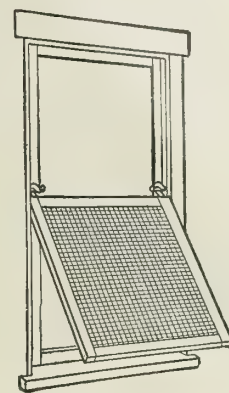


"PHENIX" FULL LENGTH SCREEN

Showing ease in hanging

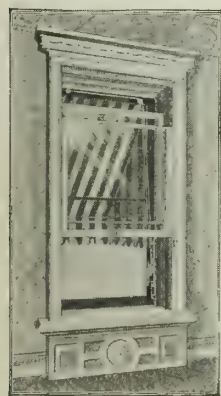


"PHENIX" SWINGING HALF SCREEN HANGER



"PHENIX" SWINGING HALF SCREEN

Outside view
They hang and swing, do not slide or stick



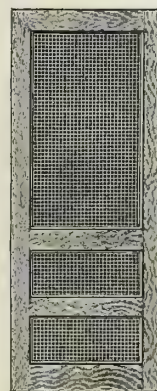
INSIDE VIEW OF "PHENIX" COMBINED WINDOW SCREEN AND AWNING

Inside sash adjusted for ventilation

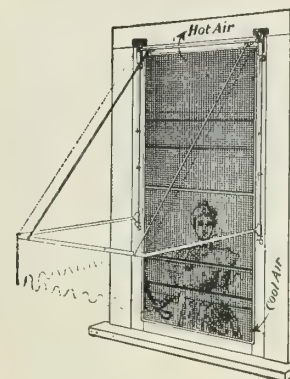


"PHENIX" VERANDA SCREEN ENCLOSURE

A living room on the veranda



"PHENIX" DOOR SCREEN, STYLE NO. 3

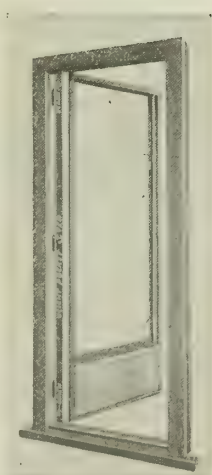


OUTSIDE VIEW OF "PHENIX" COMBINED WINDOW SCREEN AND AWNING

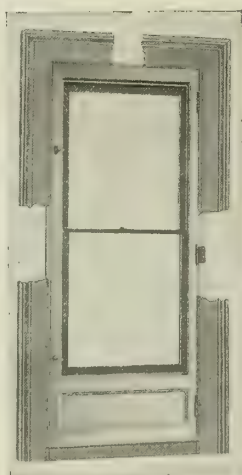
Showing method of operating from inside without opening of screen



No. 1



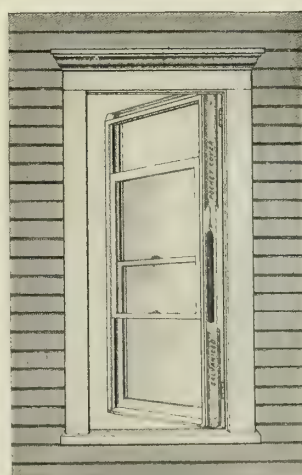
No. 2



No. 3

"PHENIX" REVERSIBLE BALCONY WINDOWS

Nos. 1 and 2 show inside and outside view of stationary back Jamb frame and swinging sash Jamb frame; No. 3 shows inside finish when completed; casing line shown where trim is broken



No. 4.

"PHENIX" REVERSIBLE WINDOWS, OUTSIDE AND INSIDE VIEW

For all regular windows of the house. The most convenient method to clean windows



No. 5

PORTER SCREEN MFG. CO.

BURLINGTON, VT.

NEW YORK OFFICE
36 EAST TWENTY-THIRD STREET

PRODUCTS. Made-to-Order WINDOW, DOOR, and PORCH SCREENS. We make to fit, fine FLY SCREENS from wood specified and finished as desired.

ADAPTABILITY. "Porter" Screens are intended for fine residences, hotels, hospitals, club houses, offices, and all buildings where the exclusion of flies, mosquitoes, and other germ-carrying insects is necessary.

INSTALLATION. "Porter" Screens can be installed by any local workman, but when desired we will do the work in territory where we are represented.

CONSTRUCTION. "Porter" Construction is designed to supply the greatest possible strength and durability consistent with the result to be accomplished. Particular attention is called to the solid mortise and tenon corner construction (see Fig. 1). Not only is the construction such as to hold the corner rigidly at right angles, but the "Porter" Interlocking Corner prevents beyond possibility the opening up of the joints.

METHOD OF WIRING FRAMES—On all "Porter" Screens the wire filling is drawn taut and held firmly in its place by a tongued moulding. By this method each individual wire is securely fastened.

Fig. 2 shows the style of moulding used on all outside sliding, stationary or swinging screens; also, door and porch screens.

Fig. 3 shows the moulding for inside screens.

This method of wiring brings the netting close to sash and positively prevents insects from crawling up between the sash and screen when a sash is partly raised.

Any "Porter" Screen frame can easily be re-wired should its netting become damaged.

The "Exclusion" (Figs. 6 and 7) is the only screen fitted with all metal bearings. By means of these concealed shoes the screen works with unvarying ease in both damp and dry seasons. There are no complicated parts to become displaced or lost when the screen is not in the window. Fig. 6 presents a view of the frame broken away to show these metal shoes.

MATERIAL.

The lumber entering into "Porter" Screen Construction is carefully selected, thoroughly seasoned, kiln-dried material of the several kinds used and each the best obtainable.

WIRE CLOTH—As the character of the metal cloth used largely determines the serviceable life of a screen, that part of its make-up becomes a matter of vital importance.

Bronze Cloth made from solid bronze wire, non-corrosive in any exposure, is in wire cloth the recognized standard of durability. By reason of its subdued color, it harmonizes

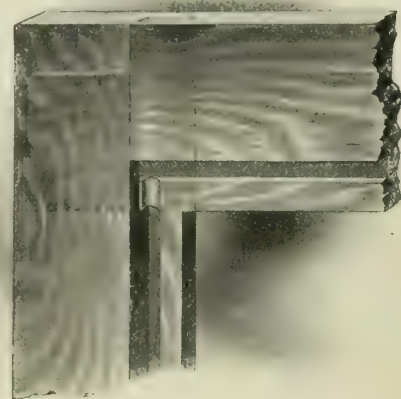


FIG. 1. CORNER CONSTRUCTION



FIG. 2. METHOD OF FASTENING WIRE CLOTH ON OUTSIDE SCREENS

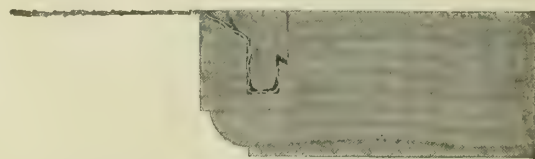


FIG. 3. METHOD OF FASTENING WIRE CLOTH ON INSIDE SCREENS

with its surroundings, and does not intercept the vision. The cost of screens covered with bronze cloth is but slightly in excess of those covered with galvanized or black enamel cloths, and because of its lasting qualities it is beyond question the best for permanent use.

HARDWARE—The hardware that we carry in stock has been carefully selected as well adapted for use in connection with Porter Screens.

WIRE GUARDS—Guards are recommended for the lower panels of screen doors and cellar window screens, as they protect the wire cloth from injury and add much to the appearance of both.

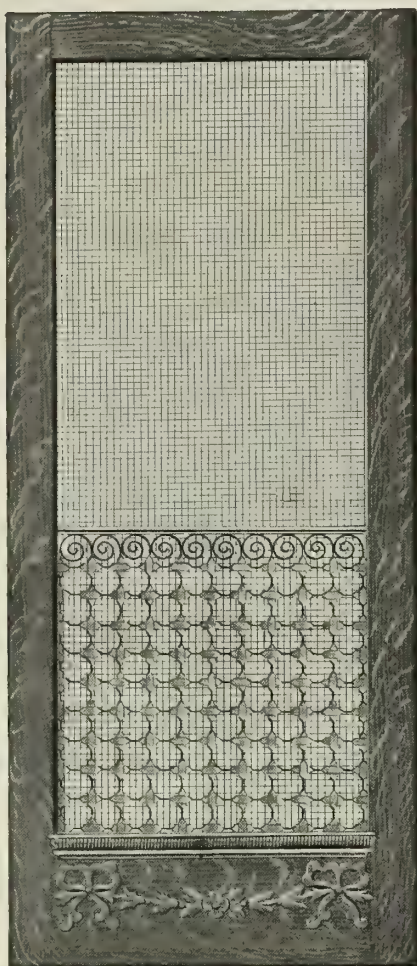


FIG. 4. SCREEN DOOR NO. 431, GUARD NO. 32 WITH SCROLL TOP AND ROD

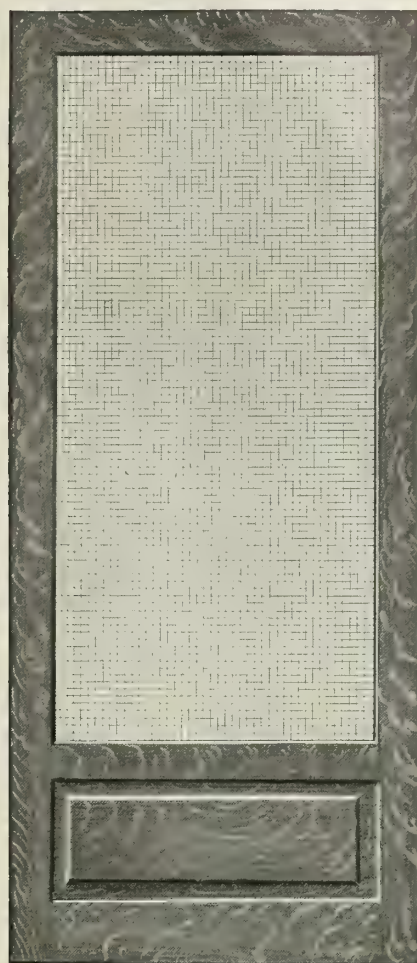


FIG. 5. SCREEN DOOR NO. 416

ESTIMATES.

Estimates on window, door and porch screens will be cheerfully furnished at any time on receipt of specifications. We make a specialty of executing work from architect's designs.

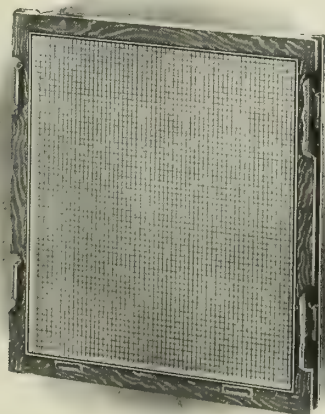


FIG. 6. "EXCLUSION" SLIDING SCREEN



FIG. 7. "EXCLUSION" SCREEN IN WINDOW

TERRITORY AND FACILITIES.

We are prepared to handle contracts of the largest size in any portion of the country. Our factory is equipped with machinery of the latest design for the rapid production of perfect work at a minimum cost.

THE STANDARD STAMPING COMPANY

MANUFACTURERS OF

"Armstrong" Wire-Renewing Window and Door Screens

MARYSVILLE, OHIO

PRODUCTS.

We manufacture "ARMSTRONG" WIRE-RENEWING METAL-FRAME WINDOW SCREENS, "ARMSTRONG" COMBINED METAL and WOOD WIRE-RENEWING WINDOW SCREENS, and "ARMSTRONG" WIRE-RENEWING SCREEN DOORS.

WIRE-RENEWING METAL-FRAME SCREENS.

The Frames of "Armstrong" all-metal window screens are one inch wide and three eighths inch thick; made from galvanized steel finished in handsome dull black or colored enamel, or they can be made from solid copper or bronze in oxidized or gun-metal finishes.

Sliding screens to cover half of the opening are mounted in metal guides or track one half inch wide and one inch deep, which extend the full height of the opening and are fastened to the window stops with rust-proof nails.

The guide on one side has a narrow flange which permits of the screen being taken out easily at any time. Two rustless compression springs attached to the side of the screen frame hold it in place and in any position when raised or lowered.

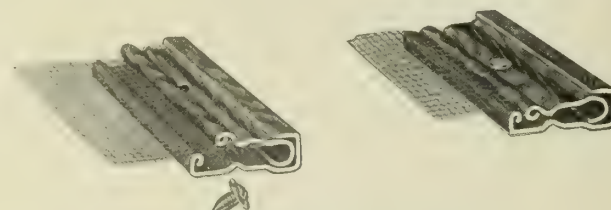
Screens made to fill the entire opening are also mounted in guides, or can be hung from the top on suspension hinges. It is not practicable to hinge metal-frame screens from the side.

These metal frames are so made as not only to permit the wire being easily renewed by any inexperienced person, but also in the act of replacing the wire it is at the same time stretched perfectly taut without the assistance of any outside appliance for stretching. The only tool required for the work is a screw-driver.

The life of an "Armstrong" Screen therefore is that of the indestructible metal frame and is not limited to the life of the comparatively fragile wire-cloth.



"ARMSTRONG" METAL-FRAME SCREEN



SECTIONAL VIEW OF METAL FRAME SHOWING WIRE-RENEWING FEATURE

WIRE-RENEWING COMBINED METAL AND WOOD FRAME SCREENS.

This screen has a wood frame $\frac{7}{8}$ inch thick and $1\frac{7}{8}$ inches wide, fastened together at the corners with a blind mortised and mitered joint, glued and pinned.

The inner side of the frame is machined to receive the metal clamping strip which holds the wire in place. This clamping strip is fastened by means of screws, and as in the all-metal screen, the act of stretching the wire-cloth is accomplished as the clamping strip is tightened down—wire-renewing in a strictly practical sense and without danger of injury to the finish of the frame.

This screen will be found specially useful where inside screens are required, as the wood parts may be furnished in any wood or finish of wood desired, and the metal clamping strips may be had in any metal or finish, so that the most complicated scheme of interior finish can be carried out in an entirely harmonious manner. This wide adaptability will be appreciated by the architect who has been troubled by the lack of a screen that would lend itself perfectly to artistic treatment.



SECTIONAL VIEW SHOWING COMBINED METAL AND WOOD CONSTRUCTION

This style of screen can be mounted to slid in guides or to hinge from side or top. When hinged on the inner side of the opening hardware is provided to correspond with that used on the inside of house.

These doors are made from any desired wood and are held together at the corners by means of a combined mitered, mortised, and tenoned joint with waterproof glue. The strength and rigidity of this combination joint deserve special consideration and insure a permanency difficult to duplicate.

The wire-cloth is held in place by means of metal clamping strips in the same way as described for the Combined Metal and Wood Window Screens. This excellent wire-renewing feature is of special importance in connection with screen doors on account of the rough usage to which screen doors are always subjected.

"Armstrong" Screen Doors are usually made from material $1\frac{1}{8}$ inch thick, though any required thickness is obtainable. Side, top, bottom, and cross stilings can be furnished in any width to suit requirements and doors can be built with any number of wire panels.

The wood stilings are finished in any shade of stain, filler, or paint desired. The metal clamping strips can be made from galvanized steel, brass, bronze, or copper, finished to match hardware used on house door and provided with substantial pulls, catches, butts, etc., in any grade or finish desired.

It is quite impossible to appreciate the beauty of an "Armstrong" screen door from any description. Suffice it to say that from an artistic and from a practical standpoint they are incomparable.

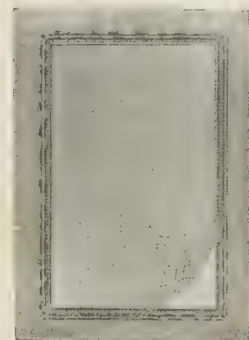
"Armstrong" Wire-Renewing Porch Panels are made in sections to screen porch enclosures of any size. These are made of combined wood and metal; frames $1\frac{1}{8}$ inches thick and $2\frac{1}{2}$ inches wide, unless otherwise required. The wire-cloth is held in place by means of metal clamping strips just as described under "Armstrong" Combined Metal and Wood Window Screens. We also furnish special hanging strips, head-pieces, etc., for filling parts of irregular openings when required.

We are always glad to furnish architects with samples and specific data as desired.

"Armstrong" Screens and Doors are sold by resident agents located in the principal cities of the United States. These agents are always glad to make estimates, take measures, and attend to the installing of the screens.

On account of the varying specifications necessary to meet, it is difficult in a small space to give an adequate idea of the cost of "Armstrong" Screens, though the following approximations may be of some service. These figures include cost of freight east of the Mississippi river, drayage and installation:

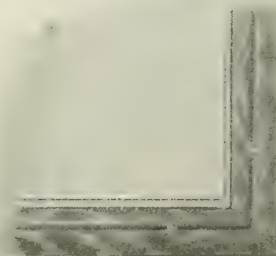
All-Metal Screens, per square foot, Galvanized Steel frames, 24 to 32 cents
All-Metal Screens, per square foot, Copper or Bronze frames, 41 to 52 cents
Combined Metal and Wood Screens per square foot, 23 to 37 cents
"Armstrong" Screen Doors, Soft Woods, per square foot, $28\frac{1}{2}$ to 40 cents
"Armstrong" Screen Doors, Hard Woods per square foot, 38 to 60 cents



COMBINED METAL AND WOOD SCREEN, SHOWING CLAMPING STRIPS RAISED FOR PUTTING IN NEW WIRE



"ARMSTRONG'S" COMBINED METAL AND WOOD SCREENS



DETAIL SHOWING CORNER CONSTRUCTION USED IN "ARMSTRONG'S" SCREEN DOORS

WIRE-RENEWING SCREEN DOORS.

WIRE-RENEWING PORCH PANELS.

DATA AND SAMPLES.

AGENCIES.

PRICES.

C. F. PURINTON CO.

MANUFACTURERS OF

"Roll-a-Way" Window Screens

SOUTH EASTON, MASS.

SALES DEPARTMENT
BOSTON, MASS., 7 Water Street

AGENCIES IN ALL PRINCIPAL CITIES

PRODUCTS.

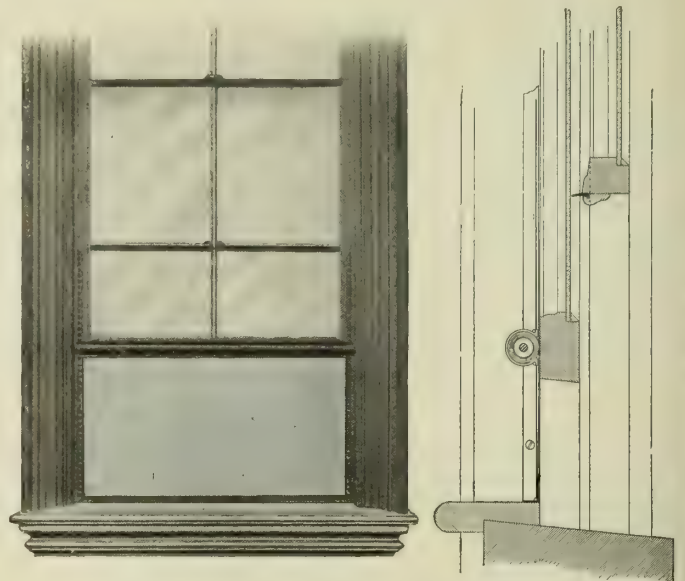
"ROLL-A-WAY" METAL ROLLING WINDOW SCREENS, WOOD-FRAME WINDOW SCREENS and SCREEN DOORS.**"ROLL-A-WAY"
METAL
WINDOW
SCREENS.**

The "Roll-a-Way" is an inside metal window screen which screens the window opening, not the glass. It can be raised to any height the window may be opened and is perfectly insect-tight in any position. When not needed it can be rolled down out of the way. The screen rolls by means of a steel gear (concealed) and steel rack, strong and substantial.

We use either Pearl Wire Cloth, steel wire galvanized, which protected as it is in our screen will last indefinitely, or Roman Bronze, especially adapted for seashore use. Both are specially woven and tempered for our purpose. The screens are painted or grained to match the woodwork so as to be indistinguishable from the sash.

A weather-strip fastened to the lower rail of the upper sash closes the opening which would otherwise occur between it and the glass of the lower sash.

The "Roll-a-Way" can be applied to any double-hung window, upper or lower sash, or to any casement without injuring or defacing the woodwork, the only requirements being a $\frac{5}{8}$ " flat surface on the stop beads at sides and on sill at the bottom, next and perpendicular to sash.



SCREEN IN POSITION

SECTION OF WINDOW

Lower sash partly raised and screen raised to same height. Upper sash partly down and weather-strip shown on lower rail.

ADVANTAGES.

With the "Roll-a-Way" screen in use any part of the window is as accessible as if no screen were on, and when the window is closed no screen is in sight. The full light from the window may be obtained on a dark day in summer or a cool day in the fall when the window is only partly open or entirely closed. At the same time the screen is always ready for instant use, even in winter, for there is no necessity for removing it, and, for the same reason, the care and trouble of the old-style screens are eliminated. The screens are fully guaranteed. All the parts are strong and simple, and their operation does not depend upon a mechanism liable to break or get out of order. Dust lodging on any part of the screen can be readily removed with a brush.

ESTIMATES.

Estimates and other information furnished upon application.

REFERENCES.

We have screened many residences all over the country and shall be glad to furnish addresses. Installations have been made in the following hotels and public buildings:

Marlboro-Blenheim, Atlantic City, N. J.
The Dennis, Atlantic City, N. J.
The Westminster, Boston, Mass.
The Colonial Hotel, Cleveland, Ohio
The Atlantic, Nantasket, Mass.
White Stone Springs Hotel, White Stone Springs, S. C.
New Haven House, New Haven, Conn.
Hotel Pleasant, Worcester, Mass.
Massachusetts Homeopathic Hospital, Boston, Mass.

N. E. Baptist Hospital, Roxbury, Mass.
Brockton City Hospital, Brockton, Mass.
Albany Hospital, Albany, N. Y.
Adler Sanitarium, San Bernardino, Cal.
Court House, Brockton, Mass.
Court House, Barnstable, Mass.
Registry of Deeds Building, Plymouth, Mass.
Y. M. C. A. Building, Quincy, Mass.
Georgetown University, Washington, D. C.

WATSON MANUFACTURING COMPANY

Specialists in Insect Screens

FACTORY AND MAIN OFFICE

JAMESTOWN, N. Y.

AGENCIES IN ALL PRINCIPAL CITIES

PRODUCTS.

We manufacture a complete line of INSECT SCREENS for WINDOWS, DOORS, and PORCHES, in Bronze, Steel and Wood Frames, and "IMPERIAL" CAR WINDOW SCREENS.

SCREEN DOORS.

The doweled corner construction shown in Fig. 1 is made with hardwood dowels; moisture cannot enter the joint; it cannot become loose by shrinking, and does not show on edge of the doors. Our veneered construction shown in Fig. 2 is used in all hardwood doors. The core is of soft pine. This construction makes a light door and one that will stay in place. Our improved method of attaching wire-cloth, shown in Fig. 3, is so arranged that a maximum amount of strength of the edge of the frame-work is retained, and every strand of wire-cloth is firmly held in place. This method is a protection to the frame-work of the door, as well as the wire-cloth itself. Screen doors are made in all thicknesses, styles, shapes, woods and finishes to conform to architects' specifications. We furnish guards and grilles in large variety. We can furnish doors with metal-frame screen panels; also screen doors of metal throughout.

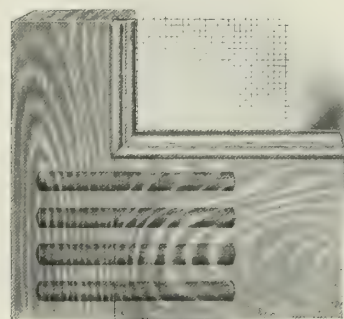


FIG. 1. DOWELED CORNER CONSTRUCTION

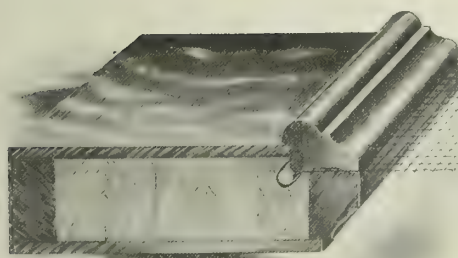


FIG. 2. VENEERED DOOR CONSTRUCTION

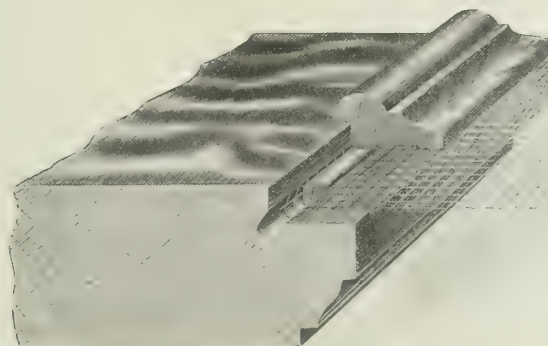


FIG. 3. IMPROVED METHOD OF ATTACHING WIRE-CLOTH TO DOOR FRAME

WOOD SCREENS.

Our Wood Screen Frames are made in any thickness, for use inside and outside, of all woods and finishes. We attach the wire-cloth in wood-frame screens by either the tack method, or by our improved strip method shown in Fig. 3.

PORCH SCREENS.

These are constructed the same as the regular screen work, but generally of heavier and thicker frames.

METAL-FRAME SCREENS.

Our Metal Frame Screens are tubular in construction, as shown in Fig. 4; the frame is $\frac{7}{16}$ inch thick, and one inch wide, making our screen the lightest and strongest screen made. Figs. 4 and 5 show clearly the method

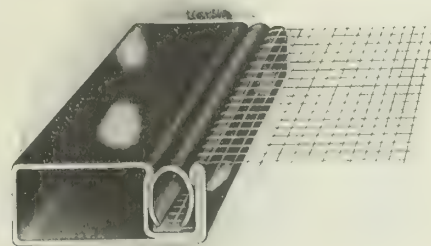


FIG. 4. METAL FRAME WITH WIRE-CLOTH IN PLACE

of attaching wire-cloth; it can be easily removed by removing the slotted tube, and replaced and firmly fastened by again inserting the tube. No bolts, screws, rivets, or other means of fastening are employed, and there is no alteration to the frame-work itself. Fig. 6 shows a corner of a pivoted casement screen. The lever operating the pivot is contained within the frame-work, and requires only the pressure of the thumb, the fingers grasping the bottom, to remove the screen from the window. In our corner construction, the end of one piece engages within the other and are further reinforced by an inside corner piece, and all are firmly soldered together. The stiffness of these corners provides a stiff and rigid frame which will not sag when hung as a hinged or pivoted screen. Fig. 7 shows our enclosed pivot hinges used in connection with stone or metal sills, and circular-top casement screens. The two levers operating the pivots are brought close together for convenience. Our double casement has the same arrangement of levers for pivoting and is also provided with astragal in the center, and the fixed screen provided with double bolts, top and bottom, operated by levers close together, as shown in Fig. 7. Bent work, either edgeways or flatways, is perfectly smooth (see Fig. 7).

Fig. 8 shows the deep groove side of our sliding screen frame with spring in place. This spring is so made and attached that, while it cannot be injured by ordinary usage, it will

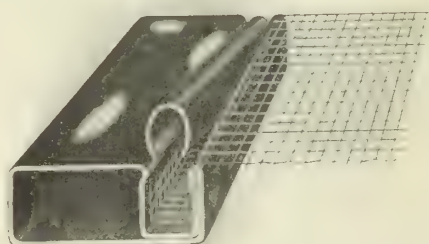


FIG. 5. METHOD OF ATTACHING
WIRE-CLOTH TO METAL
FRAMES

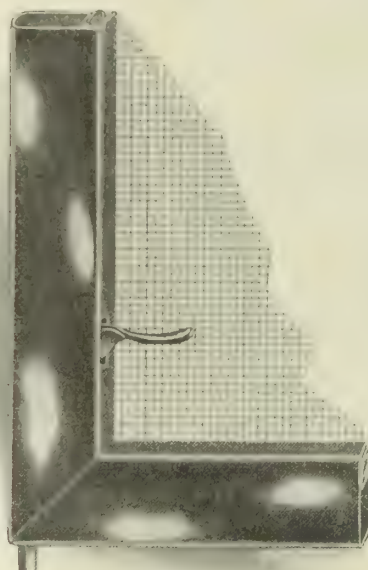


FIG. 6. PIVOT HINGE.

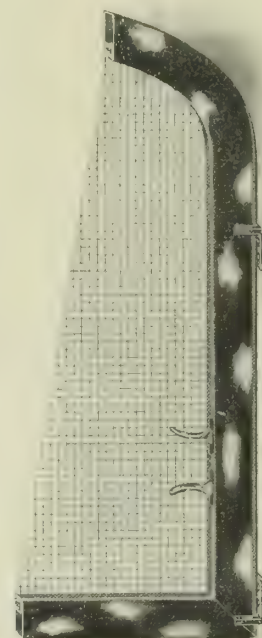


FIG. 7. ENCLOSED PIVOT
HINGES



FIG. 8. METAL SCREEN SPRING



FIG. 9. METAL-CAPPED
SLIDE BEAD

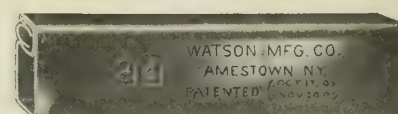


FIG. 10. NUMERALS AND NAME PLATE

immediately fall off the frame if broken, and a new spring can be inserted with no other tools than the hand, and in a few seconds' time. Fig. 9 shows our regular metal screen slide, which is a wood strip having a bronze metal cap. We also furnish all-metal and all-wood slides. Our standard grade metal-frame screen has all the advantages of our regular construction, with the exception of the permanent attachment of the wire-cloth. It is offered as a cheaper, but thoroughly reliable screen. Fig. 10 shows our name plate with the screen number stamped in the metal, which therefore cannot be lost. Small numbering tacks to apply to the windows are also shown. Special latches to open from the inside only, or from the inside and outside, eyelets, bolts, and many other minor details are provided when made necessary by circumstances.

FINISH. Steel-frame screens are finished in any color of baking enamels and paints. Brass frames are finished in the various natural and oxidized brass finishes. Bronze frames are finished in all of the different bronze and copper finishes.

QUALITY GRADES. Our work is all made to order, and is of the highest grade. While we recommend our regular grades of work, which have been developed through years of experience, we also make work to architects' details and specifications.

MATERIAL. We use the best material throughout. Our lumber is of the best quality, thoroughly dried. The finishing materials are of the best lead, oil and colors for woodwork, and the best japan and lacquer for metal work. The wire-cloth is the best of the several kinds and our bronze cloth is of especially high grade. It is 95 per cent copper, very evenly woven, and all defects are removed before applying to the screens. Hardware is thoroughly good and reliable. Our steel-frame screens are coated with a heavy non-rusting metallic composition. Our brass and broze frames are solid metal—not plated.

ADAPTABIILTY. We can successfully screen every opening of a building—doors, windows and porches, regardless of shape or size, kind of sash or location—with wood or metal-frame screens.

PRICES. Quoted by sales representatives or direct from the main office on receipt of inquiry.

BOXING AND SHIPMENT. Shipment is made in tight boxes, packed by an improved method, insuring delivery at destination with the finish uninjured.

FACILITIES AND CAPACITY. By the addition of buildings, power and machinery, our facilities are now unexcelled, and our capacity is in excess of one thousand screens and doors per day. All departments are under the supervision of experienced workmen. Factory equipment is modern and is especially adapted to screen work. We are centrally located, and shipment is made over several of the main trunk lines. No order is too large, too complex, or too good for us to undertake.

CO-OPERATIVE SERVICE. Our experience and knowledge of screen work are at the service of architects and builders. We solicit inquiries and will assist, by criticisms and suggestions, the architect in having his specifications and details complete, covering the best available material and work.

PATENTS AND COURT DECISIONS. The principal advantages and details of construction are protected by four issued and four allowed and pending patents. Recent decisions by the Court of Appeals of the District of Columbia (the highest court in patent cases) award us priority of invention for our method of replaceably attaching wire-cloth to metal-frame screens.

CATALOGUES AND SAMPLES. We solicit inquiries regarding anything not contained in this catalogue or not fully understood. Our line is complete. Catalogues and samples will be sent upon application.

REFERENCES. Our work speaks for itself. All manufacturers can give references and testimonials.

ROBERT W. HUNT

JOHN J. CONE

JAS. C. HALLSTED

D. W. McNAUGHER

ROBERT W. HUNT & COMPANY

Engineers

Bureau of Inspection, Tests and Consultation

1121 The Rookery

CHICAGO, ILL.

NEW YORK, N. Y.,

90 West Street

PITTSBURG, PA.,

Monongahela Bank Building

ST. LOUIS, MO.

Syndicate Trust Building

SAN FRANCISCO, CAL.,

425 Washington Street

MONTREAL, CAN.,

Canadian Express Building

LONDON, ENG.,

Norfolk House, Cannon Street, E. C.

GENERAL ENGINEER- ING.

CONSULTING, DESIGNING and SUPERVISING ENGINEERS on railways, central and isolated power, lighting and heating plants, and on cement and other manufacturing plants.

Reports upon and valuations of coal, cement, zinc, lead, and iron properties, and on processes of production from raw materials.

Reports on existing conditions of buildings, bridges, and other structures.

Consultation services in all Engineering fields—Mechanical, Civil, Hydraulic, and Electrical.

TESTING, PHYSICAL AND CHEMICAL.

Duty and efficiency tests of entire plants—Engines, boilers, pumps, compressors, and other machinery

Strength tests of materials and systems of construction—Steel, iron, cement, brick; columns, beams, floor slabs, partitions, and other members.

Chemical tests of all building materials, including steel, iron, cement, paints, oils, ores, slags, limestones, marls, and clays.

STRUCTURAL INSPECTION— MILL, SHOP, FIELD.

The inspection of structural material at the mills or foundries, including the identification and witnessing of physical tests.

The superintendence of the workmanship during course of fabrication at the shops, insuring the proper handling of the raw materials and first-class workmanship, and facilitating the erection of the structure in the field.

The supervision and detail inspection of the structure during erection, including a general superintendence of the workmanship.

CEMENT INSPECTION.

The testing of cement, including the sampling in car-load lots at the mills or warehouses or when delivered on the work.

Complete cement and chemical laboratories at New York, Chicago, St. Louis, San Francisco, and Montreal.

The supervision and detail inspection of concrete construction.

RAILROAD INSPECTION.

The inspection of new and second-hand railroad materials and equipment, including rails and fastenings, cars, locomotives, bar iron, couplers, axles, wheels, and general castings.

SPECIFICATION FORMS.

General—All materials of construction shall be subjected to inspection and tests wherever and whenever desired by the architect or engineer.

This inspection service shall be placed in the hands of competent inspectors appointed by the architect or engineer. They shall be the agents of said parties and they shall report to them the results of inspection and the progress of the work, and otherwise facilitate the prompt and early delivery of satisfactory materials.

The cost of inspection is to be borne by the contractor.

The inspection, acceptance or failure to inspect, shall in no way relieve the contractor from his responsibility to furnish satisfactory materials; and the architect or engineer reserves the right to reject any material, at any time, before the completion and acceptance of the structure if in his judgment it does not comply with the terms of the specification or of good practice.

Steel and Iron—The contractor shall furnish the inspectors, free of all cost, all testing apparatus and prepared test specimens called for by this specification, and shall afford them ample facilities for proper inspection including the necessary labor for handling material under said inspection.

The inspectors shall have access to all parts of the mills, foundries or shops where work is being done under this specification. In order to enable the inspector to keep close track of all material and to know the relative position of the same in the finished structure, the contractor shall furnish the inspector with complete copies of all orders for steel and iron which are placed with the mills, foundries or shops.

The contractor shall furnish the inspector a complete set of all detail drawings after the same have been approved by the architect.

All material before leaving the mills, foundries or shops, shall be weighed and each piece marked with its net weight (except in the case of small pieces, which may be bundled or boxed), and copy of the shipping invoice indicating these individual weights must be furnished the inspector within twenty-four hours after the loading of accepted material.

Cement—The contractor shall furnish the inspectors free of cost all necessary facilities and labor for the sampling of the cement. Under the direction of the architect or engineer the inspectors may test the cement in their own laboratories or the laboratories of the cement mill. In the latter case they shall be furnished, free of cost, all materials and apparatus necessary for the performance of such tests as are specified.

If the architect or engineer so desires, the inspectors may permit the Cement Company to ship cement upon the satisfactory completion of the boiling test. The object of this is that the tests may be under way while the car or cars are in transit. This release of the cement shall be solely at the risk of the cement mill, and said cement shall be rejected in case any of the other tests do not show satisfactory results.

No cement shall be used by the contractor until he has been notified by the architect or engineer that the material is satisfactory.

THOMAS MEEHAN & SONS, INC.

Landscape Gardeners and Engineers

Thomas Meehan Building
MOUNT AIRY, PHILADELPHIA, PA.

SERVICES.

LANDSCAPE GARDENING, including all PLANNING and ENGINEERING connected therewith, in the following Departments: HORTICULTURE; ARBORICULTURE; PRUNING and SPRAYING; FORESTRY. GENERAL CONTRACTING in all these branches.

ARTISTIC AND PRACTICAL LANDSCAPE GARDENING.

The development of the art of landscape gardening in the United States has been remarkable in the last two or three decades. Both in scope and quality the work now being done here equals the best in Europe. The beautiful parks in our large cities, planned by skilled hands, have done much to develop the public taste in this direction, while the creation of the many fine suburban estates in every section of the country has afforded the opportunity of applying these effects on a fair-sized scale. The charm of nature in her varying moods, guided by art and skilfully developed within a circumscribed frame, is now fully appreciated as a power in itself, and particularly as a setting for beautiful architecture and its accessories of terraces, balustrades, bridges, cascades, fountains, statuary, etc. These words will call to every one's mind some charming spot in public or private gardens where nature and art are joined in a picture of entrancing beauty.

For the attainment of the most perfect effects however there must be applied that consummate command of the ways and means which special talent, training and experience alone can supply. We claim to possess these factors in our combination of specialists and thorough equipment, and are therefore in a position to guarantee the most gratifying results, as evidenced by the work done and the high endorsements held from our patrons.

Every problem in this line of work presents its own opportunities and difficulties and must be made a special study. This has been the work of our President who has personally directed the general designing department for the last fifteen years, and guided by acknowledged ability and enthusiastic devotion he has achieved a recognized success.

PROFESSIONAL ADVICE DEPARTMENT.

This is for the purpose of advising architects and owners in regard to the choice of building sites, the location of houses, water supply, sewage disposal, general grading and road making, the layout of gardens and the artistic arrangement of natural and artificial landscape effects. Also for the care and treatment of trees, shrubs, and lawns and for advice on any other landscape subjects.

We make full investigations of properties in connection with the above matters and submit reports thereon.

ENGINEERING AND PLAN DEPARTMENT.

In this department we prepare plain and topographical surveys, design systems of water supply, irrigation, and sewage disposal, etc. This department is important as it deals with the primary sanitary requirements of a property.



FIG. 1. AN ARTIFICIAL LAKE CONSTRUCTED BY US



FIG. 2. A HILLSIDE GARDEN PLANNED AND CONSTRUCTED BY US

We draw the plans for all our work, comprising general and landscape layouts for suburban colonies and village sites, parks, cemeteries, private estates, ornamental gardens in the English, French and Italian styles, artificial lakes, cascades, etc.

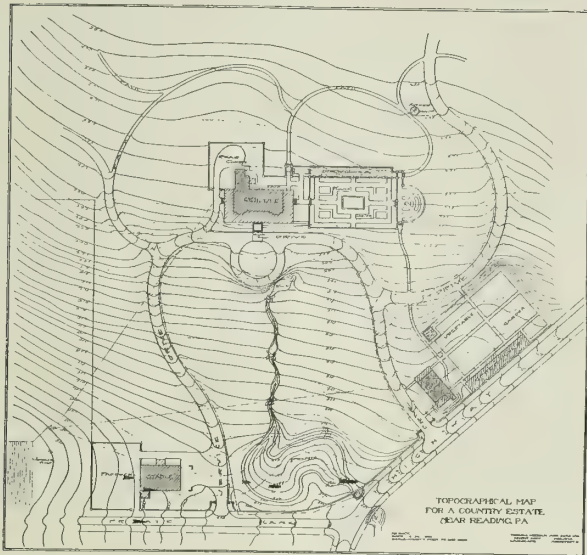


FIG. 3. REDUCED FACSIMILE OF ONE OF OUR GRADING AND ROAD-MAKING PLANS

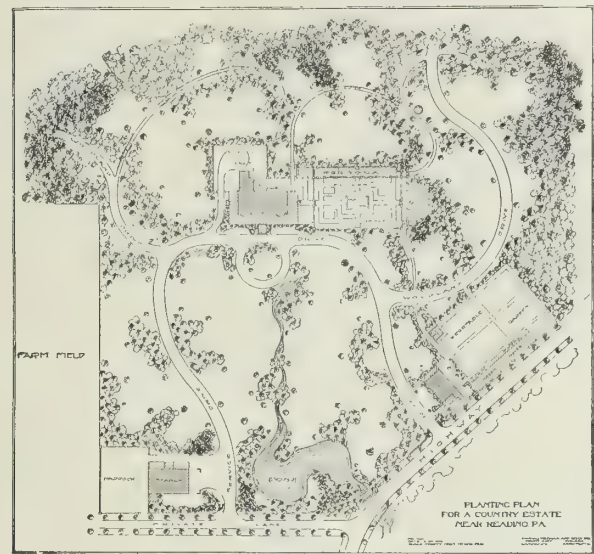


FIG. 4. THE PLANTING PLAN OF PROPERTY SHOWN IN FIG. 3

GENERAL CONTRACT- ING DE- PARTMENT.

We contract to carry out our plans to completion in all departments, and wherever possible prefer to do so, as this insures harmony of results through being under the direction of one responsible head. Where more convenient or specially desired we assume portions only of the contracts covered by our plans and specifications.

PRUNING AND SPRAYING.

These two operations are prime requisites in the maintenance of the health and beauty of trees, shrubs, and all plant life. The work of our pruning experts does not follow the lines of the "shearing" and "butchering" so common, but consists of a treatment which preserves the strength and conduces to the healthy characteristic growth of the plant.

A continued warfare must be waged on the many kinds of fungus, scale, pernicious insects and other pests which take hold of trees and shrubs. Their destruction is effected by vigilant work with improved spraying apparatus and carefully tested compounds. The systematic spraying of fruit trees is particularly necessary to the production of sound and plentiful fruit.

FORESTRY.

Forestry is a subject of great importance which is at last receiving the needed public interest and to which we are giving our special study and attention. We believe that forests should not only be treated from an esthetic point of view, but that if scientifically cared for they will prove a valuable asset and will also be the means of conserving other natural resources.

COST AND ESTIMATES.

Our various departments equipped with the best appliances and methods together make an economical unit for the execution of every kind of architectural and landscape gardening schemes. The cost is reduced to the lowest basis consistent with efficiency and is within the reach of every owner of property.

Our estimates are made both on the lump-sum plan and on the percentage basis, according to the requirements of each particular undertaking.

REFERENCES.

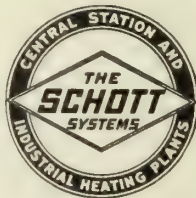
References from all parts of the United States will be cheerfully furnished upon application to the office.

THE SCHOTT ENGINEERING COMPANY

Designing, Consulting, and Constructing Engineers

315 Dearborn Street
CHICAGO, ILL.

LONG DISTANCE TELEPHONE, HARRISON 3967



TRADE-MARK

SERVICES.

We are DESIGNING, CONSULTING, and CONSTRUCTING ENGINEERS for all kinds of Public Utility Plants, such as LIGHTING, HEATING, and POWER PLANTS, and GAS and WATER WORKS.

We prepare estimates, plans and specifications, and furnish expert supervision for the construction of such plants.

FACILITIES AND CO-OPERATIVE SERVICE.

We make complete reports on Electric Railways, Light, Heat, Power, Gas, Water-Works and Hydraulic developments, and will legally organize and handle all engineering features, including detail, construction, and management.

THE "SCHOTT" SYSTEMS.

We are recognized authority on Central Station Heating Systems. No other engineering concern analyzes the heating situation as we do.

We design and build both Central Station Steam and Hot-Water Heating Systems to best meet all conditions developed by engineers' examination.

The physical and financial success of every Central Station Heating System that we have ever built is proof of the above statement.

GUARANTEE.

Depreciation in our type of underground construction for mains in our Central Station Heating Systems is practically nil.

The application of the most advanced methods and type of construction throughout in all of our work, including Central Station and Industrial Heating Systems, Mechanical and Power Equipment of all kinds, insures your absolute protection by our liberal guarantee, and our execution of an entire contract under one management insures success.

E. B. BADGER & SONS COMPANY

Manufacturers of Pantry Sinks and Wash Boilers

63-75 Pitts Street

BOSTON, MASS.

ESTABLISHED 1841

PRODUCTS.

COPPER, WHITE METAL and GERMAN SILVER PANTRY SINKS, COPPER WASH BOILERS, and HOT-WATER BOILERS.

For our other Products, see our pages in General Index.

BADGER'S PANTRY SINKS.

Badger's Pantry Sinks are made of copper, German silver and white metal. The material is heavy and of the best quality. Copper sinks are made of cold-rolled planished copper, heavily tinned on the inside, with all joints double-seamed and soldered; white metal and German silver sinks are made in the same way.

METAL USED.

German silver is a compound metal made of copper, tin and nickel. White metal is a better grade of German silver containing a larger percentage of nickel, and is what many people call "Pullman" metal. This metal takes a bright polish which it retains much longer than German silver.

UTILITY.

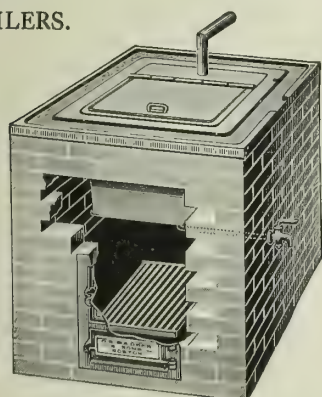
Badger Sinks are suitable for residences, restaurants, apartments, and hospitals. It does not matter how large the available space may be or how irregular the design, Badger's special sinks can be made to meet all requirements.

SIZES.

Square and recessed sinks, as shown in plates Nos. 12 and 13, are kept in stock sizes designated by table below:

12 x 18; 12 x 20; 14 x 24; 14 x 20; 16 x 24; 18 x 20; 18 x 24; 18 x 30; 18 x 36; 20 x 36.

BADGER'S COPPER WASH BOILERS.



A BADGER COPPER WASH BOILER SET IN BRICK WORK

Badger's Copper Wash Boilers are used chiefly in the laundry and are usually placed next to the wash-trays. They are made of heavy material of the best lake copper. The steam-pipe on top connects with the chimney, allowing no steam to escape into the laundry. The interior is heavily tinned. The water supply can be connected through top of boiler and the water drawn off through the cock at bottom. The top flange of boiler rests on a soapstone which makes a neat finish. Stock sizes, 10 gallon to 50 gallon capacity.



PLATE NO. 12. SQUARE PANTRY SINK

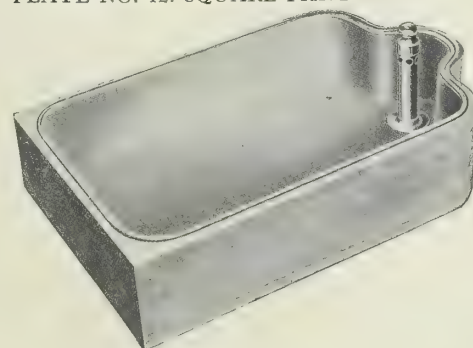


PLATE NO. 13. RECESSED PANTRY SINK

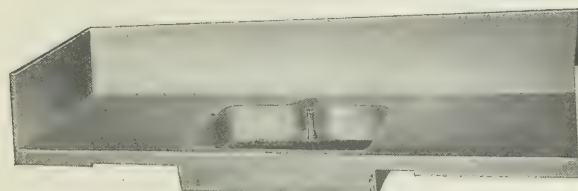
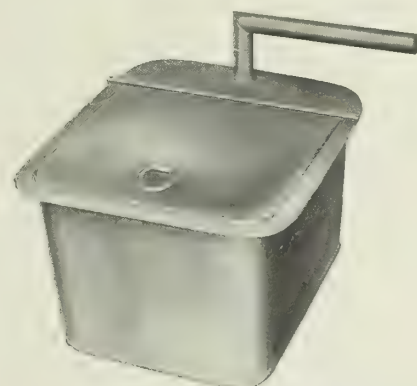


PLATE NO. 16. RECESSED PANTRY SINK AND DRAINBOARD



PLATE NO. 18. DOUBLE PANTRY SINK AND DRAINBOARD



A BADGER COPPER WASH BOILER

AMERICAN SANITARY WORKS

MANUFACTURERS OF

"B. O. T." Water-Closets and Specialties

320 Broadway
NEW YORK, N. Y.

FACTORIES
WASHINGTON, N. J.
TRENTON, N. J.

REPRESENTATIVES

LOS ANGELES, CAL., THE TAY COMPANY OF LOS ANGELES
DENVER, COLO., M. J. O'FALLON SUPPLY CO.
WILMINGTON, DEL., SPEAKMAN SUPPLY AND PIPE CO.
NEW ORLEANS, LA., THE FAIRBANKS CO.
BALTIMORE, MD., JAMES ROBERTSON MFG. CO.
WORCESTER, MASS., COLWELL LEAD CO.
KANSAS CITY, MO., U. S. WATER AND STEAM SUPPLY CO.
MANCHESTER, N. H., MANCHESTER SUPPLY CO.
BUFFALO, N. Y., W. A. CASE & SON MFG. CO.
WATERTOWN, N. Y., THE HUNTING CO.
CLEVELAND, OHIO, CLEVELAND PLUMBING SUPPLY CO.
PHILADELPHIA, PA., HAYNES-THOMPSON CO.
PITTSBURG, PA., PITTSBURG SUPPLY CO.
NORFOLK, VA., VIRGINIA-CAROLINA SUPPLY CO.
SEATTLE, WASH., THE A. HAMBACH CO.
SAN FRANCISCO, CAL., GEORGE H. TAY COMPANY
VANCOUVER, B. C., THE ROBERTSON-GODSON CO., LTD.

NEW HAVEN, CONN., C. S. MERSICK & CO.
WASHINGTON, D. C., JOHN MITCHELL, JR.
PORTLAND, ME., W. L. BLAKE & CO.
NEW BEDFORD, MASS., NEW BEDFORD BOILER AND MACHINE WORKS
DETROIT, MICH., DETROIT LEAD PIPE AND SHEET LEAD WORKS
OMAHA, NEB., U. S. SUPPLY CO.
BUFFALO, N. Y., PLUMBERS AND STEAM FITTERS SUPPLY CO.
ROCHESTER, N. Y., THE HUNTING CO.
NEW YORK, N. Y., COLWELL LEAD CO.
TOLEDO, OHIO, J. F. GRASSWILLER SUPPLY CO.
SCRANTON, PA., RALPH E. WEEKS CO.
PROVIDENCE, R. I., BENJ. T. PECK
RICHMOND, VA., VIRGINIA-CAROLINA SUPPLY CO.
MILWAUKEE, WIS., HOFFMAN & BILLINGS MFG. CO.
PORTLAND, ORE., THE GOULD CO.

PRODUCTS.

"B. O. T." REVERSE-TRAP SIPHON WATER-CLOSET; "B. O. T." PATENTED SIPHON BOWL; "B. O. T." PATENTED LEVER LOW TANK.

DESCRIPTION.

The Closets and Specialties are all high-grade goods, patented, and stamped with our trade-mark "B. O. T.," and the important features found only in this closet include the Reverse-Trap Siphon Bowl, and the Patented Lever Low Tank.

The "B. O. T." Water-Closets are made up complete in many different combinations, and are sold only by the AMERICAN SANITARY WORKS and their representatives.

REVERSE- TRAP SIPHON BOWL.

The new "B. O. T." Reverse-Trap Siphon Bowl (illustrated) embodies an absolutely new principle in water-closet construction in that it creates siphonic action without the aid of a jet and with a straight outlet.

The theory has been fully tested and has been proven entirely practicable, and is in universal use.

While all siphon-jet water-closets have the long contorted or winding outlet, which is not accessible and can not be inspected, all parts of the trap in the "B. O. T." Closet are visible, and the smallest diameter in either the trap or outlet is equal in area to any stock siphon jet.

The bowl is thoroughly cleansed at every flush, and the spud opening and flushing rim are immediately drained after each operation.

The trap overflows into the expanded short leg, which has a gravitating flow, and creates a much stronger siphonic action than is found in any old-style jet fixture. The efficiency of the "B. O. T." Bowl is equivalent to a full Strap without obstruction of any kind.

The old-style wash-down bowl, which has the sole merit of being a low-priced closet, has the disadvantage of having a small contracted outlet that can not be inspected.

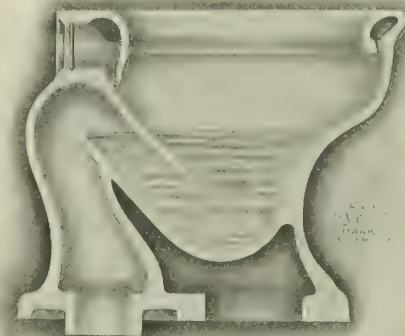
PATENTED LEVER.

The "B. O. T." Patented Lever is the most valuable fitting in our Low Tank. It is fitted to the tank by a brass ferrule (no slots or recesses necessary), with a plate on the outside, and can not stick or fail to work properly.

PATENTED LEVER LOW TANKS.

The "B. O. T." Patented Lever Low Tanks are manufactured from specially selected woods, well seasoned and kiln-dried, and also in vitreous china.

All of our wood tanks are piano polished and on the inside are treated, before the



SECTIONAL VIEW OF 375 "B. O. T."
REVERSE-TRAP SIPHON BOWL



NO. A-6. REGULAR 375 "B. O. T." BOWL

1½ inch Round Seat and Cover. X S Hinges. Tank with Brass N. P. Lever Handle. Natural, Antique and Golden Oak.

Price, Complete, \$28.50



TILDEN VITREOUS CHINA LOW TANK WITH 375 "B. O. T." BOWL

1½ inch Round Seat and Cover. S Hinges.

Price, Complete, \$40.00



NO. A-3½. SPECIAL 375 "B. O. T." BOWL

1½ inch Saddle Seat. Casco Hinges. Tank, with Vitreous China Lever Handle. Quartered Oak and Imitation Mahogany. Piano Polish.

Price, Complete, \$32.50

lining is put in, with a coat of specially prepared hot paraffine. The wood tanks are lined with 10-ounce copper, or heavier, and to overcome the effects of electrolysis, the bottoms of the wood tanks are lined with tinned copper. Each lining is tested and fully guaranteed.

All the trimmings are made of heavy brass.

The rubber ball for the flush valve is the full-sized Douglass pattern of the best quality, and the ball cock is of a heavy metal, compound lever, and fitted with winged screws. The washer is secured in position by a brass cap which, together with a full-sized outlet, prevents vibration and reduces the filling noise to a minimum.



NO. A-6½. NOVEL 375 "B. O. T." BOWL

1½ inch Round Seat and Cover. S Hinges. Tank with Brass N. P. Lever Handle. Natural, Antique and Golden Oak.

Price, Complete, \$30.00



NO. A-4½. CELLUVARNO 375 "B. O. T." BOWL

1½ inch Saddle, Celluvarno Seat. Celluvarno Tank with China Handle.

Price, Complete, \$65.00



NO. A-5½. EARLY ENGLISH QUARTERED OAK 375 "B. O. T." BOWL

1½ inch Saddle Seat to match. China Handle.

Price, Complete, \$32.50

THE BARNES MANUFACTURING CO.

MANUFACTURERS OF

Sanitary Porcelain Enameled Ware
MANSFIELD, OHIO

CABLE ADDRESS, "BARNESFIELD"

PRODUCTS.

SANITARY PORCELAIN ENAMELED WARE, including LAVATORIES—Corner and Wall; KITCHEN, PANTRY, and SLOP SINKS, DRAINBOARDS, and SINK BACKS; STRAINERS, COUPLINGS, CONNECTIONS, etc.; also, IRON and BRASS PUMPS for HAND, WINDMILL, and POWER USE, and STEAM FITTERS' SUPPLIES.

FIXTURES.

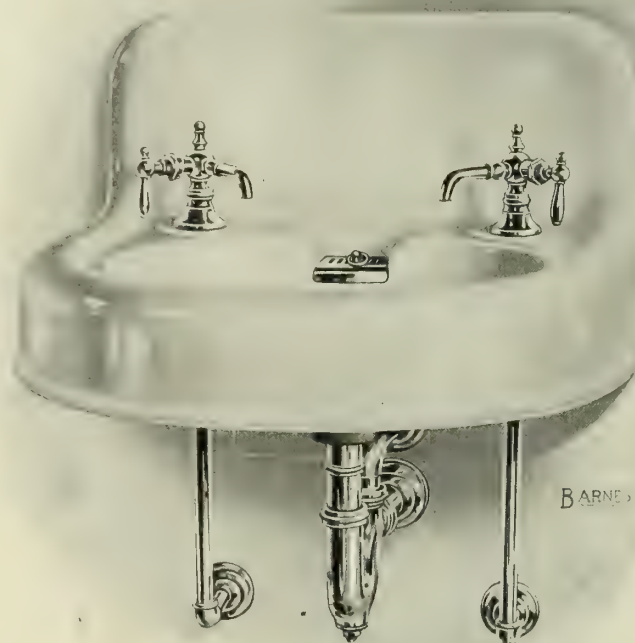


"BARNES" LAVATORY, PLATE E 1420

With D-shaped bowl cast in one piece, nickel-plated overflow strainer, chain stay, two No. O Fuller basin faucets, P trap with vent, supply pipes to wall, and concealed bracket.

DIMENSIONS		ROUGHING-IN MEASUREMENTS	
Slab	18 x 21 inches	Wall to center of waste.....	6½ inches
Height of back.....	8 inches	Wall to center of cock holes..	3½ inches
Bowl	11 x 15 inches	Distance between cock holes..	12 inches

PLATE	PRICES
E 1420, as shown	\$15.25
E 1420, as shown, except with vented S trap, and supply pipes to floor	16.00
E 1420, less faucets, supply pipes and trap, with concealed bracket..	7.25
If with open brackets, add	.50
Can be furnished with Limnae Purity Waste and with soap cup cast in, if specified.	



"BARNES" LAVATORY, PLATE E 1430

With D-shaped bowl cast in one piece, nickel-plated overflow strainer, chain stay, two No. O Fuller basin faucets, P trap with vent, supply pipes to wall, and concealed bracket.

DIMENSIONS		ROUGHING-IN MEASUREMENTS	
Slab	18 x 21 inches	Wall to center of waste.....	6½ inches
Height of back.....	8 inches	Wall to center of cock holes..	3½ inches
Bowl	11 x 15 inches	Distance between cock holes..	12 inches
Depth of apron.....	4 inches		

PLATE	PRICES
E 1430, as shown	\$18.25
E 1430, as shown, except with vented S trap, and supply pipes to floor	19.00
E 1430, less faucets, supply pipes and trap, with concealed bracket..	10.25
If with open brackets, add	.50
Can be furnished with Limnae Purity Waste and with soap cup cast in, if specified.	

The illustration shows a cross-section of the strainer and coupling connected to the sink with a piece of lead pipe in a short tail-piece.

SIZES AND PRICES

Size	Fitted for	List Price
1½-inch	Lead pipe connection	\$1.00, complete
1½-inch	Lead pipe connection	1.20, complete
1½-inch	Brass trap connection	1.00, complete
1½-inch	Brass trap connection	1.20, complete



"BARNES" PATENT BOLTLESS
SINK STRAINER AND
COUPLING



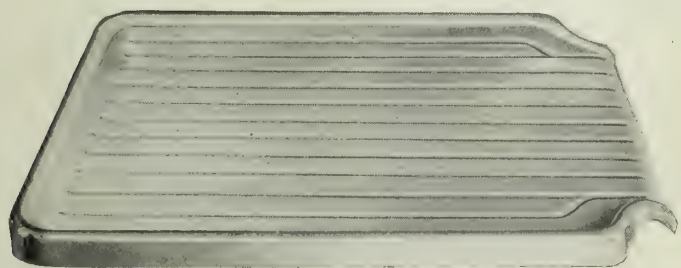
"BARNES" PORCELAIN ENAMELED LAVATORY, PLATE E 1431

With D-shaped bowl cast in one piece, nickel-plated overflow strainer, chain stay, two No. O Fuller basin faucets, P trap with vent, and supply pipes to wall.

DIMENSIONS	ROUGHING-IN MEASUREMENTS
Length on side ... 19 inches	Wall to center of waste.... 8 $\frac{3}{8}$ inches
Height of back ... 8 inches	Wall to center of cock holes. 3 $\frac{1}{2}$ inches
Bowl 11 x 15 inches	Corner of wall to cock holes. 9 $\frac{1}{2}$ inches
Depth of apron ... 4 inches	Corner of wall to waste.... 12 inches
	Distance between cock holes. 9 inches

PLATE	PRICES
E 1431, as shown	\$18.75
E 1431, as shown, except with vented S trap, and supply pipes to floor	19.50
E 1431, less faucets, supply pipes and trap.....	10.75

Can be furnished with Cyrene Purity Waste and with soap cup cast in, if specified.



"BARNES" INTERCHANGEABLE DRAINBOARD, PLATE E 1476

"Barnes" Porcelain Enameled Interchangeable Drainboard, Plate E 1476, for two-piece Roll-Rim Sink, with one painted bracket for supporting same.

18 x 18 inches	\$3.25
18 x 24 inches	3.75
20 x 18 inches	3.50
20 x 24 inches	4.00
22 x 24 inches	4.25

CO-OPERATIVE
SERVICE.

We are always glad to send, upon application, our complete illustrated catalogue of Porcelain Enamel Ware which contains cuts of other fixtures, additional tables of data, prices, etc.



"BARNES" ONE-PIECE ROLL-RIM SINK, PLATE E 1450

Can be supplied with legs as well as brackets.

ROUGHING-IN MEASUREMENTS—Center to center of cock holes, 8 inches; center of waste to wall, 6 $\frac{3}{8}$ inches; distance top of rim to center of cock holes, 6 $\frac{1}{2}$ inches.

PRICES	
18 x 24 inches	\$19.50
18 x 30 inches	21.00
20 x 30 inches	\$21.75
20 x 36 inches	23.00
If with painted brackets instead of hangers, add per pair	.50
If with painted legs instead of hangers, add per pair	1.00
If without vented P trap, deduct	5.75
If without bibbs, deduct per pair	2.50
If without galvanized air-chambers, deduct per pair	2.00



"BARNES" LAVATORY, PLATE E 1432

With D-shaped bowl cast in one piece, nickel-plated overflow strainer, chain stay, two No. O Fuller basin faucets, P trap with vent, supply pipes to wall, and concealed bracket.

DIMENSIONS	ROUGHING-IN MEASUREMENTS
Slab 18 x 24 inches	Wall to center of waste..... 6 $\frac{3}{8}$ inches
Height of back ... 10 inches	Wall to center of cock holes. 3 $\frac{1}{2}$ inches
Bowl 11 x 15 inches	Distance between cock holes.. 12 inches
Depth of apron 4 inches	

PLATE	PRICES
E 1432, as shown	\$22.00
E 1432, as shown, except with vented S trap, and supply pipes to floor	22.75
E 1432, less faucets, supply pipes and trap, with concealed bracket..	14.00
If with open brackets, add	1.00

Can be furnished with Limnae Purity Waste and with soap cup cast in, if specified.

THE CAHILL IRON WORKS

MANUFACTURERS OF

"Southern Beauty" Enamel Ware

50 Fourteenth Street

CHATTANOOGA, TENN.

SAN FRANCISCO OFFICE

1749 Sacramento Street, CHAS. H. STANYAN, Sales Agent

PORTLAND OFFICE AND WAREHOUSE

550 Sherlock Building, H. A. HEPPNER & Co., Sales Agents

EASTERN BRANCH OFFICE AND WAREHOUSE

76 West 36th Street, New York, N. Y., THOS. H. HUTCHINSON, Manager

CHICAGO OFFICE

163 Randolph Street, HARRY VERBEEK, Sales Agent

PHILADELPHIA OFFICE

5604 North Fourth Street, RUSSELL D. KNIGHT, Sales Agent

PRODUCTS.

The "SOUTHERN BEAUTY" line of ENAMELED WARE, composed of ONE-PIECE LAVATORIES, ONE-PIECE APRON and ROLL-RIM KITCHEN SINKS, ONE-PIECE SLOP SINKS, ONE-PIECE URINALS, ONE-PIECE LAUNDRY TUBS, ONE-PIECE SINK and LAUNDRY-TRAY COMBINATION, HIGH and LOW-DOWN CLOSET TANKS, SINK BACKS, DRAINBOARDS and FLAT-RIM KITCHEN SINKS. Fine HIGH-GRADE KITCHEN SINKS a specialty.

"TENNESSEE" AND "CHATTANOOGA" KITCHEN SINKS.

We would call especial attention to our "Tennessee" and "Chattanooga" Kitchen Sinks. We have had these sinks on the market for nearly three years and so far no one has offered anything that he has called just as good. We take pride in stating that our "Tennessee" Sink is the highest-priced cast-iron enameled sink ever put on the market. The fact that it is sold in every large city in the country from Boston to San Francisco shows that if the price is higher than other enameled iron sinks the value also is there. We would also call attention to our "Pacific" Sink and Laundry Tray Combination, made in one piece, and our "Empire" Duplex Laundry Tub. These are original patterns which have just been completed. Nothing similar is made by any other manufacturer.



PLATE F-200 SINK

Made one size only, 22" x 34", with two 21" x 22" drainboards, 12" back, and 6" apron cast integral. Drainboard depressed 2". Length over all, 72". List, including painted legs and two rubber mats, less fittings, \$60.00



PLATE F-209 SINK

Made in two sizes, 20" x 30", with 20" x 24" drainboard, and 22" x 34", with 22" x 24" drainboard. Sink, drainboard, 12" back, 5" apron and end-piece cast integral. Drainboard depressed 2", made for either right or left corner. List, including painted legs and rubber mat, less fittings, 20" x 30", \$50.00; 22" x 34", \$58.00

ORIGINAL PATTERNS.

We illustrate above our Plate F-200 Sink with right and left hand drainboards, and our Plate F-209 Sink, which is made for either right or left corner. Note that these sinks are made with drainboards, back, apron, etc., cast integral, and are therefore absolutely sanitary. The fact that the drainboard is depressed two inches will be found very advantageous. Space allows us to show only a few of our designs, but we will be pleased to furnish catalogue "F," showing our entire line, on application.

GUARANTEE.

Every piece of "Southern Beauty" Enameled Ware has our name "Cahill" cast on the back and bears our guarantee label, which fully protects against defects in manufacture. The Commercial Agencies will tell you that we are fully responsible and any jobber of enameled ware will testify that no manufacturers make good their guarantee more willingly or cheerfully.

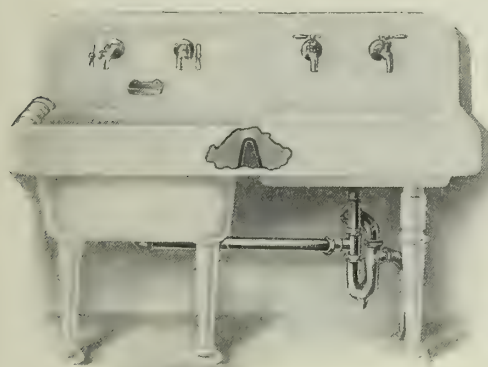


PLATE F-301 SINK AND LAUNDRY-TRAY COMBINATION

List, with perforated metal drainboard, less trimmings, \$45.00



PLATE F-321 "DUPLEX" LAUNDRY TUB

List, less fittings, \$50.00



PLATE F-271 SLOP SINK

Made one size only, 22" x 22".
List, less trimmings, enameled inside, \$24.00; enameled all over, \$29.50



PLATE F-222 SINK

Made in four sizes:

18" x 30" List, less trimmings, \$17.75
20" x 30" List, less trimmings, 19.50
22" x 36" List, less trimmings, 22.75
22" x 42" List, less trimmings, 24.00

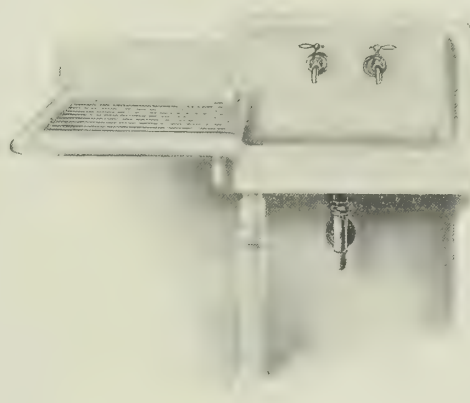


PLATE F-239 SINK COMBINATION

Made in four sizes:

18" x 30" List, less trimmings, \$26.00
20" x 30" List, less trimmings, 28.00
22" x 36" List, less trimmings, 32.25
22" x 42" List, less trimmings, 33.50



PLATE F-131½ LAVATORY

Made in two sizes: 22" x 27". List, including bi-transit waste (no other fittings), \$30.50; 19" x 24", \$22.00



PLATE F-102 LAVATORY

Made one size only, 24" x 33". List with combination fixture as shown (no other fittings), \$51.00



PLATE F-104½, LAVATORY

Made one size only, 20" x 24". List, including enameled iron leg standard, and bi-transit waste only (no other fittings), \$27.00



PLATE F-110½ LAVATORY

Made one size only, 20" x 27". List, including enameled iron leg standard, and bi-transit waste only (no other fittings), \$26.00



PLATE F-114 LAVATORY

Made in two sizes:

20" x 24" List, less fittings, \$19.50
22" x 27" List, less fittings, 23.50

COCHRAN, DRUGAN & CO.

MANUFACTURERS OF

Sanitary and Porcelain Ware

TRENTON, N. J.

PRODUCTS.

Complete line of SANITARY WARE, including LAVATORIES, CLOSETS, TANKS, SINKS, WASH TRAYS, etc., made from Vitreous China and Solid Porcelain.

THE "CODRU" CLOSET.

The "Codru," shown in Fig. 1, is a true siphon closet and is the only one that operates with the water jet above the water line. It will operate with three gallons of water, and has a water seal of three and one half inches. No closet with a water seal of less than the above is perfectly sanitary. Patents on this closet were granted September 14, 1909. There

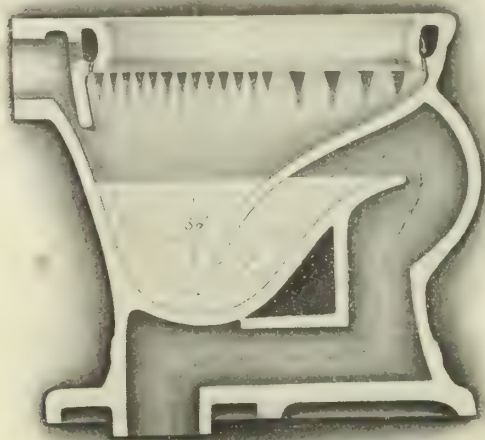


FIG. 1. THE "CODRU" SIPHON CLOSET



FIG. 2. TANK AND CLOSET
Vitreous China Tank with Center Push-Button

being no projections to catch dust and dirt, there is a perfect wash in the bowl. The illustration shows its details. It is perfectly noiseless in its operation and every one is guaranteed to operate alike.

VITREOUS CHINA TANK.

This tank, shown in Fig. 2, is made from solid vitreous china. It makes a handsome addition to any bathroom and fills a long-felt want.

The illustration shows tank operated with center push-button.

PRICE.

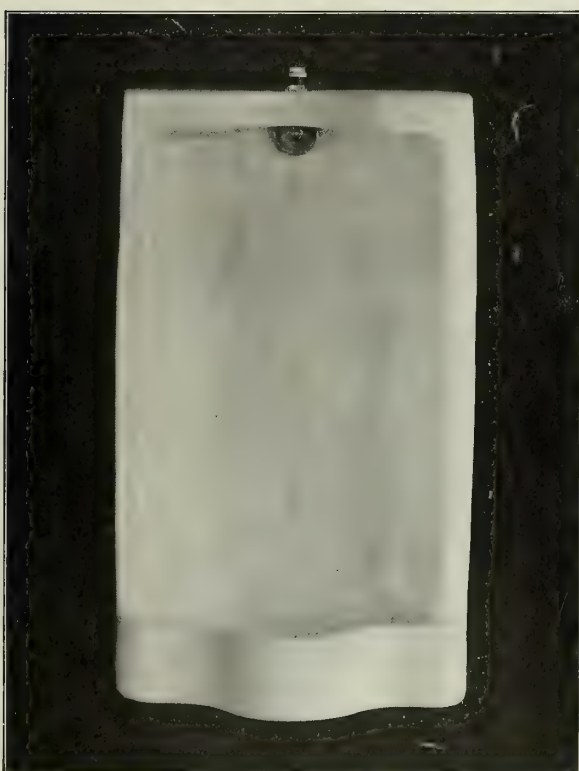
The list price of this tank is \$8.50. Fittings are extra.



LAVATORY NO. 228 A, WITH PEDESTAL
List prices, size 24" x 33", \$30.00; 22" x 27", \$28.00.
Pedestal, \$14.00 extra. Subject to discount



LAVATORY NO. 220 A, WITH SOLID LEG
List prices, size 18" x 20", back 4" high, \$20.00. Solid
porcelain leg, \$6.00 extra. Subject to discount



URINAL NO. 223 A
List price, size 24" x 44", \$50.00. Fittings extra.
Subject to discount



KITCHEN SINK NO. 227 A, SOLID PORCELAIN
List prices, size 20" x 30", \$30.00; with loose back, \$25.00;
20" x 24", \$20.00; with loose back, \$18.00. Legs, \$6.00
per pair. Subject to discount

SOLID
PORCELAIN
WARE.

The above illustrations show several styles of sanitary apparatus made by us in solid porcelain ware. Our line is complete, including all necessary apparatus for full equipment.

CO-OPERATIVE
SERVICE.

We are always pleased to submit estimates and always co-operate with architects desiring information relative to our goods.

COLWELL LEAD COMPANY

INCORPORATED 1866

Manufacturers of Plumbing Supplies and Specialties

MAIN OFFICE AND SHOWROOMS
Lafayette and Walker Streets
NEW YORK, N. Y.

BRANCH
WORCESTER, MASS.

FACTORIES
ELIZABETH, N. J.

PRODUCTS.

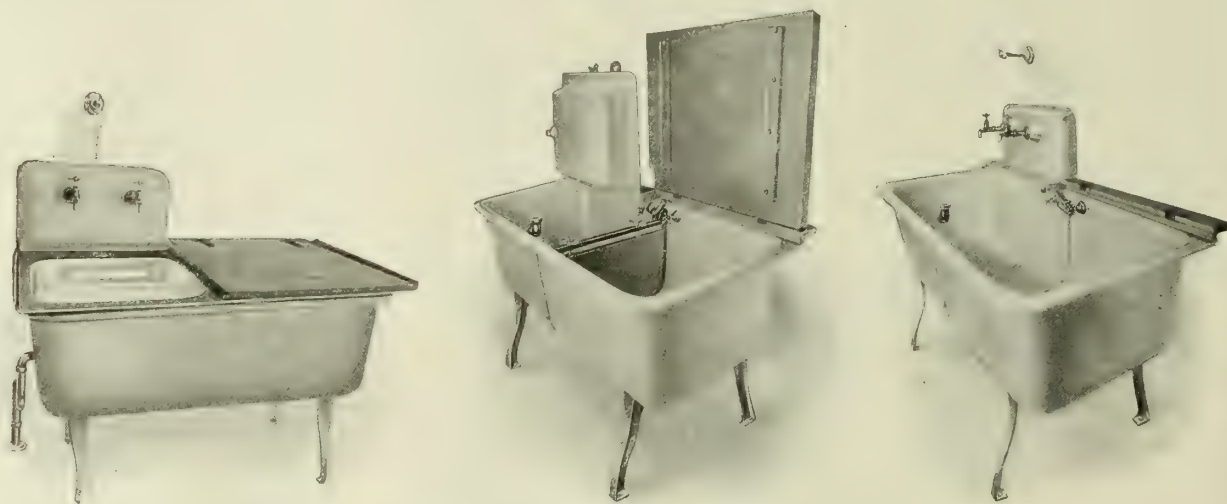
LEAD CAMES, SHEET LEAD, and LEAD of every description; a complete line of SANITARY PLUMBING FIXTURES and SPECIALTIES, comprising PORCELAIN LAVATORIES, KITCHEN SINKS, SLOP SINKS, LAUNDRY TUBS, and PORCELAIN and PORCELAIN-ENAMELED IRON BATHTUBS and FIXTURES; NICKEL-PLATED SHOWER and NEEDLE BATHS; VITREOUS CHINA LAVATORIES, TANKS, CLOSETS; "FLUSHO" VALVES; DRINKING FOUNTAINS, etc.; "CLIMAX" SOAPSTONE LAUNDRY TUBS, SINKS, URINAL STALLS, SLABS, and SOAPSTONE of every description; KITCHEN SPACESAVERS; a full line of SOIL-PIPE and FITTINGS.

FACILITIES.

We have the largest rolling mill in the United States, and therefore are able to supply sheet lead and miscellaneous lead in any size desired. Owing to the enormous quantity of articles, fixtures and piping manufactured by us it is impossible to enumerate them all. Suffice it to say we manufacture everything necessary for the equipment of public baths, schools, hospitals, sanitariums, hotels, buildings, etc. Our fixtures are made in standard sizes of the trade.

KITCHEN SPACESAVERS.

The Spacesaver is made in several different styles and sizes to meet all requirements. It saves from four to thirty-three square feet of floor space and many lines of pipe, because of its combination features. It is approved by the Board of Health and other departments of Greater New York and of other large cities throughout the country and is absolutely sanitary, clean, beautiful and almost indestructible. It is very popular for use in small apartments, bungalows, two-family houses, cottages and tenements.



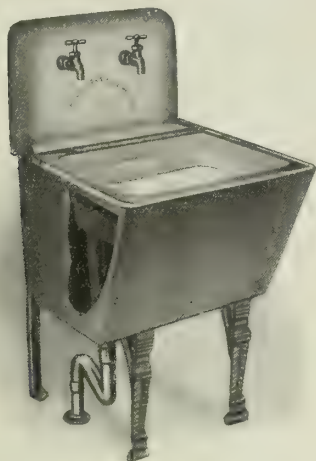
FOUR-IN-ONE KITCHEN SPACESAVER

DESCRIPTION.

The "Four-in-One" Spacesaver is a combination sink, hardwood drainboard, enameled iron bath and wash tubs. The sink is made of stamped steel and is very light. The sink and drainboard may be raised and lifted off at will, or supplied with solid hinges so that the sink can not be removed from the back.

The center partition is made of aluminum, with special rubber gasket around the edge which fits into a groove, thus making it absolutely water-tight when pressure screws are in

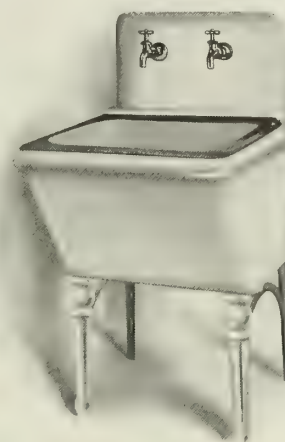
position. By releasing these screws the partition can be easily removed, leaving a bathtub standing only seven inches higher than an ordinary bath. By adding a shower bath and curtain it is made "Six-in-One." This enameled iron combination is made in only one size, 26"x 54". In soapstone the combination is made in two sizes, 26"x 48" and 26"x 54".



"Two-in-One," Soapstone



"Three-in-One," Soapstone



"Two-in-One" or "Three-in-One," Porcelain

TYPES OF SPACESAVERS

OTHER SPACESAVERS.

The "Three-in-One" Combination is made in soapstone, with enameled or galvanized steel sink, and consists of sink and back, hardwood drainboard and wash-tubs. In the 24"x 48" size there are two wash-tubs, and in the 24"x 72" size there are three wash-tubs, with the sink over the center one and hardwood drainboard on both sides of sink.

The "Two-in-One" Combination is made in solid porcelain, soapstone, and enameled or galvanized steel; and consists of sink, back and laundry tub. In a tenement where there is only a small kitchen it is a necessity. The solid porcelain combination is made 25" x 25" for one wash-tub or 25" x 48" for two wash-tubs. The other combinations are made in the 24"x 24" size only.

PRICES.

Prices range from \$22.25 to \$65.00 and include all fixtures. Owing to the various styles and combinations, it is impossible to give a complete price-list.

RELIABILITY.

Our products are built on distinctively original lines, and as the result of nearly fifty years' experience we stand first as "Quality" lead and enamel producers.

DISTRIBUTION.

We are a wholesale house, therefore we sell only to the plumbers and discounts are given to them alone.

GUARANTEE.

Our guarantee is carried on all our manufactured goods. It is impossible to excel our enameled fixtures, and wherever our lead goods are shown on exhibition we have received the highest awards.

ESTIMATES, ETC.

We are always pleased to furnish full information and specifications to architects. We can often make suggestions which save time and money.

A booklet, "Spacesaver Facts," which gives full details, prices and specifications, will be sent upon request.

REFERENCES.

The following are a few of the thousands of buildings in which "Colwell" goods are used:

Bowling Green Building, New York, N. Y.
Monolith Building, New York, N. Y.
Maiden Lane Building, New York, N. Y.
Ashcroft Mfg. Co., Bridgeport, Conn.
Russell Block, Waterbury, Conn.
Grand Hotel, New York, N. Y.
King Edward Hotel, New York, N. Y.

New Hoffman House, New York, N. Y.
Marlborough Hotel, East Orange, N. J.
St. John's Hospital, Long Island City, N. Y.
Royal Hospital (built by the Empress of Russia),
St. Petersburg, Russia
John P. Leo Construction Co., New York, N. Y.
City & Suburban Homes Co., New York, N. Y.

THE COLUMBUS HEATING AND VENTILATING COMPANY

MANUFACTURERS OF

The "Columbus" Octagon Ventilated Urinal, and Heating and Ventilating Appliances

425-435 West Town Street
COLUMBUS, OHIO

PRODUCTS.

Manufacturers of the "COLUMBUS" OCTAGON VENTILATED URINAL; "COLUMBUS" SIDE-WALL VENTILATED URINAL; "COLUMBUS" VENTILATED CLOSETS; No. 08 SCHOOL, CHURCH and FACTORY HEATER; also, RESIDENCE HEATERS.

"COLUMBUS" OCTAGON VENTILATED URINAL.

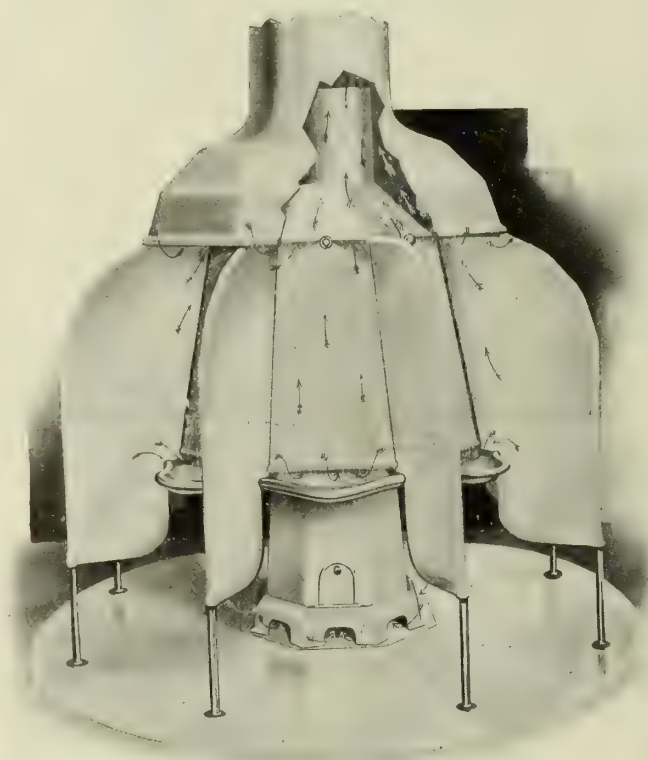
This Urinal is absolutely sanitary and no toilet-room in any public building is complete without it. It is in no sense complicated and is easy for the plumber to install. It thoroughly ventilates itself as well as the entire room, the ventilation taking place at twenty-four points, at the base or floor line, at the basin in the center, and at the top into the hood connected with the vent stack.

"COLUMBUS" SIDE-WALL VENTILATED URINAL.

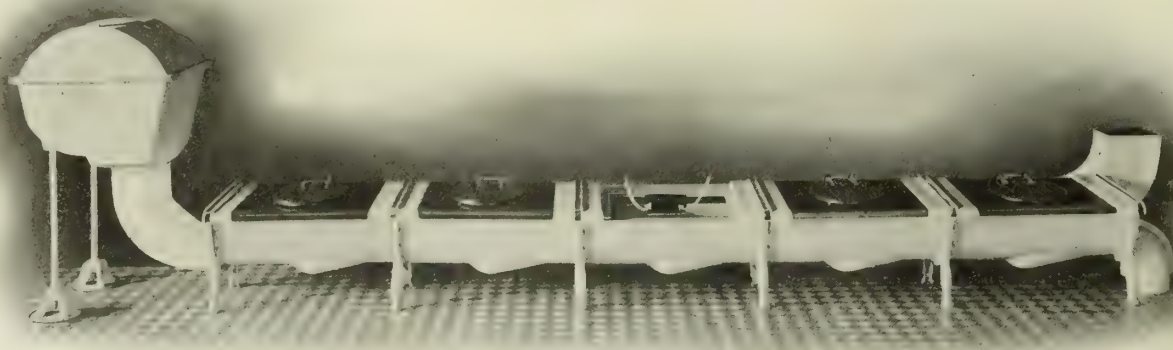
This apparatus as shown in the illustration is of good design, having an exceedingly neat appearance. The ventilation takes place at two points in each stall, at the top and at the floor line.

"COLUMBUS" VENTILATED CLOSETS.

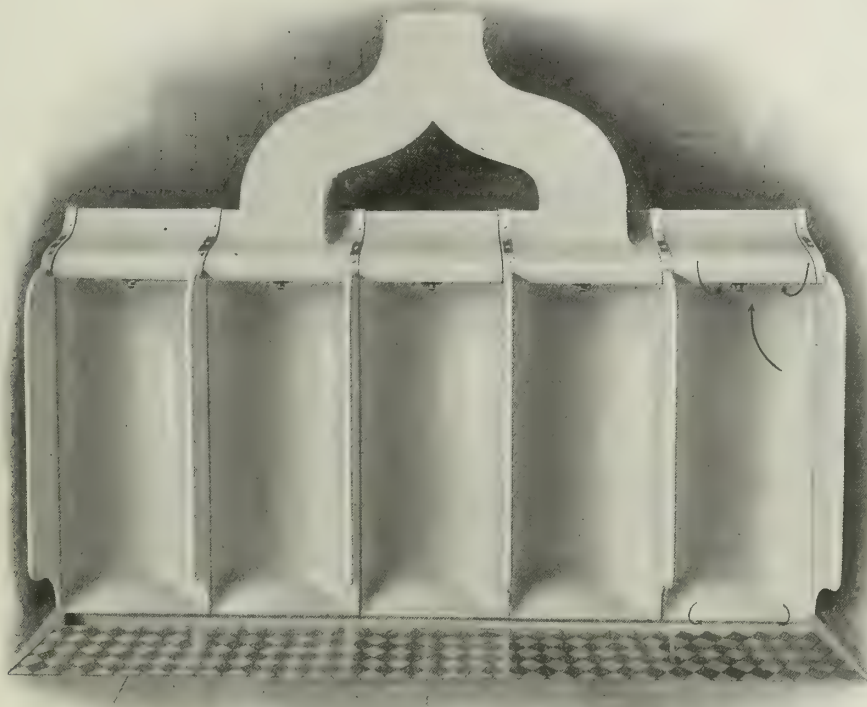
We make a full line of these closets. The ventilation takes place at the back of the bowl and each closet is ventilated independently of the other. These closets appeal to all sanitary engineers and architects.



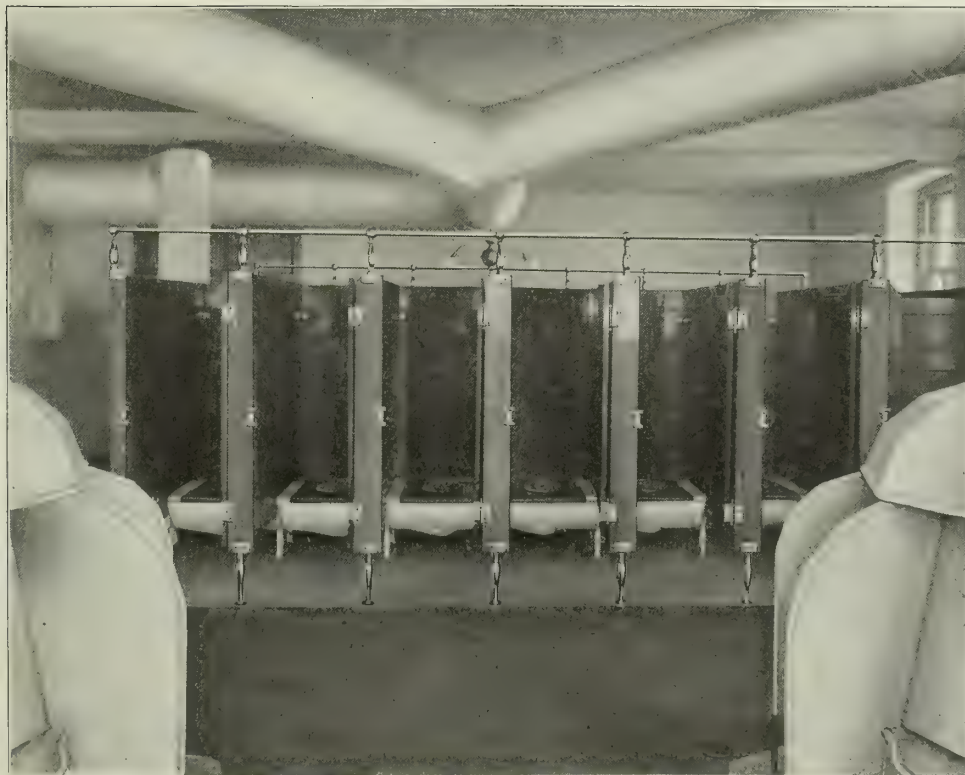
"COLUMBUS" OCTAGON VENTILATED URINAL



"COLUMBUS" VENTILATED CLOSET



"COLUMBUS" SIDE-WALL VENTILATED URINAL



BOYS' TOILET-ROOM, CLOSETS AND OCTAGON URINALS IN POSITION
Installed in West High School, Columbus, Ohio

CATALOGUES.

Write for catalogues of our products.

THE HUMPHRYES MANUFACTURING CO.

Manufacturers of Sanitary Enameled Ware

MANSFIELD, OHIO

NEW YORK OFFICE AND WAREHOUSE: 636-638 WEST 4TH STREET

PRODUCTS.

Complete line of SANITARY ENAMELED WARE, including BATHTUBS, LAVATORIES, SINK BACKS, LAUNDRY TRAYS, FLAT-RIM SINKS, ONE and TWO-PIECE ROLL-RIM SINKS, FLAT- and ROLL-RIM SLOP SINKS, ONE and TWO-PIECE URINALS, HIGH and LOW TANK CLOSETS, IRON and WOOD DRAINBOARDS; also, complete line of PLUMBERS' BRASS GOODS, including FULLER BIBBS, BATH COCKS and BASIN COCKS; COMPRESSION BIBBS, BATH COCKS and BASIN COCKS; TRAPS; BATH and BASIN WASTES; CLOSET FITTINGS; COMPRESSION STOPS; BATH and BASIN SUPPLY PIPES; LAUNDRY TRAY WASTES.

QUALITY.

Our line embraces a variety of popular and artistic designs. It is guaranteed by us to be of strictly first quality. The standard of the world.

FACILITIES.

We have a large modern plant particularly adapted to the manufacture of these goods, and are so situated as to insure prompt execution and delivery of all orders.

ESTIMATES AND PRICES.

We are always glad to co-operate in every way with architects relative to sanitary installations, and are pleased to furnish estimates on jobs large or small.



"BLANCO" SINK, PLATE M 330



"PLYMOUTH" BATHTUB, PLATE M 112



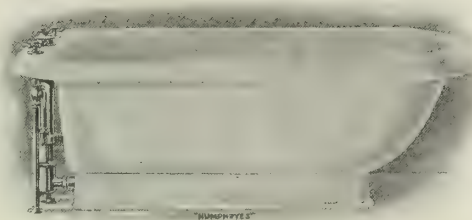
"GRACIA" SINK, PLATE M 315



"LIRIO" CLOSET, PLATE M 478



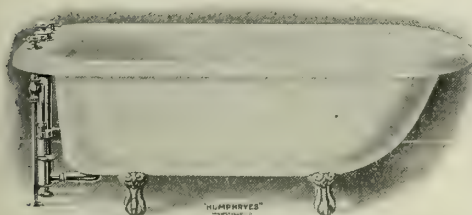
"CARMELA" LAVATORY, PLATE M 220



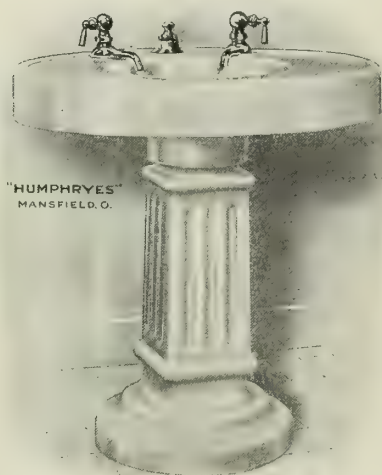
"LAROSA" BATHTUB, PLATE M 85



"TEPIC" LAVATORY, PLATE M 225



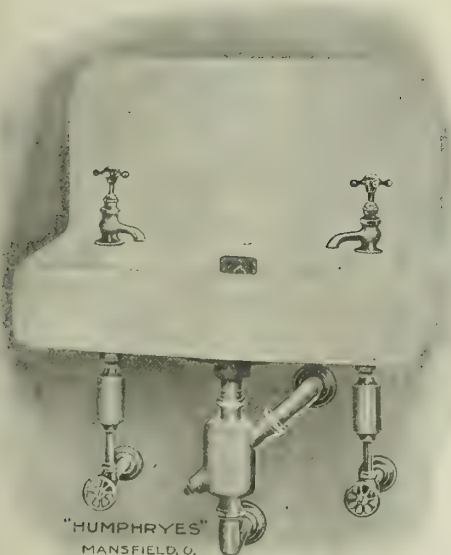
"HERMOSO" BATHTUB, PLATE M 80



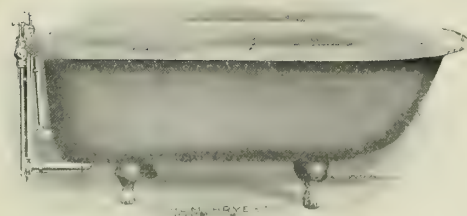
"DIBUJO" LAVATORY, PLATE M 203



"PLYMOUTH" BATH TUB, PLATE M 113



"AVALON" LAVATORY, PLATE M 214
Can be furnished with "Ideal" Basin Waste



"PLYMOUTH" BATH TUB, PLATE M 114



"DONCELLA" LAVATORY, PLATE M 222
Can be furnished with "Ideal" Basin Waste.
Also made with Right or Left End Back only

I X L PUMP & MFG. CO.

PATENTEES AND MAKERS OF

Simple Plumbing Specialties

957-961 North Ninth Street

958-962 North Darien Street

PHILADELPHIA, PA.

PRODUCTS.

AIR COMPRESSORS, BEER PUMPS, ANTI-FREEZING CLOSETS, AUTOMATIC SIPHON TANKS, SEAT-ACTION and HIGH-TANK COMBINATIONS, HOPPER VALVES, HOPPER FLANGES, HOPPER VALVE RESTS, BEER-PIPE SUPPORTS, BASIN CLAMPS, SEWAGE EJECTORS, CELLAR DRAINERS, HOUSE and WELL PUMPS, and AIR and WATER REGULATORS.

MATERIAL.

In the manufacture of our goods we use only the best brass, copper and rubber, and well-seasoned lumber in our woodwork.

QUALITY.

We manufacture a line of *simple plumbing goods* of the very best quality, as our name "I X L" implies; so that those who have used our goods all speak of them in the highest terms of praise as to their appearance and working qualities. In their construction we use no special washers, for our motto is "Simplicity."

"I X L" AIR COMPRESSOR OR BEER PUMP.

The "I X L" Air Compressor and Beer Pump is extensively used by doctors, dentists, barbers, hotel-keepers, and other users of compressed air.

It is a quick producer of air, for in a few minutes you get the full pressure. It collects no slime, and gives a dry, pure and cool body of air at each stroke. It is not affected by muddy or gritty water, as there are only two washers on inside of compressor. It will reduce water rent about 60 per cent.

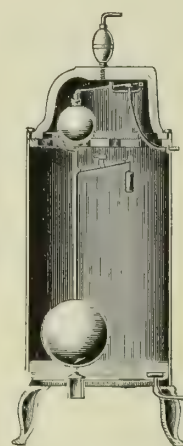
"I X L" ANTI-FREEZING CLOSET COMBINATION.

The "I X L" Anti-Freezing Closet Combination is guaranteed against freezing, if properly set. It consists of a low-down galvanized tank with lid; porcelain-lined oval-flushing rim hopper; finished oak swinging-seat, with equalized weight, self-closing hopper valve; valve rest; floor flange; bolts and nuts. All iron is galvanized. It has no flush pipe, no washers, and no fitting inside of tank; hence complete drainage of all water surfaces. It is quickly adjusted. Fasten tank against wall, couple to closet and it is ready for use.

"SURI" URINAL COMBINATION.

The "Suri" Urinal Combination includes a "Suri" Automatic Siphon Tank (any size or style), N. P. flush pipe, brackets and "I X L" Urinal Sprays (one 8-gallon tank will feed eight sprays). It can be furnished with porcelain urinal, if desired.

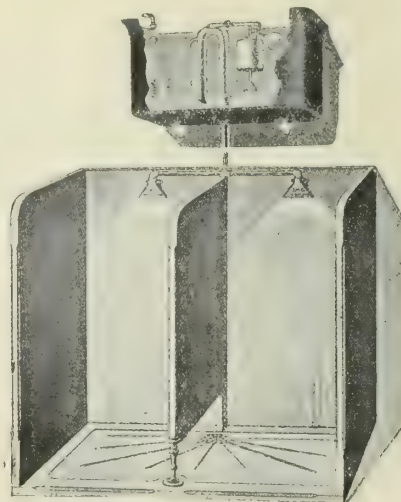
Sprays are *positive* in action; throw a sheet of water against slab, with a downward force; will not splash, and keeps the floor dry. The mouth of sprays is so constructed that the slab forms the back of sprays, preventing the mouth from crystallizing.



"I X L" AIR COMPRESSOR



"I X L" ANTI-FREEZING CLOSET COMBINATION



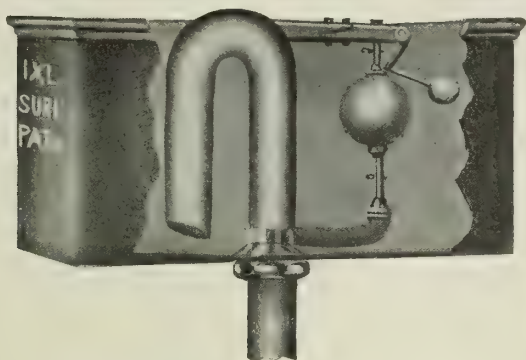
"SURI" URINAL COMBINATION



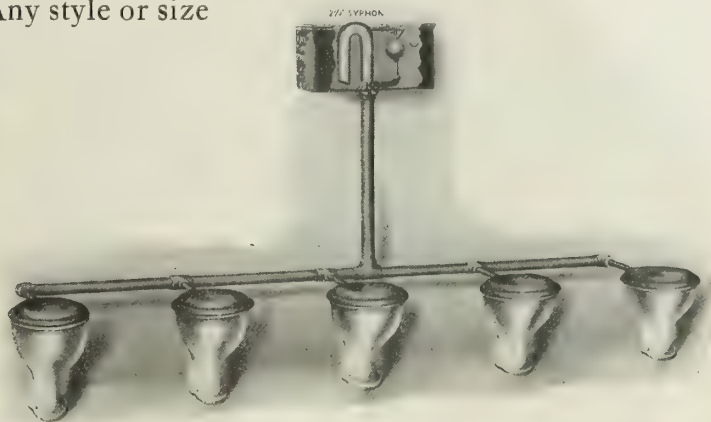
"I X L" URINAL SPRAYS

"SURI" AUTOMATIC SIPHON TANKS.

These Tanks can be used for single Closet or Urinal, Latrines or Range Closets, or a Battery of Closets or Urinals. They are *positive* in action, and can be operated by a drop of water or the full pressure. Siphons are made in the following sizes: $1\frac{1}{4}$, 2, and $2\frac{1}{2}$ inches. Any style or size of tanks furnished.



"SURI" AUTOMATIC SIPHON TANK



"SURI" AUTOMATIC TANK, SHOWN CONNECTED TO A BATTERY OF CLOSETS

"SURO" SEAT-ACTION COMBINATION.

This Combination includes an 8-gallon "Suro" tank (any size), N. P. flush and rod casing pipes, brackets and clamps, swinging saddle-seat with equalized weight, "Suro" hinges and posts, porcelain closet (any style), floor plates, bolts, etc. When set in position, no parts can be *tampered* with. The seat action is *positive*; and tanks will give a full flush, with a displacement of 3 inches of water.

"POSITO" HIGH-TANK COMBINATION.

This Combination includes an 8-gallon "Posito" siphon tank (any size), N. P. flush pipe, brackets, clamps and chain and cut-glass pull, saddle seat and lid, "Suro" hinges and posts, porcelain (any style) closet, floor plates, bolts, etc. It is *positive* in action.

"I X L" WATER OR AIR REGULATOR.

The "I X L" Regulator for controlling any pressure can be used in conjunction with the "I X L" Air Compressor or Beer Pump. It is quick in action, and does not labor in opening. It can be used for either water or air.

"I X L" BEER PIPE SUPPORT.

The Beer-Pipe Support prevents the breakage, kinking or flattening of the beer pipes. The pipes having a large radius lie in a channel of the support; and, having a bell-shaped mouth, the support allows a full swing of the beer pipe in all directions, making it impossible for the beer pipes to flatten or kink. It can be adjusted while the pipes are in position.

PRICES.

Our prices are low, when you consider the quality of our products.

DISTRIBUTION.

We sell to the trade only. Send for descriptive catalogue with prices and discounts.

GUARANTEE.

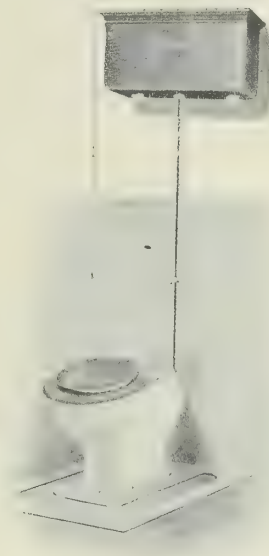
We guarantee all of our goods for one year (five, if necessary), to be positive in action, and to save water taxes.

REFERENCES.

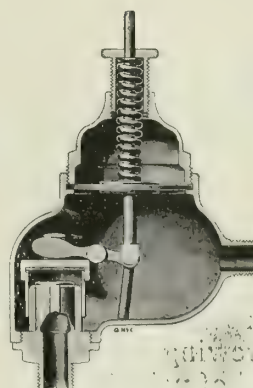
Send for list of testimonials.



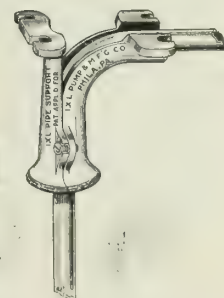
"SURO" SEAT-ACTION CLOSET COMBINATION



"POSITO" HIGH-TANK COMBINATION



"I X L" WATER OR AIR REGULATOR



"I X L" BEER PIPE SUPPORT

KEENAN STRUCTURAL SLATE CO.

BANGOR, PA.

AMERICAN BANGOR QUARRIES, BANGOR, PA.

MILLS

MANTEL FACTORY, BANGOR, PA.

BANGOR EXCELSIOR QUARRIES, BANGOR, PA.

PRODUCTS.

SLATE BLACKBOARDS; also, STRUCTURAL and SANITARY SLATE, adaptable for the following uses:

STEPS	MANTELS	GRAVE COVERS	TABLE TOPS
RISERS	FIREBOARDS	GRAVE MARKERS	KITCHEN SINKS
PLATFORMS	URINALS	CISTERN COVERS	WASH-TUBS
FLOOR TILE	SHOWER STALLS	FEED AND WATER TROUGHS	SINK TOPS
WAINSCOTING	BATHROOM PARTITIONS	OYSTER TROUGHS	LAVATORY TOPS
VESTIBULE PANELS	MORGUE SLABS	ELECTRIC SWITCH-BOARDS	REFRIGERATOR SHELVES
BASE	OPERATING TABLES	FISH TANKS	CUPBOARD AND PANTRY SHELVES
DOWELS	GERM-PROOF FLOORING	AQUARIUM BOTTOMS	SHELVING OF ALL SORTS
LINTELS	MAUSOLEUMS	PASTRY BOARDS	
WINDOW SILLS	GRAVE VAULTS		
COPING			
TILING			

Also for VATS and TANKS for Dye Works and Chemical Works, Dairies, Bottling Establishments, Canneries, Soda Fountains, Slaughter-Houses, Bakeries, Florists, Tanneries.

ADAPTABILITY.

Slate, the only workable stone extant, owing to its strength, durability, non-combustibility, cleanliness, and absolute non-absorption, is well adapted for all kinds of sanitary work and for a large variety of structural purposes in the interior finish of buildings. Our natural-slate blackboards are unexcelled for finish and durability.

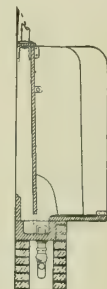
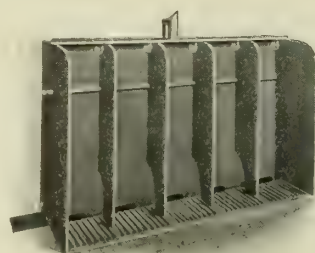
SPECIAL
K. S. S. CO.
VENTILATED
SLATE
URINALS.

These Urinals are well known and commend themselves to every architect, sanitary engineer, etc., for their ventilating effect upon the entire room. Through an opening near the urinal floor a constant flow of air passes into the air space behind the back, and out at the top through a vent flue. (See cross-sections herewith.) By connecting it with a warm-air flue or chimney an efficient draft is generated.

The entire surface of the back slabs is constantly flushed from a perforated brass wash-down pipe fitted with a loose-key stop-cock to regulate the flow of water, reducing it to a minimum.

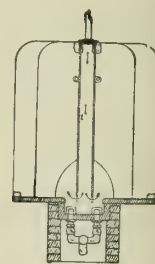
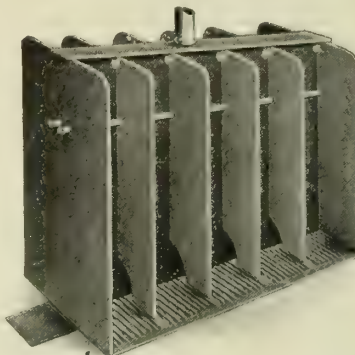
Special attention is invited to the gutter, made from a solid block of slate, and filled with a constantly changing body of water, 3" deep.

A standing waste siphons the gutter periodically. When flushing out the toilet-room the surplus water can be disposed of by simply unscrewing the cap of the waste. A manhole at end of urinal gives ready access to the gutter and its connections.



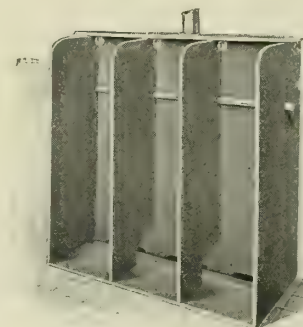
Section

FIG. B5. K. S. S. CO. SPECIAL SINGLE-VENTILATED SLATE URINAL



Section

FIG. B6. K. S. S. CO. SPECIAL DOUBLE-VENTILATED SLATE URINAL



Section

FIG. B8. K. S. S. CO. SINGLE-VENTILATED SLATE URINAL

All our goods, intended to be set up at destination, are assembled, fitted, and tested at the factories, before shipment.

We show illustrations and cross sections of a few standard types, but will make special styles for any specifications furnished.

Fig. B5 shows K. S. S. Co. Special Single-Ventilated Slate Urinal. Thickness of partitions, back and cap, 1"; grooved floor slab, 2"; manhole cover, 1 $\frac{1}{4}$ "; gutter 6". N. P. brass standing waste-pipe, perforated wash-down pipe with loose-key stop-cock, partition braces and vent collar.

Fig. B6 shows K. S. S. Co. Special Double-Ventilated Slate Urinal. Favorite type with the United States Government for barracks, etc. Should be erected well out toward the middle of the room, allowing free access of air from all parts. Thickness of slabs and fittings same as Fig. B5.

Fig. B8 shows K. S. S. Co. Single-Ventilated Slate Urinal. Same as B5, except that gutter does not provide for standing water, disposing of same by a bell trap. Thickness of partitions, back and cap, 1"; floor slab 1 $\frac{1}{4}$ "; gutter 3". N. P. brass bell trap, perforated wash-down pipe with loose-key stop-cock, partition braces and vent collar.

Our Combination Stalls shown in Fig. B19 are very much in favor where only limited space is available for toilet-rooms. Backs and partitions 1" thick; urinal floor slab 1 $\frac{1}{2}$ " thick; closet stiles 1 $\frac{1}{4}$ " thick. Furnished with N. P. brass supports and standard, top standards, railings, clamps and angles.

The shower and bathroom stalls shown herewith are specially adapted for use in hospitals, hotels, gymnasiums, sanitariums, recreation buildings of industrial establishments, etc.

SPECIAL
SHOWER
STALLS AND
BATHROOM
PARTITIONS.

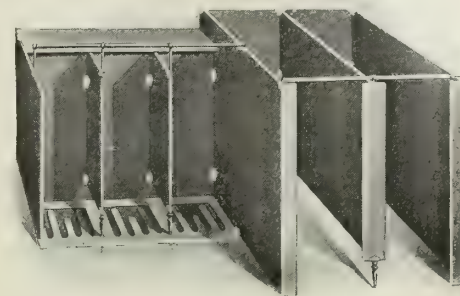


FIG. B19. K. S. S. CO. COMBINATION URINAL AND CLOSET STALLS

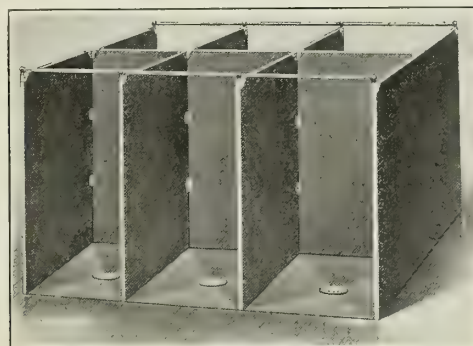


FIG. B28. K. S. S. CO. SPECIAL GOVERNMENT STANDARD DOUBLE-SLATE SHOWER STALLS

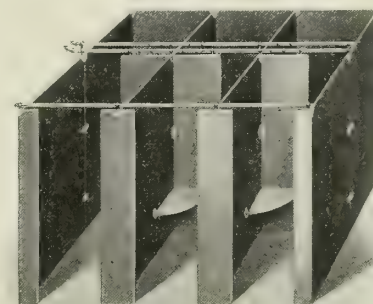


FIG. B29. K. S. S. CO. SPECIAL GOVERNMENT STANDARD SLATE SHOWER AND DRESSING-ROOM STALLS WITH SLATE SEATS



FIG. B31. K. S. S. CO. SLATE NEEDLE AND SHAMPOO BATH STALL

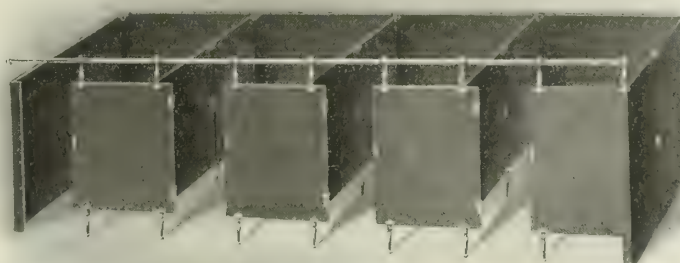


FIG. B33. K. S. S. CO. SPECIAL SLATE BATHROOM STALLS FOR HOSPITALS, BATHHOUSES, ETC.

ILLUSTRATIONS.

Fig. B28 K. S. S. Co. Special Government Standard Double-Slate Shower Stalls. Thickness of back and partitions 1". Furnished with N. P. brass clamps, angles, top standards and railings. Also furnished in single set.

Fig. B29 shows K. S. S. Co. Special Government Standard Slate Shower and Dressing-Room Stalls with slate seats. Thickness of seats $1\frac{1}{2}$ "; stiles $1\frac{1}{4}$ "; backs, ends, and partitions 1". Furnished with N. P. brass supports, clamps, angles, top standards and railing.

Can be furnished double by setting back to back.

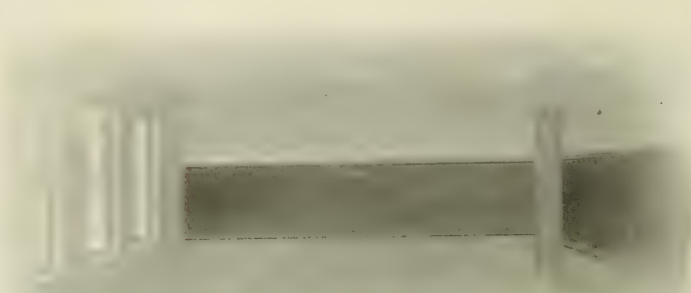
Fig. B33 shows K. S. S. Co. Special Slate Bathroom Stalls for hospitals, bathhouses, etc. Thickness of backs and partitions, 1"; stiles $1\frac{1}{4}$ ". Furnished with N. P. brass partition and stile supports, clamps, angles, top standards and railing.

Can be furnished double by setting back to back.

Fig. B31 shows K. S. S. Co. Slate Needle and Shampoo Bath Stall, a very popular equipment for private residences, club rooms, gymnasiums. Backs, ends and curbs extend to, and are embedded 1" in cement floor. Clamps, angles, top rail and standards, nickel-plated. Height of back and ends from floor, 6' 6". Stall, 3' 2" x 3' 2", inside measurements. Thickness of back and ends, 1". It can be furnished with countersunk floor if desired.

NATURAL-SLATE BLACKBOARDS.

K. S. S. Co. Natural-Slate Blackboards do not warp, split, crack, buckle, peel off; do not wear out, do not fade, do not absorb moisture or any impurities. Natural-Slate Blackboards offer a smooth writing surface, have proved to be the most economical in the end, and can be shipped any distance. Being made from the same material as roofing-slate, they are durable; whereas artificial blackboards, or so-called "composition" blackboards, being made from pulp, prepared in and drained from a solution of pasty water, are bound to disintegrate. When a building is torn down, K. S. S. Co. Blackboards can always be used again, being always as good as new.



NATURAL-SLATE BLACKBOARD ON SCHOOLROOM WALLS

Note how smoothly it fits the walls



BLACKBOARD SECTION

Showing most modern method of installing Natural-Slate Blackboard

CO-OPERATIVE SERVICE.

Co-operation with architects, engineers and others interested, is cordially offered; invitations to furnish additional information, to send our catalogue, or to bid on blue-prints or special requirements are respectfully solicited. All our material and workmanship are guaranteed. All our work complies with underwriters' and sanitary laws.

TRADE-MARK.

To be sure of getting the best Structural or Sanitary Slate specify: "Trade-Mark to be on every slab."

INSTALLATIONS.

We have furnished numerous installations to the United States Government for its army posts, naval stations, etc., throughout the United States and its foreign possessions as shown by the following partial list:

Fort Leavenworth, Kan.
Fort Riley, Kan.
Fort Des Moines, Iowa
Fort Han's Mission, Alaska
Fort McKinley, Me.
Fort Snelling, Minn.
Fort Meads, S. Dak.
Fort McRee, Fla.
Fort Totten, N. Y.
Fort Hamilton, N. Y.

Fort Lincoln, N. Dak.
Fort Ethan Allen, Vt.
Fort Wm. McHenry, Vt.

GOVERNMENT BARRACKS

Bismarck, N. Dak.
Vancouver, Wash.

ACADEMIES

Annapolis Naval Academy
West Point Military Academy



INSIST ON GETTING IT
TRADE-MARK

THE McCRUM-HOWELL CO.

MANUFACTURERS OF

"Richmond" Porcelain Enameled Ware, Boilers and Radiators

FACTORY
UNIONTOWN, PA.

Park Avenue and 41st Street
NEW YORK, N. Y.

"RICHMOND"
TRADE-MARK

PRODUCTS.

"RICHMOND" PORCELAIN ENAMELED BATHS, LAVATORIES and SINKS.

"RICHMOND" STEAM and WATER BOILERS and RADIATORS, as described elsewhere in this Catalogue, for which see our name in General Index.

INTRODUC-
TION.

Since the completion, nearly two years ago, of our new Enameled-Ware Plant at Uniontown, we have been steadily enlarging our line until we now have as varied an assortment of Bathroom and Kitchen Fixtures as is ordinarily required.

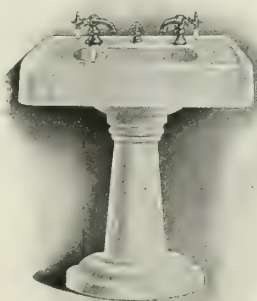
Every detail in the process of manufacture has been brought to the highest perfection, so that our goods are not excelled by those of any other manufacturer.

FIRST-
QUALITY
GOODS.

In this line our product is assorted into Firsts and Seconds. The first-quality goods are guaranteed to be faultless, and carry our guarantee label.

SIZES,
PRICES,
SPECIAL
CATALOGUE.

We give herewith data of sizes and prices, and a few illustrations. We manufacture an extensive variety in each line. Our Special Catalogue of "Richmond" Enameled Ware containing the additional patterns and other information is promptly sent upon request.



NO. E-610. PEDESTAL
LAVATORY

LIST PRICES (LESS FITTINGS) OF "RICHMOND" PORCELAIN ENAMELED WARE

Bathtubs

Number	Width over rim	4½ ft.	5 ft.	5½ ft.
200	26 in.	\$21.75	\$24.00	\$27.75
210	30 in.	24.00	27.00	30.75

Lavatories

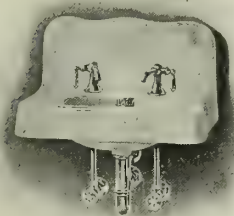
Number	Slab size in inches	Bowl size in inches	Back Height, inches	List Price
610	18 x 24	11 x 15		\$26.00
620	18 x 24	12 x 15	10	16.50
630	18 x 24	12 x 15	10	14.00
730	18 x 24	12 x 15	10½	14.00
730	20 x 24	12 x 15	12	17.50
640	18 x 21	11 x 14	8	10.25
645	18 in. long on side	11 x 14	8	10.00
650	16 x 20	11 x 14	10	9.50
650	18 x 24	12 x 15	10	12.00
660	18 x 21	11 x 14	8	7.25
665	17 in. long on side	11 x 14	8	7.75
670	16 x 19	10½ x 13	6	6.50
675	17 in. long on side	11 x 14	6	7.00
680	16 x 14	12 in. diameter	5	5.00

Sinks

Number and Description			Sizes, Inches		
	16 x 24	18 x 24	18 x 30	18 x 36	20 x 30
*800 with Concealed Hangers	\$8.75	\$9.25	\$10.75	\$12.00	\$11.50
†812 with Legs	9.25	9.75	11.25	12.50	12.00
850 with Square Corners	3.25	3.50	4.25	4.75	4.50
860 with Round Corners	3.50	....	4.50	5.00	4.75
Number and Description			Sizes, Inches		
	20 x 36	20 x 40	22 x 36	22 x 42	
*800 with Concealed Hangers	\$12.75	\$14.00	\$13.25	\$14.50	
†812 with Legs	13.25	14.50	13.75	15.00	
850	5.25	5.75	....	....	

*The same sink furnished with brackets, known as our E801, at \$0.50 each list, or with legs, known as our E802, at \$1.00 each list, in addition to above lists.

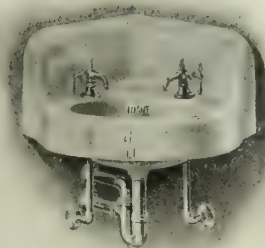
†The same sink furnished with brackets, known as our E811, at \$0.50 each list, less than above list.



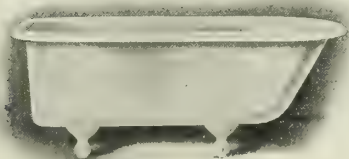
NO. E-620. LAVATORY



NO. E-670. LAVATORY



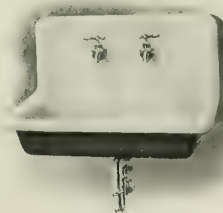
NO. E-645. CORNER LAVATORY



NO. E-200. BATHTUB



NO. E-860. FLAT-RIM SINK



NO. E-800. ONE-PIECE ROLL-RIM
SINK

THOS. KELLY & BROS.

Manufacturers of Plumbers' Specialties
Congress Street and 46th Avenue
CHICAGO, ILL.

TELEPHONE, KEDZIE 83

PRODUCTS.

"KELLY"
SEAT-ACTION
AFTER-FLUSH
WATER-
CLOSETS.

Manufacturers, Patentees and Dealers in the following "KELLY" PLUMBING SPECIALTIES: SEAT-ACTION, AFTER-FLUSH WATER-CLOSETS, FROST-PROOF WATER-CLOSETS, HORN-LESS WATER-CLOSETS, ENAMELED IRON and JUVENILE WATER-CLOSETS for School Purposes, and "KELLY" OCTOPUS CLOSET FITTING.

The action of the seat operates the valve and gives a strong after flush. There are no springs, weights or levers used. It is operated entirely by water pressure. When the seat



FIG. 126. "KELLY" SEAT-ACTION CLOSET
WITH OFFSET FOR HIDDEN TANK



FIG. 125. "KELLY"
SEAT-ACTION
WATER-CLOSET
Pat. Sept. 5, 1899; Sept.
24, 1901

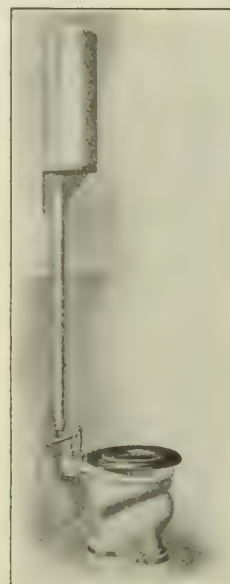


FIG. 131. "KELLY"
SEAT-ACTION
WATER-CLOSET
Pat. Feb. 12, 1907

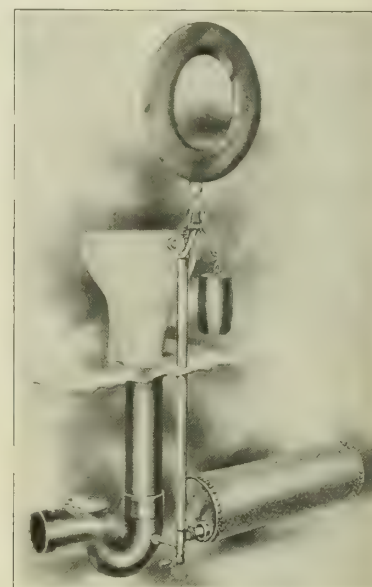


FIG. 118. "KELLY" FROST-PROOF
WATER-CLOSET
Pat. Feb. 23, 1904

is pressed down the tank fills as far as the water pressure will compress the air in the tank, and when the closet seat is released the compressed air drives the water from the tank into the closet with great force, and will flush out the closet thoroughly and leave a refill of clear water.

"KELLY"
FROST-PROOF
WATER-
CLOSETS.

"Kelly" Frost-Proof Water-Closets shown in Figs. 118 and 119 are suitable wherever a closet is exposed to frost, or for churches, schools, and factories that are not heated at all times.

All space underneath can be filled with earth to floor line. The valve can be repacked from above without digging up.

The flush pipe valve and all fittings attached to same are brass. We test all our Water-Closets with water pressure before shipping. The tank as shown in cuts is two feet below the floor. We can furnish this apparatus with any form of bowl, and also arrange it so that the bowl will be one or more stories above the tank.

There is no water standing above the point where the supply pipe is connected, which is about two feet six inches below the top of the floor, and when filled with earth to floor level no frost will ever reach the valve. We can furnish this closet to suit any depth.



FIG. 119. "KELLY" FROST-
PROOF WATER-
CLOSET
Pat. Feb. 23, 1904

INSTALLATION.

Our closets are suitable for installation in all classes of buildings where a water pressure of fifteen pounds or more is maintained. We furnish roughing-in measurements with all our goods, which are easily installed by any first-class workman.

"KELLY" OCTOPUS FITTING.

The "Kelly" Octopus Closet Fitting (see illustration) is a one-piece casting, and when set in place completes the roughing-in for eight water-closets. It revolutionizes the arrangement of the public toilet-room, taking closets away from the walls and arranging them in circles in the middle of the room. Partitions are fastened to our special fittings around the main stack, as are also all tanks and water supply connections. A floor space only seven feet in diameter is required for each set of eight closets.

ADVANTAGES.

Sanitation is improved and real ventilation made practical. The walls are left free for windows, lavatories, or both. Over sixty calked joints are done away with in each toilet-room containing sixteen closets. No skill required to install. No closet is over twenty inches from the main ventilation stack, and has independent discharge into the stack. No back venting is required. Back venting is necessary with the old type of toilet-room, where closets are often thirty feet from the ventilation pipe. The "Kelly" Octopus Fitting affords a saving in cost of labor, material and time.

DETAILS, SHIPMENTS AND PRICES.

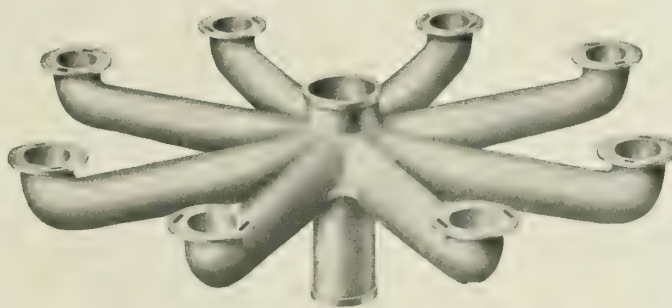
We will quote prices and furnish details for the application of the "Kelly" Octopus Closet Fitting for any public toilet-room on receipt of blue-prints. Prices as shown complete with everything illustrated on this page, either galvanized steel or wood partitions, \$500.00, list.

Prices on slate or marble partitions on application.

We carry all our products in stock and can make prompt shipments to all points. Prices and full descriptive catalogue will be mailed on request.



"KELLY" OCTOPUS CLOSET FITTING COMPLETE, WITH EIGHT "KELLY" AUTOMATIC CLOSETS. PARTITIONS FOR SCHOOL OR FACTORY INSTALLATION



"KELLY" OCTOPUS CLOSET FITTING
One-piece Casting. Pat. Oct. 20, 1908; Dec. 1, 1908

KNOTT-VAN ARNAM MFG. CO.

MANUFACTURERS OF

High-Grade Closet Tanks and Seats

FORT WAYNE, IND.

PRODUCTS.

ILLUSTRATIONS.

SUPERIOR QUALITY.

MANUFACTURING FACILITIES.

HIGH-GRADE CLOSET TANKS and SEATS.

We make a large and complete line of Tanks and Seats, but show herewith only two of our leaders.

These are made in plain sawed oak, quarter-sawed oak, genuine mahogany, genuine cherry, bird's-eye maple, white enamel, or mahogany finish.

"None better made."

When we began the manufacture of this line we did so knowing that the plumbers had always had more trouble with the Closet Combinations than with any other item on the list of supplies. This was due to various reasons, among others a failure to inspect carefully the working parts and the overlooking of the importance of using nothing in the way of glue, filler, varnish, etc., but what is first-class. The tendency being to cater to the trade that is looking for the lowest possible price, the goods of necessity had to suffer.

We determined at the outset that we would not merely talk quality; therefore we instituted as our motto throughout the factory, "Quality first, quality last, quality always," and our rigid inspection makes sure that our good will come up to any claims we make for them.

We realized that a good name is a valuable asset and have built upon that foundation, until our goods are known to be *as near perfection* as can be produced.

Instead of cutting the quality after we had a reputation established, we have ever sought to improve our product until now we are making our goods better than ever before, as has been proved.

We have not only equipped our entire factory, including our brass departments, with the latest and best machinery, but in addition to this have always given our product our personal attention.



NO. 110 TANK



NO. 112 TANK



KNOTT-VAN ARNAM MFG. CO.

NO. 550 SEAT, DOWEL CONSTRUCTION



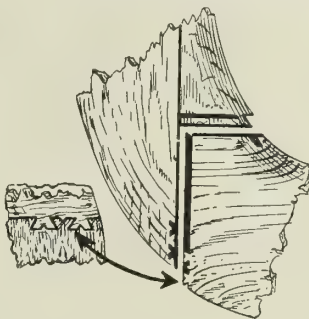
KNOTT-VAN ARNAM MFG. CO.

NO. 4 SEAT, IF OF SIX-PIECE CONSTRUCTION, AND NO. 24 SEAT, IF OF "SAMSON" CONSTRUCTION

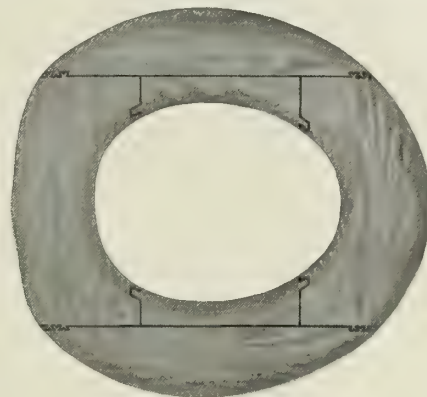
The advantage of having our own brass shops can readily be seen when you consider whether it is better to get a line of goods made throughout under the manufacturer's supervision than to have the working parts picked up here and there, wherever they can be bought the cheapest, and then thrown together to make a tank or a seat. Not only in our wood-working plant but in our brass shops we always insist upon the same degree of care being used.

CONSTRUCTION OF
REGULAR
SIX-PIECE
SEAT.

The small section shows how our Six-Piece Seat is joined and locked together. The four inner sections are first joined with the strong tongue and groove joints, same as any ordinary four-piece seat. The two side-sections are then run on by a very expensive patented machine, making the dovetail lock-joint here shown, absolutely locking and reinforcing the whole construction so that the joints can not break, split or pull apart. We furnish this seat on all orders unless otherwise specified and without extra cost.



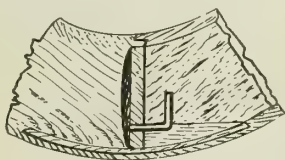
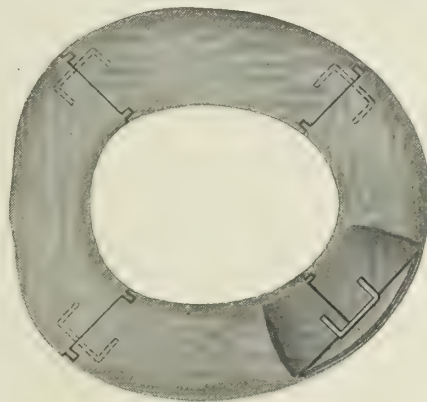
DOVETAIL LOCK-JOINT



REGULAR SIX-PIECE SEAT

"SAMSON"
SEAT.

This is the strongest seat on the market to-day. It is correctly constructed from a mechanical standpoint. There are simply four pieces of thoroughly seasoned wood held rigidly together by four sturdy steel clamps, with good tongue and groove joints to boot. Note particularly that the clamps are not inserted from the bottom, where the opening would be subject to the disintegrating effect of moisture and acid vapors. The outside edge is plainly the only proper place; and you can see by this section the thorough workmanship and the strong, neat method of closing the opening, which is practically unnoticed when finished.

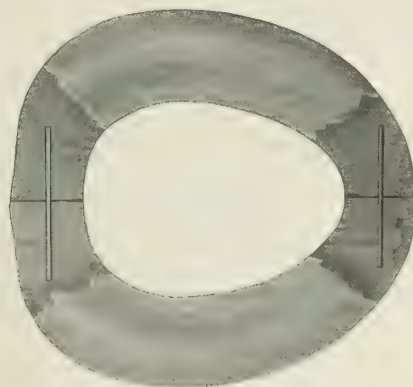
SECTION SHOWING
CLAMP

"SAMSON" SEAT

SADDLE SEAT,
HICKORY
DOWELS.

It is admitted that to be really handsome and perfect the saddle seat should have the grain running all one way. For nearly ten years we have been making our Saddle Pattern Seats with hickory dowels, as it is the strongest, toughest wood for the purpose; and wood makes the best possible dowel, because glue will cement wood to wood, but not to iron or steel. Using good glue, wood adheres tenaciously to wood, the short grain can not split or break and the joints can not come apart; so we have the best and handsomest Saddle Seat made.

We guarantee all our Seats and our guarantee is good.



SADDLE SEAT, HICKORY DOWELS

J. M. KOHLER SONS CO.

MANUFACTURERS OF

Porcelain Enameled Iron Sanitary Ware

SHEBOYGAN, WIS.

NEW YORK, N. Y., 47 West 42nd Street
TELEPHONE, 3723 BRYANT

BRANCH OFFICES AND SALESROOMS
SAN FRANCISCO, CAL.

CHICAGO, ILL., 514 First National Bank Building
TELEPHONE, 5930 CENTRAL

PRODUCTS.

"KOHLER'S" SUPERIOR PORCELAIN ENAMELED IRON SANITARY WARE, and consisting of a complete line of BATH-TUBS, SITZ BATHS, FOOT TUBS, SHOWER RECEPTORS, CHILD BATHS, LAVATORIES, DRINKING FOUNTAINS, ROLL-RIM and FLAT-RIM KITCHEN and SLOP SINKS, DRAINBOARDS, SINK BACKS, LAUNDRY TUBS, URINALS, WATER-CLOSETS, CLOSET TANKS and COMBINATIONS.



CONSTRUCTION.

The manufacture embraces a large variety of modern patterns designed on handsome, graceful lines and constructed in accordance with the most approved sanitary requirements. Our ware is coated with a beautiful glossy pure white enamel which by our process of manufacture is so thoroughly fused into the iron as to make it practically indestructible.

FACILITIES.

We have a large modern plant, splendidly equipped and desirably located with convenient side-track facilities, which, in conjunction with our own force of skilled, experienced labor, enables us to produce economically in large quantities "Kohler's" Superior Porcelain Enameled Sanitary Ware.

GUARANTEE.

Every piece of "Kohler's" Superior Porcelain Enameled Iron Sanitary Ware has the name "Kohler" cast on it in raised letters and bears our Maroon and Gold Label, guaranteeing the goods to be strictly first-class so far as workmanship, finish and durability are concerned. When specifying "Kohler's" Superior goods always give plate number and size to avoid confusion and errors.

SPECIFICATIONS.

The use of the following form will prevent the possible substitution of goods not "Kohler's":

"All Porcelain Enameled Iron Sanitary bathroom, laundry, and kitchen ware used must bear the name 'KOHLER' in raised letters and be furnished by J. M. KOHLER SONS Co., Sheboygan, Wis."

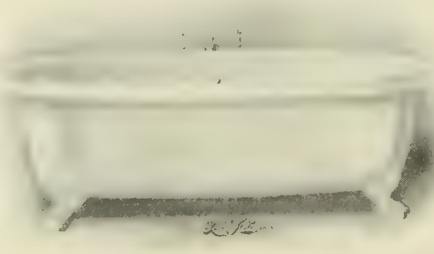
PRICES.



"CZARINA" BATH—Plate A 10 A

Width of roll rim, 43"; width over rim at center, 37"; width inside, 27½"; depth inside, 17½"; height from floor to top of rim, 21½"; length over rim, 70"

List price, complete, \$79.50



"DUCHESS" BATH—Plate A 28 A

Width of roll rim, 34"; width over rim at center, 33½"; width inside, 26"; depth inside, 17½"; height from floor to top of rim, 21½"; length over rim, 66½"

List price, complete, \$56.50



"CARLTON" BATH—Plate A 38 A

Nominal sizes, 5'-5½"; width of roll rim, 4"; width over rim, 32½"; width inside, 24½"; depth inside, 17"; height from floor to top of rim, 22½"; length over rim, 60"-66"

List price, complete, \$54.00, \$58.00



"FAIRFAX" LAVATORY—Plate A 151

Slab, 24" x 34"; basin, 14" x 18"

List price, including combination supply and waste fixture, \$52.50



"ESMOND" LAVATORY

List price, including secret waste

Plate	Slab	Basin	Back	
A 453	20" x 24"	12" x 15"	12"	\$30.25
A 457	22" x 27"	14" x 18"	12"	34.50
A 461	22" x 30"	14" x 18"	12"	37.50



"BELLAIRS" LAVATORY—Plate A 157

Slab, 24" x 34"; basin, 14" x 18"

List price, including combination supply and waste fixture, \$51.00



"DELEVAN" FOUNTAIN—Plate A 995

Width, 13½"; front to wall, 10½"; height, 24"

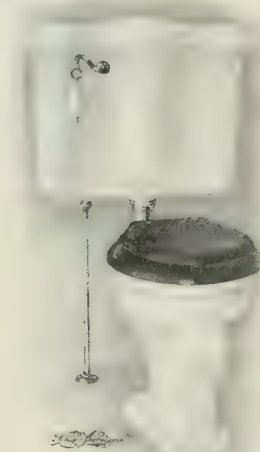
List price, complete, \$10.00



"ELKHART" FOUNTAIN—Plate A 977

Width of slab, 24"; front to wall, 14"; height of back, 12"

List price, complete, \$20.00



"ARMEDA" WATER-CLOSET COMBINATION—Plate A 1357

List price, complete, \$33.25



ONE-PIECE ROLL-RIM SLOP SINK

Plate A 1199, All-Over Enameled

Plate A 1200, Inside Enameled Only

List price, without faucets

Sizes	Plate A 1199	Plate A 1200
16" x 20" x 12"	\$21.00	\$16.00
18" x 22" x 12"	23.00	18.00
20" x 24" x 12"	25.50	20.00



ONE-PIECE ROLL-RIM LAUNDRY TUB COMBINATION

Plate A 1249, All-Over Enameled

Plate A 1250, Inside Enameled only

Length inside, 23"; length over rim, 27½"; width inside, 21½"; width over rim, 27"; depth inside, 14½"

List price, without trimmings

A 1249	\$96.50
A 1250	62.00



ONE-PIECE ROLL-RIM SINK

Plate A 1035, All over Enameled

Plate A 1036, Inside Enameled only

List price, without faucets and trap

Sizes	Plate A 1035	Plate A 1036
16" x 24"	\$12.75	\$ 8.75
18" x 24"	13.25	9.25
18" x 30"	14.75	10.75
20" x 30"	16.50	11.50
20" x 36"	17.75	12.75
20" x 40"	19.00	14.00

THE LOUIS LIPP COMPANY

Manufacturers of Sanitary Plumbing Fixtures

CINCINNATI, OHIO

BRANCH OFFICES
BOSTON, MASS. SAN FRANCISCO, CAL.

FACTORIES, FOUNDRIES AND ENAMELING WORKS
WINTON PLACE, OHIO

PRODUCTS.

A complete line of BATHTUBS, WATER-CLOSETS, LAVATORIES and FITTINGS.



"ELK" PLAIN SIPHON-JET CLOSET, PLATE 61J

With enameled iron tank (enameled inside and outside) fitted with "Elk Improved" high-pressure ball-cock, rubber float flush-valve, side push button with porcelain "push" plate, iron pipe size supply pipe; plate 402 "Elk" saddle seat, with bar hinge; all trimmings nickel-plated. No lining in tank. Outfit as described, with quartered oak or imitation mahogany seat, \$37.50. Genuine mahogany, cherry, walnut, bird's-eye maple or white enamel finish seats, extra

CLOSET
OUTFITS.

We make every style of modern closet outfit for which there is a demand. For twenty-three years we have made this branch a special feature. In addition to the enameled iron tanks illustrated, we supply also outfits with low or high tanks in quartered oak or imitation mahogany.

Our "Elk" and "Eagle" fixtures were the first enameled tank closets (tank enameled inside as well as outside) on the market.

Each fixture is tested before it leaves our plant. All the linings in our tanks are double-seamed and soldered from the outside. All oak fixtures are made from best grade quarter-sawed lumber, thoroughly kiln-dried after it has been "on sticks" in our yard; hence, there can be no chance of our woodwork warping or splitting. All closet seats are doweled together, and a corrugated steel fastener is put on each joint. Our seats are full 1½ inch and are made from 1½-inch stock.

Leaking linings are impossible with the tanks of the "Elk" (siphon-jet) and the "Eagle" (siphon washdown) outfits. The heavy coat of enamel on the inside takes the place of the heaviest lining, and no water is strong enough to eat through it and make it leak.

Our Enameled Iron Ware can be told at a glance. We give every piece of our ware three heavy dredges of enamel, while most manufacturers use only two.



"ELK" EXTRA HEAVY PLAIN SIPHON-JET CLOSET, PLATE 76J

With enameled iron tank (enameled inside and outside) fitted with high-pressure ball-cock, rubber float flush-valve, patented "Elk" (roller bearing) push button, iron pipe size supply pipe; plate 401 "Syexo" self-rising seat; all trimmings nickel-plated. Seat rises of its own accord. This outfit specially designed for public buildings, stations, prisons and all places where a closet is subjected to hard and careless usage. Bowl is double-thick vitreous china and fireproof. Seat 1½ in. thick, finished. Outfit, with quartered oak or imitation mahogany seat, \$43.50.

ENAMELED
WARE.

Every "Empire" Tub is guaranteed against all defects in workmanship and material.



"EMPIRE" ENAMELED IRON BATH, PLATE 20 J

With 3-in. roll rim, exterior unfinished, flat bottom, secret waste, 4½-inch Fuller cocks, ½-inch iron pipe, size supply pipes; all nickel-plated

Length of bath	4½ ft.	5 ft.	5½ ft.
Bath only	\$21.75	\$23.25	\$26.25
Add for fixtures as described.....			12.75
Exterior finish and gold bands, extra			

VITREOUS
CHINA
LAVATORIES.

Our "Lolico" Vitreous China Lavatories can not be excelled. They are best for sanitary security, durability, strength and attractiveness. Because of the absolutely non-absorbent surface, vitreous china always retains its glistening whiteness, never becoming discolored from alkalis, as a marble slab is sure to do.

There is not one third the chance of warping that there is in making enameled iron ware. The curves are free and shallow, the corners never sharp, always curving, offering no surface for the lodgment of dust or grease.



"LOLICO" VITREOUS CHINA SQUARE
LAVATORY PLATE, 200 J

On vitreous china pedestal. With Fuller combination basin-supply and waste fixture, nickel-plated

Size of lavatory, inches,	30 x 22
Size of basin, inches,	17 x 13
Lavatory and pedestal only,	\$32.70
Trimnings as described,	\$16.50

Supply pipes also furnished if required, extra. Can be furnished for patent overflow instead of for waste as shown, also for recessed overflow



"LOLICO" VITREOUS CHINA OVAL
LAVATORY PLATE, 215 J

On vitreous china fluted pattern pedestal. With compression cocks indexed "hot" and "cold," and bi-transit waste indexed; all nickel-plated

Size of lavatory, inches,	30 x 23	33 x 24	36 x 25
Size of basin, inches,	17 x 13	17 x 13	19 x 14
Lavatory and pedestal only,	\$31.40	\$38.75	\$48.95
Trimnings as described,			\$6.40

Supply pipes also furnished if required, extra. Can be furnished for patent overflow instead of for waste as shown



"LOLICO" VITREOUS CHINA OVAL
LAVATORY PLATE, 230 J

Made for nickel-plated brass legs and frame. With compression cocks indexed "hot" and "cold," and bi-transit waste indexed, with trap to wall; all nickel-plated

Size of lavatory, inches,	30 x 23	33 x 24	36 x 25
Size of basin, inches,	17 x 13	17 x 13	19 x 14
Lavatory only,	\$24.15	\$31.35	\$41.25
Nickel-plated brass legs, per pair,			\$19.50
Trimnings as described,			\$8.40

Supply pipes also furnished if required, extra. Can be furnished for patent overflow instead of for waste as shown

THE C. H. MUCKENHIRN CLOSET COMPANY

MANUFACTURERS OF

"Naturo" Water-Closets and Seats

DETROIT, MICH.

PRODUCTS.

"NATURO" WATER-CLOSETS and SEATS.

HYGIENIC ADVANCE.

The progress in Hygiene and Sanitary Science which distinguishes our age has established a close connection between health and physical habits and the appurtenances which we require for our personal comfort, prominent among which are Plumbing Fixtures of every kind. Of these none has greater importance than the Stool, or Water-Closet.

A NEW IDEA.

The investigations of physicians have gradually evolved the conviction that a water-closet fixture of the height commonly used and having a level seat is not in conformity with the structure of the human body and is, in fact, responsible for many serious ailments. To provide the correct position for the body the seat should be lower at the front than usual and should slant from front to back.

THE "NATURO" CLOSET.

These requirements are met by the "Naturo" Closet. Its endorsement by medical men and the rapid spread of its use in hospitals, schools, hotels, apartment houses, office buildings and residences, prove it to fill a genuine want and to be a substantial contribution to hygiene.

CLEANLINESS.

As a result of its shape, the "Naturo" Closet possesses the very valuable features of securing a greater cleanliness of seat and bowl and a stronger flush-action than the old-style apparatus.



NO. 32L "NATURO" COMBINATION

Includes vitreous "Naturo" siphon-jet bowl, plain oak low-down tank lined with 10-oz. copper, elevated high-pressure ball cock and rubber float valve, $\frac{3}{4}$ inch I. P. size supply pipe and 2 inch N. P. flush pipe. Plain oak "Naturo" seat, cast-brass hinges. Woodwork, rub polish. List price, \$32.00. Prices for special woodwork on application



NO. 40L "NATURO" COMBINATION

Includes vitreous "Naturo" siphon-jet bowl, selected quartered oak low-down tank, lined with 14 oz. copper, elevated high-pressure ball cock and rubber float valve, $\frac{3}{4}$ inch I. P. size supply pipe and 2 inch N. P. flush pipe. Selected quartered oak "Naturo" seat, with special heavy cast-brass hinges. Woodwork, piano polish. List price, \$40.00. Prices for special woodwork on application



NO. 42L "NATURO" COMBINATION

Includes vitreous "Naturo" siphon-jet bowl, vitreous earthenware tank, with elevated high-pressure ball cock and rubber float valve, $\frac{3}{4}$ inch I. P. size supply pipe and 2 inch N. P. flush pipe. Selected quartered oak "Naturo" seat, with special heavy cast-brass hinges. Seat, piano polish. List price, \$42.00. Prices on special wood for seat on application

MECHANICAL
DETAILS.

There is no new principle of operation involved in the "Naturo." The closets are either made with siphon-jet or siphon wash-down action of the best patterns and construction. They can also be supplied with spring-seat action.

The low seat produces a practically noiseless operation and very effective flushing of the bowl.

The Flushing Tanks can be of the low-down style shown in the illustrations or of the usual elevated kind.

GUARANTEE.

As we confine ourselves exclusively to the "Naturo" Closet Combinations we take particular pride in every outfit made up. We guarantee every "Naturo" Combination without reserve and that neither the seat nor the tank will split at the joints within five years after shipment.

DELIVERY.

"Naturo" Closets are carried in stock in all the usual varieties, and we guarantee prompt delivery to all points in the United States and Canada.



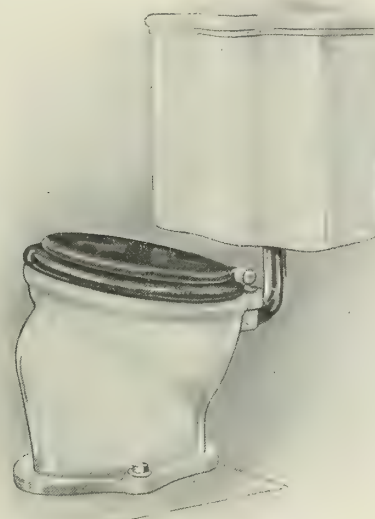
NO. 22L "NATURO" COMBINATION

Includes vitreous "Naturo" siphon wash-down bowl, plain oak low-down tank lined with 10 oz. copper, elevated high-pressure ball cock and rubber float valve, $\frac{3}{8}$ inch I. P. size supply pipe and 2 inch N. P. flush pipe. Plain oak "Naturo" seat, with cast-brass hinges. Woodwork, rub polish. List price, \$22.00. Prices for special woodwork on application



NO. 25L "NATURO" COMBINATION

Includes vitreous "Naturo" siphon wash-down bowl, plain oak low-down tank lined with 12 oz. copper, elevated high-pressure ball cock and rubber float valve, $\frac{3}{8}$ inch I. P. size supply pipe and 2 inch N. P. flush pipe. Plain oak "Naturo" seat, with cast-brass hinges. Woodwork, piano polish. List price \$25.00. Prices for special woodwork on application



NO. 30L "NATURO" COMBINATION

Includes vitreous "Naturo" siphon wash-down bowl, vitreous earthenware tank, with elevated high-pressure ball cock and rubber float valve, $\frac{3}{8}$ inch I. P. size N. P. supply pipe and 2 inch flush pipe. Selected quartered oak "Naturo" seat, with special heavy cast-brass hinges. Seat, piano polish. List price, \$30.00. Prices on special wood for seat on application

REFERENCES.

While "Naturo" combinations are used extensively for all purposes, particularly for residence work, we give herewith a few instances of prominent installations in the United States and Canada, which have been reported to us:

Van Dyk Apartments, New York, N. Y.
Arthur Hall Apartments, New York, N. Y.
Manhattan Opera House New York, N. Y.
The Severn Apartments, New York, N. Y.
H. H. Rogers' Steam Yacht "Kanawha"
Trussed Concrete Building, Detroit, Mich.
Grinnell Building, Detroit, Mich.
Lightner Building, Detroit, Mich.
Packard Motor Co. Factory, Detroit, Mich.
Detroit Thomas Motor Factory, Detroit, Mich.
New Lamson Hotel, Portland, Ore.
Beck Office Building, Portland, Ore.
Profile House Hotel, Profile Mountain, N. H.
Technical High School, Montreal, P. Q., Can.

Champlain Street School, Montreal, P. Q., Can.
Sarah Maxwell Memorial School, Montreal, P. Q., Can.
Earl Grey School, Montreal, P. Q., Can.
Henry Birks & Sons Office Building, Montreal, P. Q., Can.
Lindsay Office Building, Montreal, P. Q., Can.
Bank of Toronto, Bank and Office Building, Toronto, Ont., Can.
Nurses' Home, Sick Children's Hospital, Toronto, Ont., Can.
Three Public Schools at Ottawa, Ont., Can.
General Hospital, Port Arthur, Ont., Can.
Eastern Townships' Agricultural Association Buildings, Sherbrooke, P. Q., Can.

NEVER-SPLIT SEAT COMPANY

MANUFACTURERS OF

Never-Split Closet Seats

701-715 West Franklin Street

EVANSVILLE, IND.

PRODUCTS. CONSTRUCTION.

NEVER-SPLIT CLOSET SEATS.

The construction of the Never-Split Seats is shown in Figs. 1 and 2. Fig. 1 shows the four sections assembled with bolts, nuts and washers inserted ready to be joined. The bolts are let in at the ends, while the nuts and washers are inserted through small mortise holes at the bottom. Fig. 2 shows the under side of the seat after it has been joined and bolted together but before it has been finished or mortise holes have been filled. The nuts have been tightened until the washers are sunk into the wood and the joints are thus held together as if by a vise. When the holes have been filled and the seat finished only a trace of them remains, and that on the under side of the seat.

The Never-Split Seat is the strongest, most durable and most sightly seat made. It is the only sanitary wood seat on the market and may be cleansed without dirt or filth gathering in the joints. Every seat is guaranteed for five years.

ILLUSTRATIONS AND PRICES.

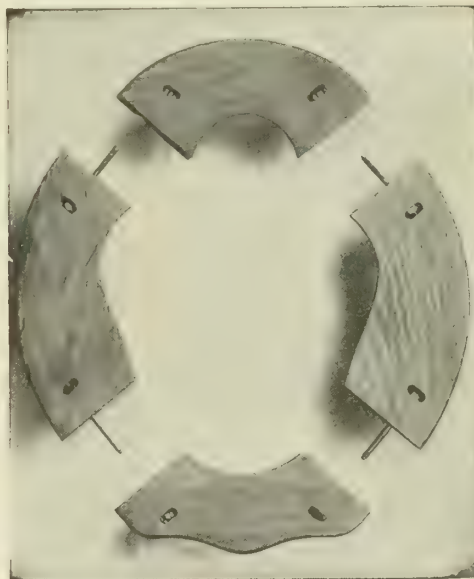


FIG. 1 CONSTRUCTION OF SEAT

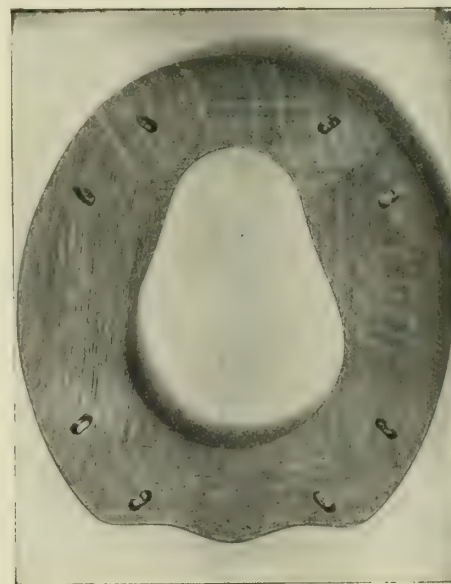


FIG. 2 UNFINISHED SEAT



SEAT NO. 110

One and one quarter inch stock cast-brass, nickel-plated, straight-post hinges, with bumpers attached. For high tank.

Finished in natural, antique or golden oak, varnish finish. Price, \$3.00.

Finished in imitation cherry or mahogany, rub finish. Price, \$3.25.



SEAT NO. 110W

Same as No 110, without cover. This seat has full pair of hinges; that is, two arms to each post, preventing it from coming unhinged.

Finished in natural, antique or golden oak, varnish finish. Price, \$2.75.

Finished in imitation cherry or mahogany, rub finish. Price, \$2.90.



SEAT NO. 115

One and one quarter inch stock nickel-plated, cast-brass, straight-post hinges, with bumpers attached. For high tank.

Finished in natural, antique or golden oak, varnish finish. Price, \$3.00.

Finished in imitation cherry or mahogany, rub finish. Price, \$3.25.

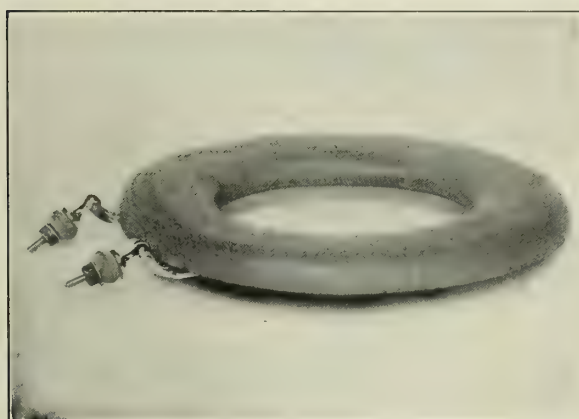


SEAT NO. 120

One and one quarter inch stock nickel-plated, cast-brass, offset post hinges, with bumpers attached. For low tank.

Finished in natural, antique or golden oak, varnish finish. Price, \$3.25.

Finished in imitation cherry or mahogany, rub finish. Price, \$3.50.



SEAT NO. 170

One and one half inch stock heavy stout seat, without cover. Full set of nickel-plated, cast-brass, straight-post hinges, with bumpers attached. For high or low tank.

Finished in natural, antique or golden oak. Price, \$3.25.

Finished in imitation cherry or mahogany, rub finish. Price, \$3.40.

Same as above with hotel hinge. Price, \$3.85.

May also be had in quartered oak, genuine cherry, walnut or mahogany.



SEAT NO. 190

One and one half inch stock selected quarter-sawed white oak, hand-hollowed shape, heavy cast-brass offset hinges. For low or high tank.

Finished in natural, antique or golden oak, imitation cherry or mahogany, piano polish. Price, \$4.75.

In genuine Mexican mahogany, piano polish. Price, \$5.75.



SEAT NO. 200

One and one half inch stock selected quarter-sawed white oak, hand-hollowed, saddle-shape, heavy cast-brass offset post hinges, with bumpers attached. For low or high tank.

Finished in natural, antique or golden oak, imitation cherry or mahogany, piano polish. Price, \$5.25.

In genuine Mexican mahogany, piano polish. Price, \$6.25.



SEAT NO. 285

One and one half inch stock selected quarter-sawed white oak, fancy hand-hollowed, saddle-shape, trimmed with heavy and elegant offset post hinges, with bumpers attached. For low or high tank.

Finished in natural, antique or golden oak, imitation cherry or mahogany, piano polish. Price, \$6.00.

In genuine Mexican mahogany. Price, \$7.00.

PHOENIX SOAPSTONE COMPANY

Producers of Sanitary Stone

116 Nassau Street
NEW YORK, N. Y.

TELEPHONE, BEEKMAN 3725

WORKS
CROWN POINT, ARRINGTON,
NELSON COUNTY, VA.

PRODUCTS.

"CROWN" SOAPSTONE LAUNDRY TUBS, SINKS, URINAL STALLS, URINAL RANGES, DRINKING SINKS, TABLE TOPS; also, LAVATORIES, SHOWER STALLS, FLUSH TANKS, FLUSH SIPHONS, FLOORS, PLATFORMS, WAINSCOTING, and STAIR-TREADS; SANITARY STONE for STRUCTURAL WORK and SWITCHBOARDS.

SOAPSTONE.

Soapstone is a natural product of the earth; and in massive form is chiefly found in Nelson, Albemarle and Schuyler Counties, in the State of Virginia.

There are various names by which Soapstone is called, but they are merely trade-names and are often misleading to prospective buyers. Soapstone is of a bluish-gray color and presents a beautiful appearance. It is considered the most sanitary stone in existence.



TRADE-MARK

GUARANTEE.

We guarantee "Phoenix" Stone to be acid-proof, fire-resisting, non-conductive, and that it will remain sweet and clean after years of contact with acids or oily substances.

"CROWN" LAUNDRY TUBS AND SINKS.

"Crown" Laundry Tubs and Sinks are made of the highest grade Soapstone, beautifully finished; are all tongued and grooved throughout, each slab being locked to the next, and every joint held firmly in place with bolts and nuts. (See Fig. 1.)

ILLUSTRATIONS.

Below are illustrations of a few styles of tubs and sinks. We are prepared to furnish any special design or size at very short notice.

We furnish, when specified, Plugs, Collars and Bolts, Legs, Covers and Drainboards for our Laundry Tubs and Sinks.

We carry a complete stock of the regular sizes of Laundry Tubs in our New York Warehouses.



FIG. 1. TONGUE AND GROOVED JOINT

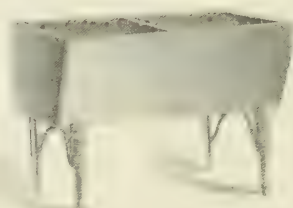


FIG. 2. 48 x 24 INCH TWO-PART LAUNDRY TUB

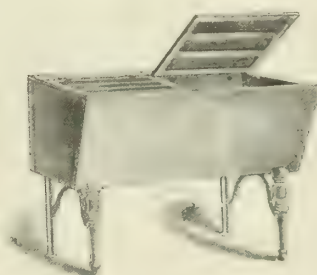


FIG. 3A. 48 x 24 INCH TWO-PART TWIN-CONNECTION LAUNDRY TUB

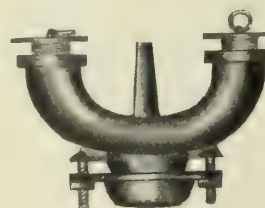


FIG. 3B. TWIN-CONNECTION CASTING



FIG. 4. 72 x 24 INCH COMBINATION TWO-PART LAUNDRY TUB AND SINK

SLIP TONGUE
JOINT.

In lavatory, school and hospital work, wherever a continuous water-tight and acid-proof surface is required, the Slip Tongue Joint (Fig. 5) and our Acid-Proof Cement are used.

URINAL
STALLS AND
RANGES.

As already stated, Soapstone is the most sanitary stone in existence, and is therefore specially adapted for Urinal Stalls and Ranges where a thoroughly sanitary job is required, as in public schools, institutions, etc.

Special attention is invited to our Soapstone Flush-Tank, fitted with our Automatic Flush-Siphon. It has no movable parts to get out of order, and will flush the gutter periodically.

FIG. 5. SLIP TONGUE
JOINTSHOWER
STALLS.

The Shower Stalls, as shown in Fig. 7, are specially adapted for gymnasiums, hospitals, hotels, sanitariums, and recreation buildings of industrial establishments.

We can furnish these in one, two, three or more stalls.

SOAPSTONE
STAIR-
TREADS.

"Phoenix" hard-grade Soapstone is specially adapted for Stair-Treads, Platforms and Floors and will resist wear for an indefinite period.

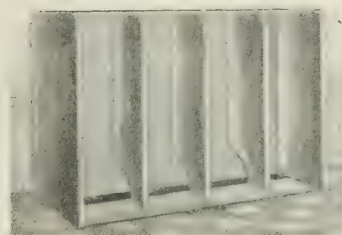
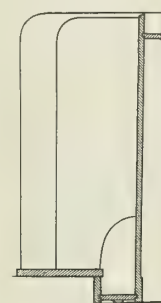


FIG. 6. URINAL RANGE

Sectional
ViewELECTRIC
SWITCH-
BOARDS.

The chemical analysis of Soapstone proves that it is one of the best known non-conductors of electricity. We make a specialty of Switchboards, and are at present supplying some of the largest electric companies with them.

VARIOUS
USES OF
SOAPSTONE.

The special uses for which Soapstone has proved most adaptable are too many and varied for more than a brief mention in this notice. In school or institution toilet-rooms Soapstone wainscoting can be supplied; water-tight floors of Soapstone slabs, joined by our Slip Tongue Joint (Fig. 5), can also be provided.

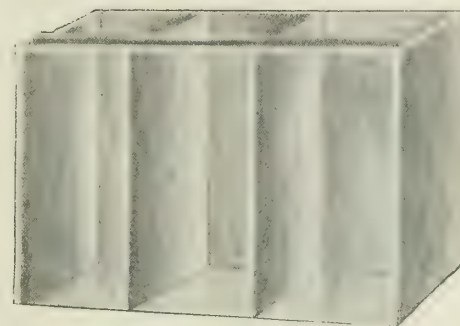


FIG. 7. SHOWER STALLS

We are prepared to take a toilet-room with the rough floors and bare walls, furnish it completely with Soapstone of the highest sanitary excellence, using our "Phoenix" Sanitary Stone for wainscoting, floors, urinal ranges, drinking sinks, water-closets and shower stalls, and make a thoroughly sanitary toilet-room.

CO-OPERATIVE
SERVICE.

We invite correspondence with Architects, Builders, Boards of Estimate, School Boards, Building Committees and others interested; and will cheerfully co-operate and give them the benefit of our long experience in Sanitary Stone construction work.

We promptly furnish estimates and whatever information is requested from us in regard to our product.

REPUBLIC MANUFACTURING COMPANY

Makers of Plumbing Fixtures

OFFICES AND SHOWROOMS

656-658 Washington Boulevard, near Desplaines Street

CHICAGO, ILL.

LONG DISTANCE TELEPHONE, MONROE 2400

WAREROOMS

657-659 WALDO PLACE

LONG DISTANCE TELEPHONE, MONROE 4440

PRODUCTS.

We manufacture and sell a complete line of high-grade PLUMBING FIXTURES, including the REPUBLIC "OIL-REGULATED" FLUSHING VALVES (Brook's patent) for flushing water-closets; "FOSTER" NON-SCALDING MIXING VALVE for bathtubs, lavatories and showers; "REPUBLIC" SANITARY POP-UP BASIN and BATH WASTES (Allingham patent); SWINGING SEAT and ADJUSTABLE LEG for kitchen sinks, and the best sanitary ADJUSTABLE CAST-IRON WATER-CLOSET BEND; also, CLOSETS and URINALS, PORCELAIN and ENAMELED BATHS, VITREOUS PORCELAIN and ENAMEL LAVATORIES, SHOWERS, SINKS, LAUNDRY TRAYS, SLOP SINKS, etc.; PLUMBERS' BRASS GOODS, including "FULLER," "COMPRESSION" and "GROUND KEY" WORK, "OIL-REGULATED," "CELTIC," "APOLLO," "ARION," "ATLAS" and "WATROUS" SELF-CLOSING FAUCETS.

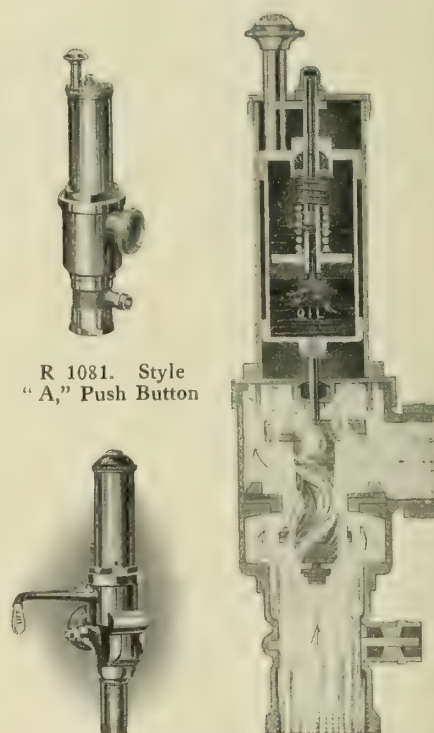
THE REPUBLIC
"OIL-REGU-
LATED"
FLUSHING
VALVES
FOR FLUSH-
ING WATER
CLOSETS.

The Republic "Oil-Regulated" Flushing Valves are the only *perfect working* self-closing valves yet produced. This important result has been obtained by using *oil* as a controlling means instead of water as in other makes.

We designed and constructed our valve with the defects of other makes in mind, and have produced a valve that can be depended upon at all times; it having been pronounced by experts the simplest and best flushing device on the market. They have been in use for nearly six years and have given perfect satisfaction wherever installed, owing to their superior construction and their *oil* regulation. They are an absolute success, and their operation is not affected by mud, sand, alum, alkali or any other foreign substance contained in the water, as the piston, spring and controlling tube, which are the vital parts, and on which the life of the valve depends, are enclosed in a cast-brass air-tight chamber filled with *oil*, which the water can not reach, thus affording a protection not found in any other valve. Oil will never need to be replenished; we use mineral oil, which does not change its consistency.

THE "FOSTER"
COMBINATION
LAVATORY
SUPPLY AND
WASTE
FIXTURE.

The "Foster" Combination Lavatory Supply and Waste Fixture is strongly constructed, neat in design, and compact. By turning the lever handle to the proper position designated on the indicator, *cold*, *warm* or *hot* water is immediately obtained, which permits the user to wash in running water of any desired temperature. By turning the handle marked "Waste" the plug is raised or lowered. The "Foster" Combination Fixture takes the place of the ordinary unsanitary waste and two faucets. It requires but one opening in the lavatory, thus almost its entire top can be used, which is an important feature. It is easily kept clean, and there are but few working parts, all of which are accessible without removing fixture from lavatory.



R 1081. Style
"A," Push Button

R 1083. Style "C," Lever Handle R 1085. Style "A,"
Sectional View
REPUBLIC "OIL-REGULATED"
FLUSHING VALVES



R 1035. "NATIONAL" SIDE-INLET
SYPHON-JET WATER-CLOSET,
WITH STYLE "A" VALVE
One of our most modern closets

THE "FOSTER"
COMBINATION
BATH FAUCET
AND POP-UP
WASTE.

The "Foster" Combination Bath Faucet and Pop-up Waste operates and is constructed upon the same principle as our basin fixtures, and all operating parts are accessible.

THE "FOSTER"
NON-SCALDING
SHOWER
VALVE AND
MIXER.

The "Foster" Non-Scalding Shower Valve and Mixer is strongly constructed, neat in design, and compact. Cold, warm or hot water may be obtained immediately by turning the lever handle to the proper position designated on the indicator. With other shower valves tedious manipulation is required to secure the desired temperature, thus wasting much water. It is constructed so as to prevent accidental scalding, and displaces the dangerous series of shower valves (which are hard to regulate and often scald the user), and also the cumbersome mixing chamber, which constantly drips when not in use.

It is simple in construction and will outlast any other valve. A great many are now in use and are giving perfect satisfaction. A notable installation is that of four hundred in the Hotel Statler at Buffalo, N. Y.

They are recommended for use in hotels, clubs, public bathing establishments, natatoriums, apartments, etc.

"REPUBLIC"
ADJUSTABLE
SWINGING
SEAT.

COMFORT IN THE KITCHEN—The most irksome and tiresome tasks of the kitchen become easy when one uses the "Republic" Adjustable Swinging Seat. A woman can be comfortably seated while washing dishes, paring fruit or vegetables, or engaged in any task usually performed at the sink. It is a boon, and should be adopted.

SUPERIORITY
OF THE
SINK SEAT
OVER KITCHEN
CHAIR.

The "Republic" Seat swings freely on the sink leg, and is concealed under the sink out of the way when not in use. It is properly located; not like an ordinary kitchen chair, which is always in the way when sweeping and scrubbing and is too low to be of any use. It is a neat and most convenient addition to any sink, *fitting perfectly all kinds and sizes.*

THE SINK
LEG.

Sink leg is made in two sizes: No. 1, 24 inches, which allows sink to be raised from 30 to 33 inches from floor to top of rim; and No. 2, 27 inches, which allows sink to be raised from 32 to 35 inches.

"REPUBLIC"
SANITARY
CLOSET
BEND.

Specify the "Republic" Sanitary Adjustable Iron Closet Bend, and insure health and happiness in the home. It is the latest improved, least expensive and most sanitary closet waste connection, overcoming all objections to the old style unsanitary bends, brass ferrules, and brass floor flanges.

CATALOGUE.

Write for our Catalogue, which illustrates the finest and most complete line of fine plumbing material for high-class work.



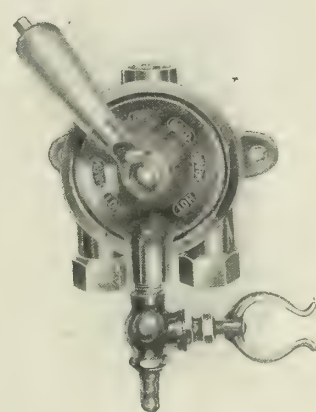
R 2500.
"FOSTER"
COMBINATION
LAVATORY
SUPPLY
FIXTURE
AND POP-UP
WASTE



R 3201. "FOSTER"
COMBINATION
BATH FAUCET
AND POP-UP
WASTE



R 3530.
"REPUBLIC"
SHOWER BATH



R 3525. "FOSTER"
NON-SCALDING
SHOWER-BATH MIXER



R 4137. "REPUBLIC" ADJUSTABLE
SWINGING SEAT
Adapted for any style and size of Sink



R 1272. "REPUBLIC"
CLOSET BEND NO. 1

SPEAKMAN SUPPLY AND PIPE CO.

MANUFACTURERS OF

Showers and Other Plumbing Fixtures
WILMINGTON, DEL.

BRANCH OFFICES

NEW YORK CITY, Presbyterian Building, Fifth Avenue and 20th Street
ALBERT G. WEBER, RepresentativeSAN FRANCISCO, Monadnock Building
W. E. GILCHRIST, Representative

PRODUCTS.

Manufacturers of the largest line of SHOWERS made.

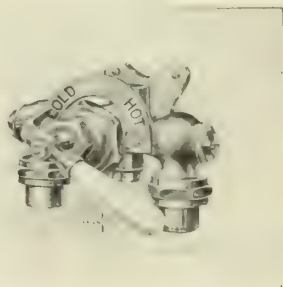
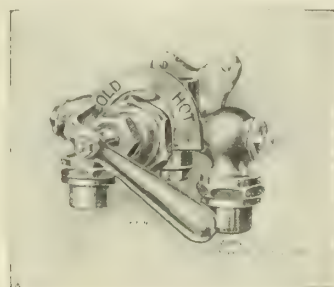
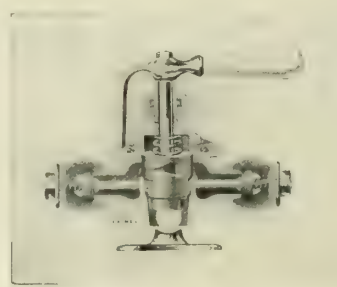
QUALITY,
FACILITIES,
DISTRIBUTION.

All Showers are made of brass, highly finished and nickel-plated, and every fixture is made from standardized drawings.

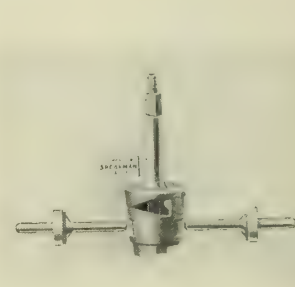
Our line is so complete and our system of manufacturing so thorough that we are prepared to furnish showers for the largest institution or the smallest cottage with the same careful attention to details. Many styles and sizes are carried in stock by the wholesale plumbing trade in all parts of the United States.

PRESSURE.

There should be at least 25-pounds water pressure where circular needle showers are to be used and the water mains should be sufficiently large.

NO. 1 VALVE WITH WHITE
CHINA HANDLENO. 2 VALVE SAME AS NO. 1,
BUT WITH NICKEL-PLATED
BRASS HANDLE

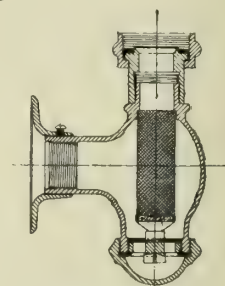
CROSS-SECTION OF VALVE

WORKING PARTS OF
VALVE"SPEAKMAN"
NON-SCALDING
REGULATING
VALVES
(PATENTED).

The valve is simple in construction, the cylindrical mixing chamber and the spindles being the only working parts. The spindles with discs close with the water pressure and are simply intended to assist in keeping the valve tight when it is closed off, having nothing to do with the mixing of the water. The cylindrical chamber acts as a cam to open the discs. The exact regulation or measurement of water is insured by the V-shaped port openings in the cylinder traveling across the openings of the water supply. In opening the valve the first movement of the handle raises the discs from their seats and further movement by the operator mixes the water to the desired temperature. The discs have a regular faucet washer which can be readily renewed whenever necessary. It will be noticed from the cross-section of the valve that the construction is entirely original and different from that of any other valve made. The V-shaped ports in the cylinder are so constructed that when the valve is operated the water, both hot and cold, is measured accurately and only so much admitted as to make the required temperature. *No other type of mixing valve has this feature of construction.* "Speakman" Non-Scalding Regulating Valves are sold only with showers of our own make.

"SPEAKMAN"
STRAINER
UNIONS.

Water carrying more or less sediment and other foreign matter is a condition very frequently met with, causing annoyance to shower users on account of the filling up of the small spray holes in shower heads and needle baths. To avoid this we have designed a strainer union which is placed at each supply inlet of our non-scalding and needle showers—a very simple device, containing a heavy brass gauze strainer of such design as to give a large surface. This strainer can be readily taken out and cleaned at any time.

"SPEAKMAN"
STRAINER
UNION

With supply inlet coming from wall. Note clean-out cap at bottom. Patent applied for

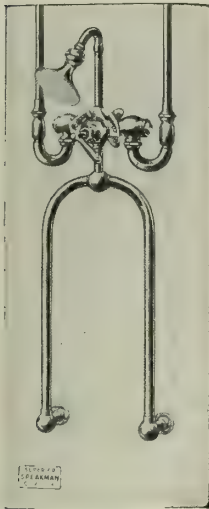


FIG. 1030.
"SPEAKMAN"
SHOULDER AND
BODY SHOWER
FOR WOMEN

Needle Head set low so water will not strike the head of the bather
1/2-in. Size, \$42.50
With supplies to wall instead of ceiling, deduct \$3.50



FIG. 990. "SPEAKMAN" TYPICAL
SHOWER FOR
INSTITUTIONS

1/2 in. Size, \$29.00
Lock-shield controlling stops in supply pipes permit cutting down of either hot or cold water to economize in the volume used, also shutting off of water without interfering with adjoining showers or fixtures

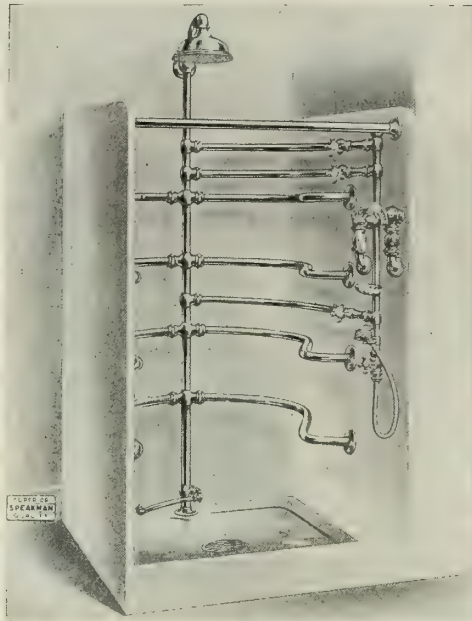


FIG. 1016. "SPEAKMAN" SHOWER AND
NEEDLE BATH WITH BIDET AND
HAND SHAMPOO, \$150.00

Marble Stall not included

Bather can operate this style of Shower and obtain desired temperature of water before entering stall.

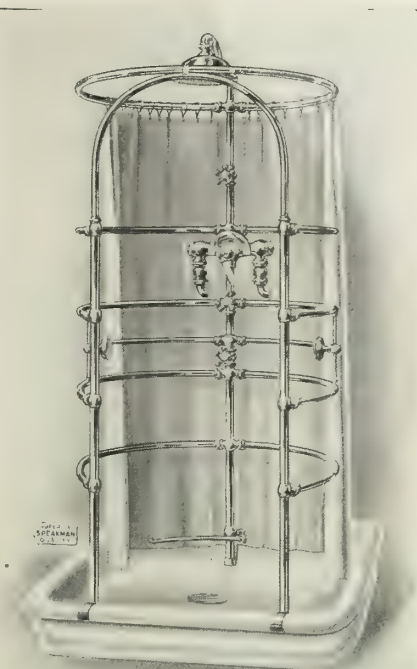


FIG. 1020. "SPEAKMAN" SHOWER
AND NEEDLE BATH WITH BIDET
AND LIVER SPRAYS, \$175.00

Receptor not included

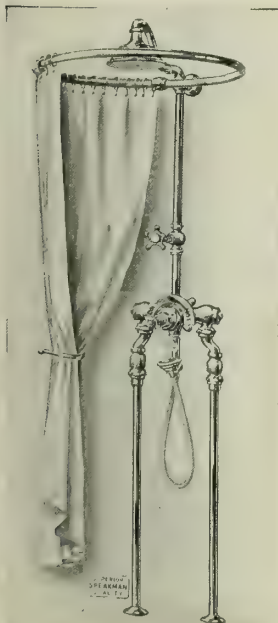


FIG. 1006
"SPEAKMAN" SHOWER
1/2-inch Size, \$48.00. Also
made in 3/4-inch Size

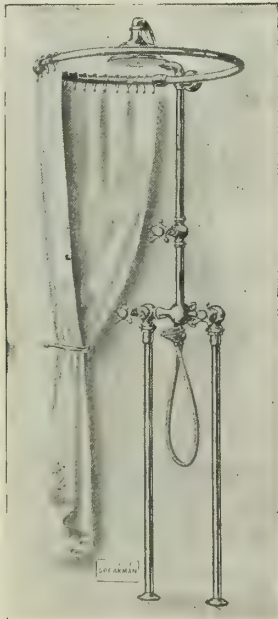


FIG. 1200. "NIAGARA"
SHOWER
1/2-inch Size, \$28.50

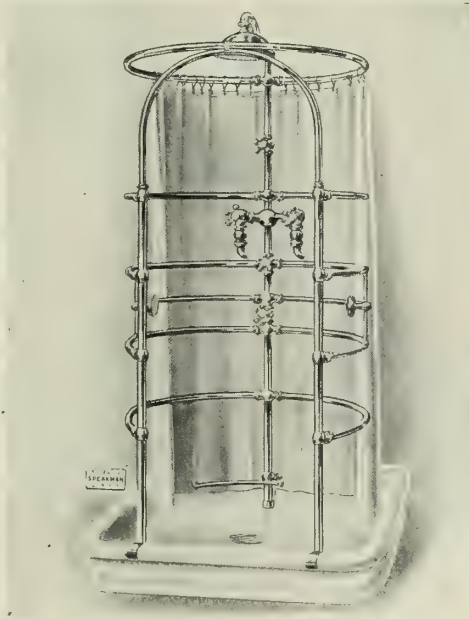


FIG. 1292. "SPEAKMAN" SHOWER
AND NEEDLE BATH WITH BIDET
AND LIVER SPRAYS, \$156.50

Receptor not included

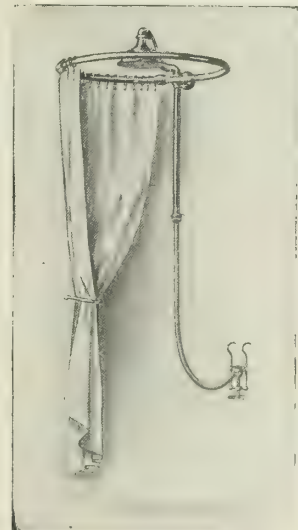


FIG. 1275. "SPEAKMAN" PORTABLE
SHOWER WITH CLIP
FAUCET ATTACHMENT
(Patented), \$12.50

Can be set over regular Bath without installing extra piping. Will fit any double-bath faucet and can be attached or detached instantly

EXPLANATION.

Referring to the accompanying illustrations of different showers Figs. 1030, 990, 1016, 1020 and 1006 are fitted with "Speakman" patent non-scalding regulating valves; Figs. 1200 and 1292 are fitted with compression valves, and Fig. 1275 is fitted with clip attachment for double-bath faucet.

CATALOGUE.

Catalogue G, showing one hundred different styles and sizes of showers, sent upon request.

THE TRENTON POTTERIES COMPANY

TRENTON, N. J.

THE CANADIAN-TRENTON POTTERIES CO., LTD.
ST. JOHNS, P. Q., CANADA

EUROPEAN SHOWROOMS
PARIS, FRANCE, 154 Rue Du Fauborg St. Martin

PRODUCTS.

Manufacturers of "IDEAL" SOLID PORCELAIN WARE, including BATHTUBS and SEAT, FOOT and BABY BATHS; DRINKING FOUNTAINS; DRAINBOARDS for Kitchen Sinks; FLOOR SLABS for Water-Closets; HORSE TROUGHS and MANGERS; LAVATORIES for all kinds of installations; LEGS for Sinks, Tubs and Lavatories; LAUNDRY TUBS; PEDESTALS for Lavatories and Sinks; SHOWER RECEPTORS; KITCHEN, PANTRY, SLOP, VEGETABLE, LABORATORY and SURGICAL SINKS; TRAP STANDARDS, URINAL STALLS and GUTTERS; WALL SLABS; FOOT STOOLS; DRESSING TABLES with Pedestals; BATHTUB FEET and MANICURE TABLES. "IMPERVIO" VITREOUS CHINA WARE, including LAVATORIES of all kinds and PEDESTALS for same; SLOP SINKS; FLUSH TANKS for Closets and Urinals, and DRINKING FOUNTAINS.

SANITARY VITREOUS EARTHEN-WARE PLUMBING FIXTURES, including BASINS, BIDET PANS, PEDESTAL BIDETS, CLOSET BOWLS, DRIP TRAYS and PANS; HOPPERS for Slop, Cars, Ships, etc.; HOPPERS and TRAPS, combined with and without siphon action; DRIP PIPES; SIPHON-JET and WASH-OUT CLOSETS; PEDESTAL WASH-OUT CLOSETS; TRAPS; URINALS with and without siphon action; CAR URINALS, and WASHDOWNS.

Also, WHITE "BONE CHINA" TOILET ACCESSORIES, including BASES for Fuller Cocks; BRUSH VASES; BELLS for Bath Supplies; BATH SPRAYERS; BATH WASTE PLUGS; BUTTONS for Metal Trimmings; COCK HOLE PLUGS; TRADE-MARKS COLLAR, CUFF and COAT HOLDERS; COMB and BRUSH HOLDERS; BASIN and BATH KNOBS; MUGS; NOZZLES; PULL and COCK HANDLES; TOILET-PAPER HOLDERS; SPIGOT HANDLES; SPONGE and SOAP HOLDERS; TOWEL BARS; WASTE PLUGS and CAPS; and WHISK BROOM HOLDERS.

DRUGGISTS' SUPPLIES, including BED PANS, SICK FEEDERS, SPIT CUPS, HAT BASES, FLAT and STEEPLE-TOP SYRUP and ACID JARS, MORTARS and PESTLES.

We are manufacturers of Sanitary Pottery only, although we furnish all fixtures complete, as shown in our catalogue, if so requested. Our wares are handled by practically all the first-class plumbing supply houses in the United States, Canada, Mexico, South America and Europe.

"IDEAL"
SOLID
PORCELAIN
WARE.

"Ideal" Solid Porcelain is the only body from which all clay bathtubs, urinal stalls, large lavatories, sinks and laundry tubs have been successfully made and at a moderate cost.

Like Vitrified China, the body of "Ideal" Solid Porcelain is made entirely of clay; but unlike china, it is neither non-absorbent nor white in color and need not be so. The body of the ware is a light brown color, made of hard refractory clay, commonly called fire clay; and it admirably serves the purpose, being strong, thick, and very durable. This light-brown body is covered with several coats of vitreous white lining; and this white lining is in turn covered with a vitreous white glaze of the same quality and texture as the glaze used in Vitrified China. It is then fired or baked at an exceedingly high temperature, in a rectangular or muffle kiln, and finished at one firing. The result is a beautiful, soft, delicate cream-colored ware, satin-like in finish, restful to the eye, and matching closely in color the wall tile in the bathroom. This vitrified glaze can easily be kept clean and is not affected by soaps, liquids and acids which mar many other less highly fused glazes.

Owing to the size of these goods and the high temperature at which they are fired (a degree of heat that no metal but platinum can withstand), it is not possible to obtain all of them without some slight defects. The best are graded after coming from the kilns as A quality; some slightly warped or with a small fire crack are classed as B quality, and others as C quality; but the materials used in making are the same, no matter in what grade the finished piece is classed. None of these defects, however, affect their sanitary qualities, and to most people they are not even apparent.



Solid Porcelain has been used in Great Britain and on the Continent in increasing quantities for over fifty years. The industry in the United States is not much over fifteen years old; and in that time great improvements have been made until the ware manufactured in this country is equal, if not superior, to that made in Great Britain or on the Continent.

"IMPERVO"
VITREOUS
CHINA
LAVATORIES
AND VITREOUS
CHINA
CLOSETS.

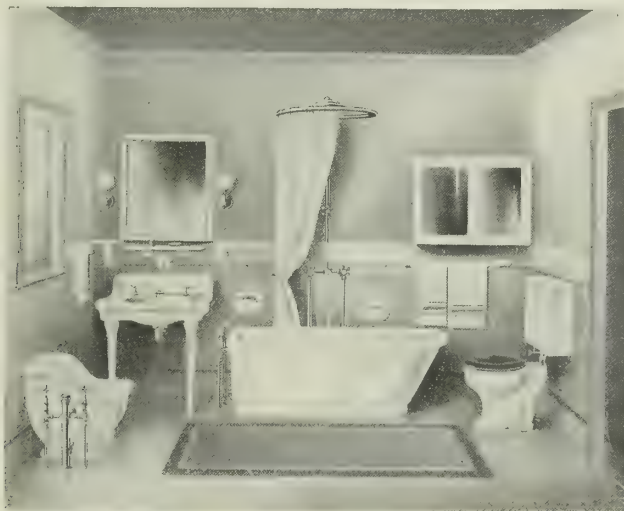
These are made of the same material as fine china tableware, and contain no iron whatever; hence, they can not rust, corrode or peel. They are fired or baked at an exceedingly high temperature, combining the vitreous glaze and the vitreous body into one homogeneous compound.

They have a smooth, beautiful, high lustrous surface, glazed all over; therefore, there is no chance for dust or germs to settle.

They are easily kept clean, and are not affected by soaps or liquids which mar other less highly fused glazes. Being close bodied they do not absorb grease or other substances and are strong enough to withstand any use to which sanitary fixtures are subject.

WHITE "BONE
CHINA"
ACCESSORIES.

These goods are of the finest pure white "Bone China" clay, the same as that used in the finest dinner ware.



No. 12



No. 13

SUGGESTIVE MODERN SANITARY POTTERY BATHROOMS

SPECIFICA-
TIONS,
BATHROOM
NO. 12.

Bathtub—"Ideal" Solid Porcelain regular Franch pattern on base, glazed pure white inside and over roll rim and around base; fitted with nickel-plated brass combination bell supply and waste fixtures with china Fuller valve handles and china waste knob. Plate 11-K, THE TRENTON POTTERIES COMPANY Catalogue. (This tub is made in four lengths: 4½, 5, 5½, and 6 feet.)

Lavatory—"Impervio" Vitreous Ware, "Stelton," with integral back and set upon two vitreous china legs. Lavatory fitted with nickel-plated brass combination supply and waste fitting, with china Fuller offset valve handles and china waste knob; one pair nickel-plated brass supply pipes to wall and nickel-plated brass 1½-inch waste trap to wall, as shown. Plate 820, Supplement to THE TRENTON POTTERIES COMPANY Catalogue. (This lavatory is made in two sizes: 24 x 20 inches and 27 x 23 inches.)

Seat Bath—"Ideal" Solid Porcelain Ware Seat Bath on base, glazed-inside and over roll rim and around base; finished plain white outside; fitted with nickel-plated brass combination bell supply and waste fixture with china Fuller handles and china waste knob. Plate 52-K, THE TRENTON POTTERIES COMPANY Catalogue.

Closet Combination—Vitreous China Center Outlet Plain Siphon-Jet Closet, fitted with quartered oak or mahogany seat and lid, and with vitreous china low-down panel front flushing tank complete; with bottom china indexed push-button flushing fitting; with nickel-plated brass supply pipe to wall, with wheel handle shut-off valve; and with nickel-plated brass offset to closet. Combination complete as shown. Plate 989, Supplement to THE TRENTON POTTERIES COMPANY Catalogue.

SPECIFICA-
TIONS,
BATHROOM
NO. 13.

Bathtub—"Ideal" Solid Porcelain oval pattern on base, glazed pure white inside and over roll rim and around base; finished white outside with raised bead touched in gold; fitted with nickel-plated brass special goose-neck combination supply and waste fitting, with china Fuller handles on knob and china waste knob. Plate 14-K, THE TRENTON POTTERIES COMPANY Catalogue. (This tub is made in two lengths: 5½ and 6 feet.)

Shower Bath—"Ideal" Solid Porcelain Corner Shower Receptor. Plate 61-K, with nickel-plated brass outlet strainer and floor flange; nickel-plated brass shower fittings, with supply pipes and compression check valve, together with shampoo attachment, and with rubber curtain and nickel-plated brass frame, as shown in Plate 550-K.

Lavatory—"Ideal" Solid Porcelain "Ardmore" Oval Lavatory on solid porcelain pedestal; fitted with nickel-plated brass combination supply and waste fitting, with china Fuller valve handles and china waste knob; one pair nickel-plated brass supply pipes to wall; one 1½-inch nickel-plated brass waste trap to wall, and one set nickel-plated brass wall stay braces. Plate 109-K, THE TRENTON POTTERIES COMPANY Catalogue. (This lavatory is made in three lengths: 27, 33, and 37 inches.)

Closet Combination—Vitreous China Plain Oval Siphon-Jet Closet, "Welling" pattern, Plate 1065-K; with mahogany seat and cover, and with low-down panel front vitreous china flush tank, with bottom china indexed push button; flushing fitting complete, with supply pipe to wall with wheel handle shut-off valve and offset to closet. Tank all complete as shown. Plate 989, Supplement to THE TRENTON POTTERIES COMPANY Catalogue.

CATALOGUE.

Our complete Catalogue of Sanitary Pottery Plumbing Fixtures will be sent upon application to any architect, engineer or contractor.



Plate 320-KH. "Ideal" Solid Porcelain Integral High-Back Sink, With End Recess

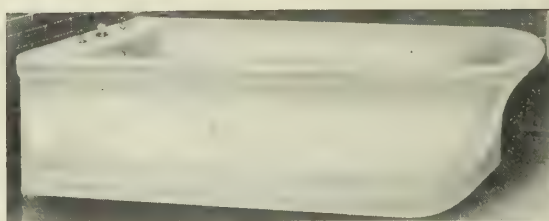


Plate 18-KH. "Ideal" Porcelain "Seville" Pattern Bathtub on Base. To tile into corner, as shown

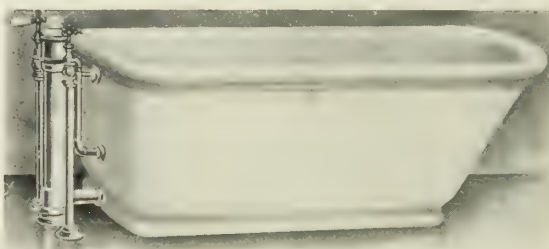


Plate 11-KH. "Ideal" Porcelain "French" Pattern Bathtub on Base

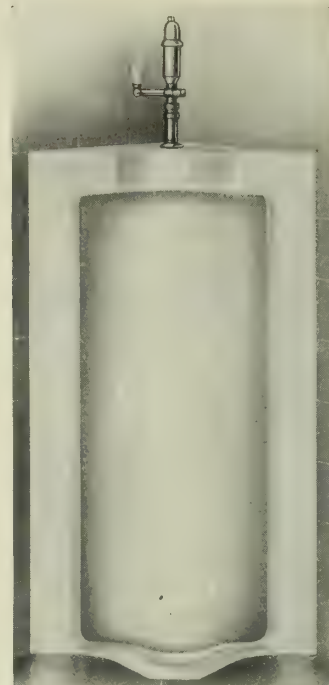


Plate 512-KH. "Ideal" Solid-Porcelain Corner Urinal Stall



Plate 155-KH. "Ideal" Porcelain "Pennsylvania" Lavatory, with Integral-Back and Sides



Plate 989-KH. Vitreous China Panel-Front Tank, with Vitreous China Center Outlet, Siphon-Jet Closet

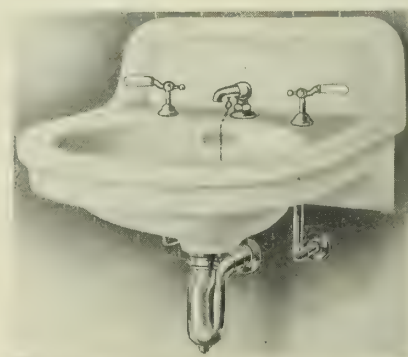


Plate 786-KH. "Impervio" Vitreous China "Elfington" Round-Front Lavatory, with Integral Back

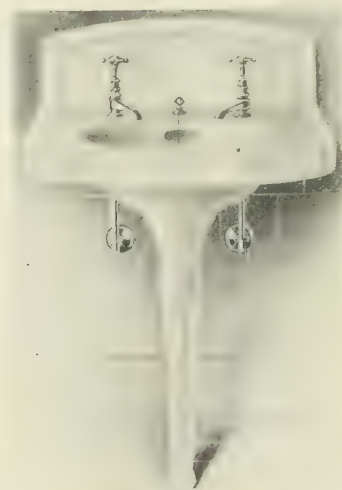


Plate 692-KH. "Impervio" Vitreous China "Bellemeade" Round-Front Lavatory, with Integral Back



Plate 820-KH. "Impervio" Vitreous China "Stelton" Integral-Back Lavatory

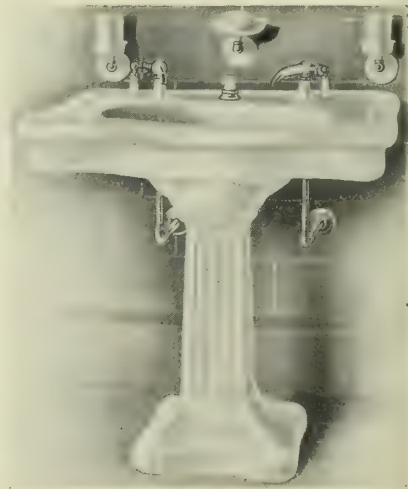


Plate 656-KH. "Impervio" Vitreous China "Girard" Roll-Rim Lavatory, on Fluted China Pedestal

REPRESENTATIVE SANITARY POTTERY FIXTURES FROM OUR NEW CATALOGUE "K-H"

JOSEPH A. VOGEL COMPANY

"Vogel" Patent Frost-Proof Water-Closets

WILMINGTON, DEL.

PRODUCTS.

Manufacturers of "VOGEL" PATENT FROST-PROOF WATER-CLOSETS.

DESCRIPTION.

The "Vogel" Patent Frost-Proof Water-Closet Outfit consists of enameled iron hopper, hardwood seat, with brass valves assembled.

In Outfit No. 1, depressing the seat raises the rod, allowing the tank to fill, after which no more water enters until the closet is again used. Releasing the seat allows a strong flush direct from tank to a flushing rim hopper, after which the water in valve casing passes down through waste valve (below frost line) into the sewer, leaving the entire fixture empty. By means of the pressure tank (as shown in the illustration) an ample flush is secured without unnecessary waste of water.

Outfit No. 2 contains but one washer and flushes while in use, after which no water remains in the fixture or casing. Grit can not collect in the valve as the valve seat is beveled.

ADVANTAGES.

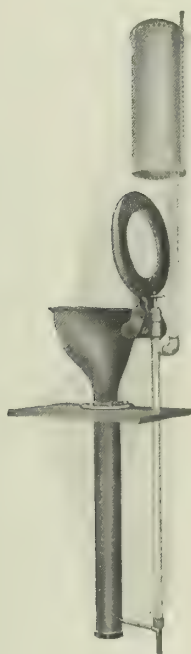
The "Vogel" Patent Frost-Proof Water-Closets are the simplest and most durable made and give excellent service. Their extreme simplicity provides little chance for repairs, so generally a necessity where complicated workings are employed. They have the easiest action and are positive in operation. While no pit is required one may be used if desired. The rod and packing are easily removed from above the floor.

ADAPTABILITY.

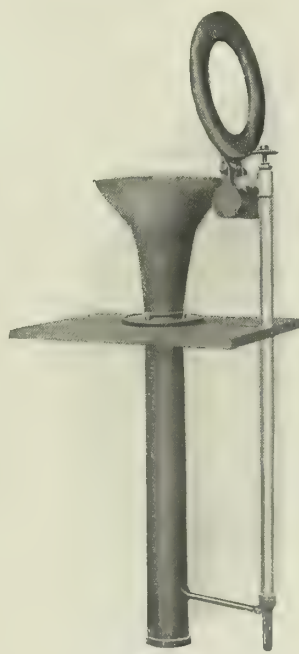
These closets are designed for use in unheated compartments or in yards, or on the back porches of residences. They are admirably adapted for use in schools, or in any place where a first-class outside closet is desired.

SPECIFICATIONS.

In order to avoid possible substitution of inefficient closets architects should specify: "Water-Closets used shall be the 'Vogel' Patent Frost-Proof Closet, manufactured by the JOSEPH A. VOGEL COMPANY, Wilmington, Del."

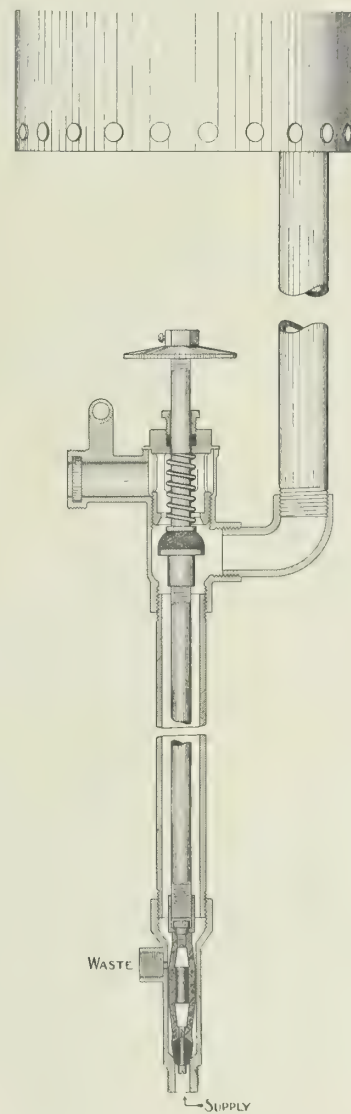


Outfit No. 1



Outfit No. 2

"VOGEL" PATENT FROST-PROOF WATER-CLOSETS



THE VALVES
Sectional View

E. B. BADGER & SONS COMPANY

MANUFACTURERS OF

Copper Hot-Water Boilers

63-75 Pitts Street
BOSTON, MASS.

ESTABLISHED 1841

PRODUCTS.

COPPER HOT-WATER BOILERS, COPPER and WHITE METAL or GERMAN SILVER PANTRY SINKS, etc.

For our other Products, see our pages in General Index.

DESCRIPTION.

Badger's Copper Hot-Water Boilers are made for tank and direct pressure. The material used is of the best lake copper. The heads are riveted, and it is impossible for them to blow off or for the joints to start. The interior is heavily tinned to insure perfectly clear water, and reinforced with heavy brass rings to prevent collapsing. No iron is used in the construction. They are finished in a brown which will not tarnish, or in polished copper.



SPECIAL COPPER HOT-WATER BOILER, WITH
STEAM COIL FOR HIGH PRESSURE

ADVANTAGES.

Range Boilers are usually connected to water-back or coil in range or to an independent heater. The large boilers can be heated by an independent heater or by steam-coils, or by both. A Badger Hot-Water Boiler containing nothing corrosive insures perfectly clear water, which is impossible by the use of an iron boiler. Badger Copper Boilers will last an indefinite number of years. Its neatness in appearance, quality, strength, and mechanical skill are strong features of the Badger Hot-Water Boiler.

UTILITY.

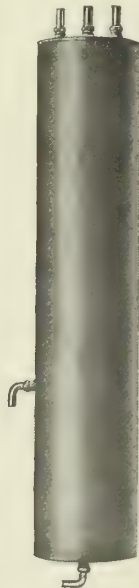
Badger Hot-Water Boilers are suitable for residences, apartments, office buildings, hospitals, and factories.

SIZE, ETC.

Badger's Copper Boilers are made in stock sizes from 30 to 100 gallons, and as large as 1,500 gallons' capacity. They can be made to dimensions to meet requirements. Badger's standard pressure boilers are tested to 200 pounds cold water pressure. Heavier pressure boilers are made to stand working pressure up to 400 pounds.

CO-OPERATIVE SERVICE.

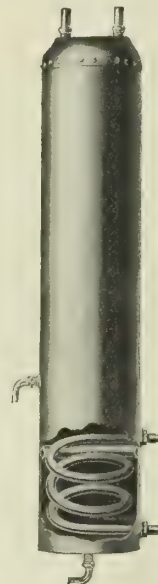
List prices, when furnished, are of little help to the architect. If you will write us we will gladly send illustrative Catalogue with quotations and any further information desired.



REGULAR TANK-
PRESSURE BOILER
SUPPLIED FROM
TANK PLACED
ABOVE BOILER.
MADE TO SET
UPRIGHT OR
HORIZONTAL



REGULAR PRES-
SURE BOILER 200
POUNDS TEST,
SUPPLIED
DIRECT FROM
WATER MAIN.
MADE TO SET
UPRIGHT OR
HORIZONTAL



PRESSURE BOILER
WITH STEAM
COIL.
MADE TO SET
UPRIGHT OR
HORIZONTAL

THE LOUIS LIPP COMPANY

MANUFACTURERS OF

The "Harrington" Automatic Instantaneous Gas Water-Heater

CINCINNATI, OHIO

SHOW ROOM
139 WEST SEVENTH STREET, NEAR ELM

PRODUCT.

THE "HARRINGTON" AUTOMATIC INSTANTANEOUS GAS WATER-HEATER.

"HARRINGTON" AUTOMATIC INSTANTA- NEOUS GAS WATER- HEATER.

This Instantaneous Water-Heater heats water more economically than can be done in any other way and assures hot water at any time, day or night.

The heater is placed on your kitchen or basement wall, or wherever convenient to flue, and connected to gas and water supply pipes in the regular way. To operate the heater, light the pilot inside of the heater, which burns a mere spark, and turn on the gas valve to the main burner. You can then turn on the hot-water faucet at any fixture in the house and instantly you have a ready supply of hot water, cheaply heated.

CONSTRUC- TION.

The entire outside casing is made of 18-gauge oxidized Russia iron with an inner casing of heavy galvanized iron. The space between the outer and inner casing is of heavy asbestos lining which prevents radiation of heat. The door, extending the entire height of the coil, renders easy access to the same and is equipped with a non-positive catch, eliminating danger from explosion. The pilot light is also of easy access, requiring merely the opening of the door to light the same. The coils are made of heavy seamless copper tubing and are tested and guaranteed to stand a working pressure of three hundred pounds.

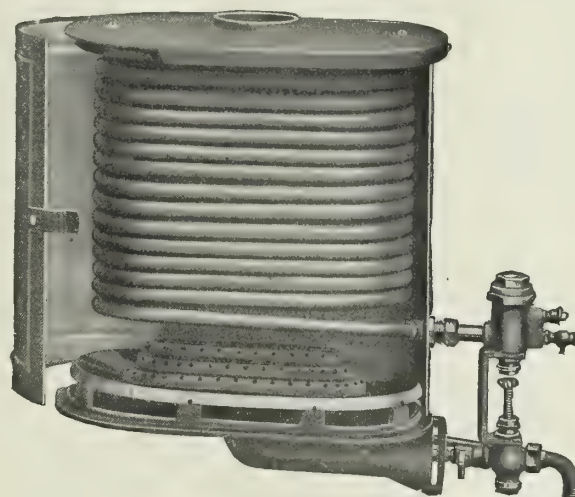
The coils are so arranged that condensation does not come in contact with the burner but drops into a heavy copper drip-pan arranged in the base of the heater with an opening for the drip-pipe to carry the condensation to any point.

The heater must always be connected with a three-inch vent pipe to carry off the fumes.

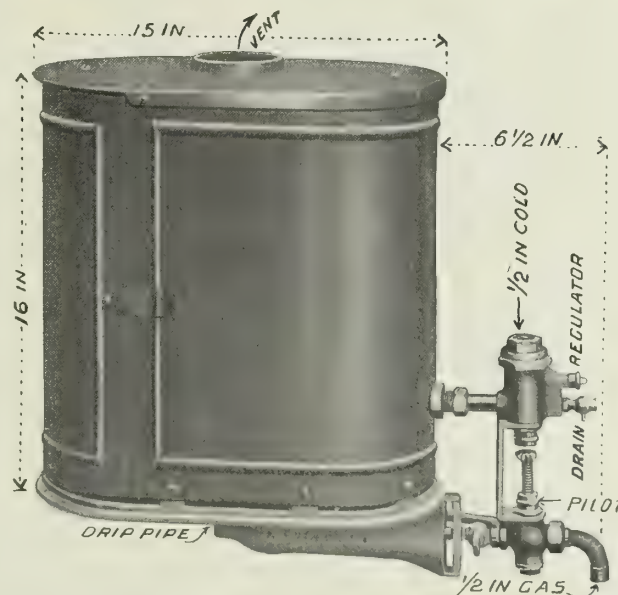
Will work with artificial or natural gas.

PRICES.

Prices will be quoted upon application.



Interior View



Exterior View

"HARRINGTON" AUTOMATIC INSTANTANEOUS
WATER-HEATER

W. E. BEILMAN

MANUFACTURER OF

The "Seamans" Automatic Tank Water-Heaters

448 Niagara Street

BUFFALO, N. Y.

PRODUCTS.

THE "SEAMANS" AUTOMATIC TANK WATER-HEATER for Gas; "SEAMANS" IMPROVED WEB WATER-HEATER for Gas; "SEAMANS" AUTOMATIC TANK WATER-HEATERS for Coal or Gas with THERMOSTAT; SPECIAL FLOAT CHECK-VALVES.

"SEAMANS"
AUTOMATIC
TANK
WATER-
HEATERS.

Any size heater up to 100 gallons can be run with $\frac{1}{2}$ -in. gas pipe on natural gas, $\frac{3}{4}$ -in. and 1-in. pipe being required for larger sizes only. The number of heater in price-list corresponds to the number of bathrooms that each size heater up to No. 15 will supply at one time. No. 16 will supply 17 baths; No. 17, 19 baths; No. 18, 21 baths; No. 19, 23 baths; No. 20, 25 baths; No. 21, 28 baths, besides laundry and other fixtures. In average use of hot water these heaters would be sufficient to supply 50 per cent more in number of bathrooms. All heaters with 5-ft. boilers (style of Fig. X) can be set under ceiling from $6\frac{1}{2}$ to 7 feet. "Seamans" Heaters can be connected up by any plumber or pipe-fitter.

SIZES AND PRICES OF WATER-HEATER, FIGS. X AND XX

Number of Heater 1 to Col. 7	For Boilers nearest to these standard sizes	Price of Heater X with extra heavy Galv. Boiler, Galv. Iron Pipe Circulation	Price of Heater X with a vacuumizer Galvanized Boiler, Galvanized Iron Pipe Circulation	Heater with $\frac{1}{4}$ " Steel Boiler Heads on sizes over 120 Gals. \$3.00 extra for hand holes Galv. Iron Pipe Circulation Heads on sizes above 390 gallons	5	6	7
1	2	3	4	5	6	7	
	gal.			gal.	in.		
1	30	\$59.00	\$65.00	30	14 x 48	\$74.00	
2	40	65.00	72.00	40	14 x 60	83.00	
3	52	71.00	78.00	52	16 x 60	93.00	
4	66	85.00	92.00	66	18 x 60	104.00	
5	82	95.00	103.00	82	20 x 60	116.00	
6	100	112.00	121.00	100	22 x 60	128.00	
7	120	125.00	134.00	120	24 x 60	140.00	
8	150	148.00	158.00	150	30 x 48	153.00	
9	165	163.00	173.00	165	30 x 54	166.00	
10	185	175.00	187.00	185	30 x 60	178.00	
11	210	.....	.....	210	36 x 48	190.00	
12	225	.....	.....	225	30 x 72	200.00	
13	265	.....	.....	265	36 x 60	214.00	
14	290	.....	.....	290	36 x 66	230.00	
15	315	.....	.....	315	36 x 72	245.00	
16	350	.....	.....	350	38 x 72	265.00	
17	390	.....	.....	390	40 x 72	290.00	
18	430	.....	.....	430	42 x 72	315.00	
19	470	.....	.....	470	48 x 60	345.00	
20	515	.....	.....	515	46 x 72	375.00	
21	570	.....	.....	570	48 x 72	420.00	

Larger sizes of any style Heater can be supplied if required.

Heater with Brown's Seamless Special Copper Boiler 200-lb. Test. Galv. Iron Pipe Circulation			Heater with Copper Boiler and 1" Brass Pipe Cir- culation		Heater with Copper Boiler and 1½" Brass Pipe Cir- culation		Heater with Copper Boiler and 1½" Brass Pipe Cir- culation		No of Heater with Copper Boiler
8	9	10	11	12	13	14			
gal.	ins.								
30	60 x 12	\$ 86.50	\$ 94.00	\$ 96.25	\$ 97.00	1			
40	60 x 14	102.25	110.25	112.65	113.45	2			
50	60 x 16	118.00	126.50	129.05	129.90	3			
60	70 x 16	134.50	143.50	146.20	147.10	4			
60	44 x 20	175.00	184.50	187.35	188.30	4			
80	59 x 20	205.00	215.00	218.00	219.00	5			
100	76 x 20	230.75	241.25	244.40	245.45	6			
100	60 x 24	260.75	271.75	275.05	276.15	6			
120	65½ x 24	271.00	282.50	286.00	287.10	7			
125	69 x 24	281.50	293.50	297.10	298.30	7½			
150	78½ x 24	307.00	319.50	323.25	324.50	8			

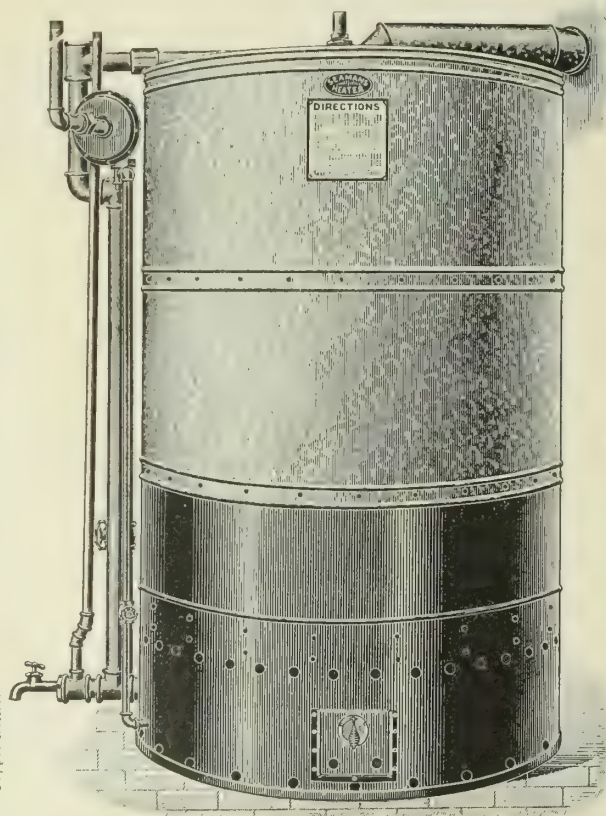


FIG. XX

"SEAMANS" AUTOMATIC WATER-HEATER

Photographed from the one now in successful operation at the Trubee House on Delaware Avenue, Buffalo, N. Y. The capacity of this heater is 470 gallons and is sufficient to supply 23 baths and other fixtures at one time.

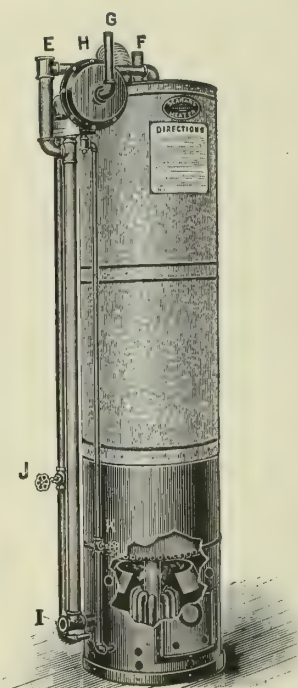


FIG. X. "SEAMANS" AUTOMATIC WATER-HEATER

E Cold-water supply
F Hot-water supply
G Gas supply
H Pipe to chimney
I For sediment cock
J Main gas valve
K Pilot gas valve

FUEL
CONSUMP-
TION.

Hot water can be drawn from the "Seamans" Automatic Water-Heater in volumes and from a number of faucets at the same time. The maximum consumption of natural gas is 1000 ft. to 1000 gallons of hot water, under perfect automatic control at all times. Where only manufactured gas can be had, the "Seamans" Heaters can be supplied for coal fuel (see Fig. Y), or the regular gas heater can be connected to water section in the house furnace or range, so that the gas can be cut off entirely when furnace or range is in operation. The "Seamans" Heaters are built on the common-sense plan, of the best material and workmanship, have no coils to fill up, are always ready for use and unaffected by low gas pressure. They are easily adjusted for higher or lower temperature of water.

FLOAT
CHECK-
VALVES.

SPECIAL FLOAT CHECK-VALVES FOR RETURN-PIPE CIRCULATION					
Size, inches.. $\frac{1}{2}$	$\frac{3}{4}$	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	2
Price, each..\$4.50	\$5.00	\$6.00	\$7.00	\$8.00	\$10.00

When a return circulation pipe is run to a heater without the check-valve it invariably affects the efficiency of the hot-water supply by drawing cold water from the bottom of boiler and mixing cold water with the hot on the faucet line, which should be avoided by using a check-valve.

COAL
HEATERS.

COAL HEATERS WITH THERMOSTATS AND FITTINGS. (FIG. Y.)	
No. 1, Without Boiler.....\$ 95.00	No. 1 will supply 52 to 100 gal. boilers
No. 2, Without Boiler..... 115.00	No. 2 will supply 120 to 185 gal. boilers
No. 3, Without Boiler..... 145.00	No. 3 will supply 210 to 315 gal. boilers
No. 4, Without Boiler..... 185.00	No. 4 will supply 350 to 430 gal. boilers
No. 5, Without Boiler..... 235.00	No. 5 will supply 470 to 570 gal. boilers

The collars on casings for pipe to chimney on all heaters are arranged for the number of burners to each size heater in order to carry off the full volume of gas. Pipe should not be reduced or fitted with damper, as the size of pipe being adjusted to the size of heater, there can be no excess of draft and waste of gas and heat. The construction of heater is such that no poor or back draft can cause the burners to go out entirely, thus avoiding all danger of gas explosions.

All Heaters guaranteed.

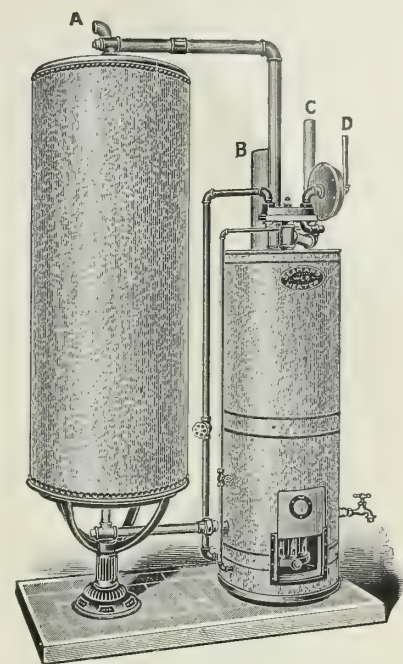


FIG. W. "SEAMANS" IMPROVED
WEB WATER-HEATER FOR
GAS

Can be connected to any size boiler up to 300 gals. Inner tank, made of $\frac{1}{4}$ -in. steel, holds 18 gals. of water. If set on wood requires protection against fire. Brick or stone foundation is best.

Price of Heater, without Boiler,
\$75.00

A Hot-water supply B Pipe to Chimney
C Cold-water supply D Gas supply

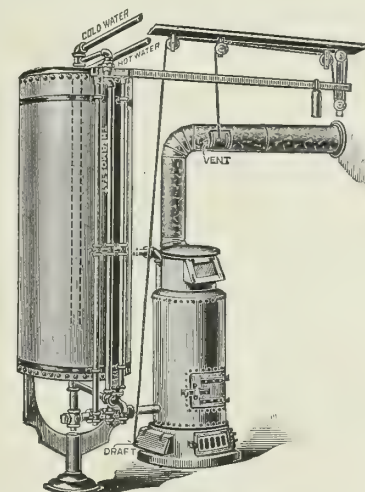


FIG. Y. "SEAMANS" AUTOMATIC
WATER-HEATER FOR COAL
(OR GAS, IF DESIRED)

BELER WATER HEATER CO.

311 Water Street and 310 First Avenue
PITTSBURG, PA.

PRODUCTS.

Manufacturers of the "BELER" AUTOMATIC-THERMOSTATIC INSTANTANEOUS WATER-HEATER, "BELER" STORAGE SYSTEM, and the "BELER" DOUBLE COPPER-COIL STORAGE-TANK HEATER.

"BELER" AUTOMATIC- THERMO- STATIC INSTANTANE- OUS WATER- HEATER.

This is absolutely the simplest and safest heater on the market (Fig. 1), being equipped with our patent Automatic-Thermostatic Pressure Regulator (Fig. 2), which insures immediate action, there being no plunger, no stuffing-boxes to catch or bind, no springs in water to corrode. Our new Patent Hydrocarbon Burner (Fig. 3) is constructed to give the highest combustion and greatest efficiency and is non-corrosive.

The Heater is constructed with swinging doors, which allow free access to coil at all times, and removal of coil if necessary without taking heater apart.

The "Beler" Automatic Heater combines the qualities of efficiency, economy and reliability.

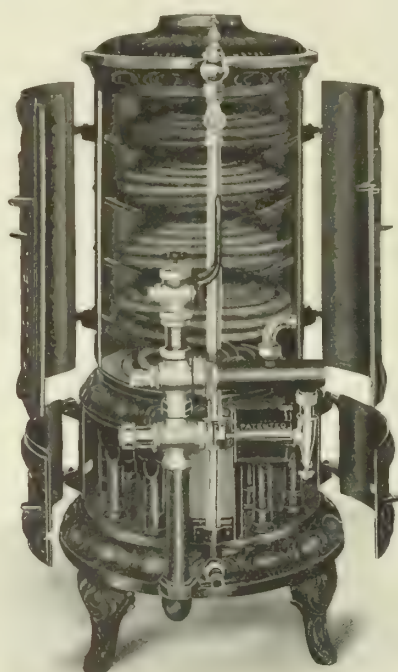


FIG. 1. "BELER" AUTOMATIC HEATER,
WITH SWINGING DOORS OPEN

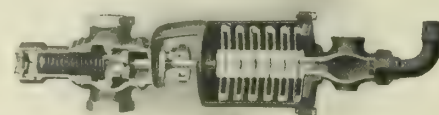


FIG. 2. AUTOMATIC-THERMO-
STATIC PRESSURE REGU-
LATOR

Has no springs in water chamber; no stuffing-boxes or plunger. Used only on the "Beler" Heater

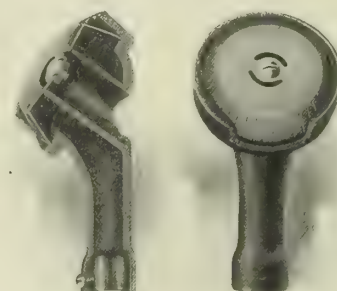


FIG. 3. HYDROCARBON BURNER
Gives highest efficiency and greatest combustion; absolutely non-corrosive

CAPACITIES AND PRICES.

"Beler" Automatic Water-Heater No 4, capacity 4 gallons per minute, suitable for any ordinary size house containing bath, kitchen and laundry . . .	\$100.00
"Beler" Automatic Water-Heater No 6, capacity 6 gallons per minute, suitable for dwellings having two or three bathrooms, lavatories, etc. . . .	130.00
"Beler" Automatic Water-Heater No. 8, capacity 8 gallons per minute, suitable for large dwellings having 3 to 6 baths, butler's pantry, lavatories, laundries, etc., small hotels, restaurants, small apartment houses, etc. . . .	160.00

INSTALLA- TION.

The "Beler" Heater can be installed by any competent plumber in any place having at least a 1-inch gas supply and a water pressure of at least four pounds. We co-operate with the plumber in every way to see that the heater is properly installed.

PROVISION IN PLANS.

We advise that a separate flue opening be provided, and also that provision for ample gas service be made: For No. 4, 1½-inch supply; No. 6, 1½-inch supply; No. 8, 2-inch supply.

**"BELER"
STORAGE
SYSTEMS.**

The "Belér" Storage Systems are applicable for all purposes and uses where instantaneous heaters are not suitable, or are undesirable, and are made in all sizes from 80 gallons up.

Heaters are the Multi-Coil type, connected to tank and equipped with thermostatic control.

The burners and thermostat were invented and patented by our Mr. Beler and represent years of labor and thought, and possess qualities superior to all others.

**"BELER"
THERMOSTAT.**

The "Belér" Thermostat is a liquid thermostat and is the most sensitive and accurate used on any water-heater to-day, and can be adjusted to work by the slightest change in the temperature of the water, so volatile is the liquid used.

All other heater manufacturers use the old style expansion rod system of thermostat, which depends on the expansion and contraction of the metal to open and close the gas supply valve; in time these crystallize and become useless.

The "Belér" System is adapted to return circulation and is recommended for large apartment houses and institutions where hot water is desired at once upon opening the faucet, whereas, in the one-pipe system, one must wait until the water in the line between faucet and tank has been run off before the hot water starts.

The "Belér" Storage System as illustrated is made with the following capacities:

80 Gallon Storage System—Suitable for residences having 2 or 3 bathrooms, one shower-bath, kitchen, pantry and laundry.

100 to 150 Gallon Storage System—Suitable for residences having from 3 to 8 bathrooms, 1 to 2 shower-baths, kitchen, pantry, and laundry; or for small hotels having 3 to 5 bathrooms, not over 10 lavatories, kitchen, and laundry; or for flat building having 3 to 6 apartments.

200 to 500 Gallon Storage System—Suitable for large residences, having from 8 to 15 baths, several showers, bedroom lavatories, butler's pantry, kitchen, and laundry; or for flat buildings having 3 to 18 apartments. Also for hotels having from 6 to 15 baths, not over 50 bedroom lavatories, kitchen, and large laundry; and for gymnasiums having from 10 to 15 baths and wash-basins.

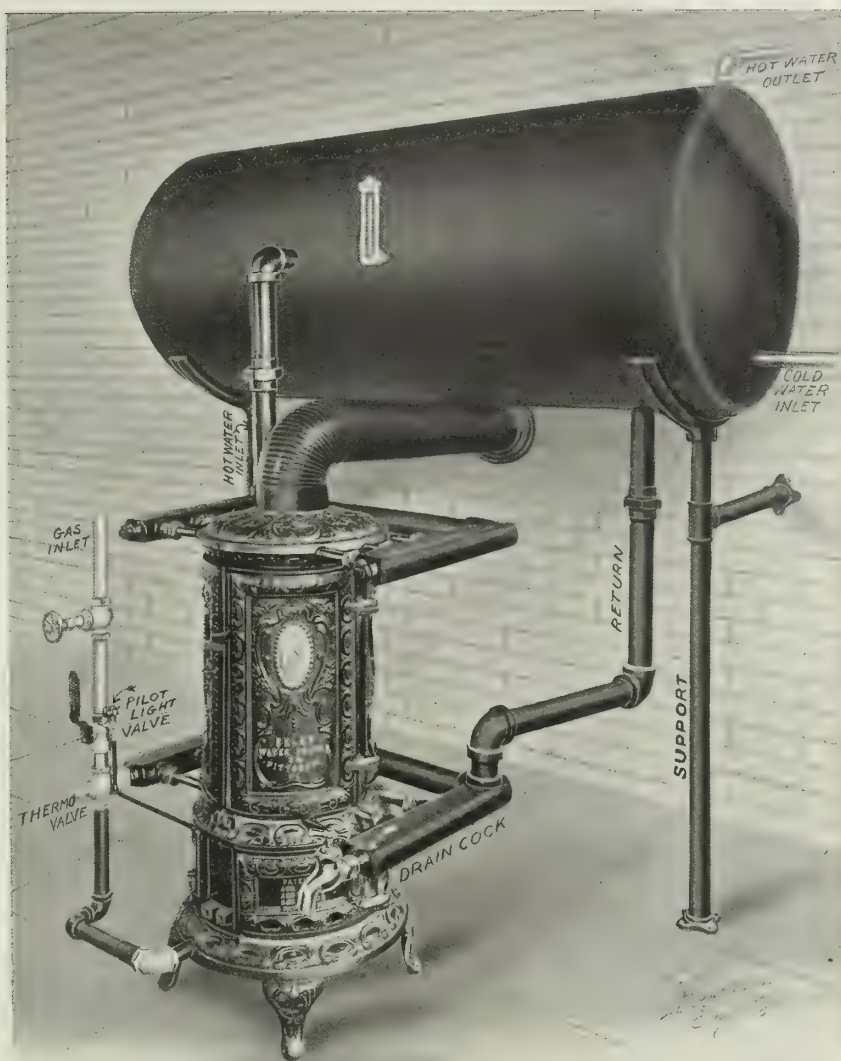
For 100 Gallon Storage System—One 100 gallon, extra heavy, charcoal iron tank, No. 12 Multi-Coil "Belér" Storage Heater, Thermometer, Thermostat, Brass Circulating Pipes, Stop-Cock and Tank Supports. Tank to be covered with 2-inch 85 per cent Magnesia, canvased. Approximate Price, \$148.00. Extra charge for galvanized and copper tanks.

For 150 Gallon Storage System—One 150 gallon, extra heavy, charcoal iron tank, No. 12 Multi-Coil "Belér" Storage Heater, Thermometer, Thermostat, Brass Circulating Pipes, Stop-Cock and Tank Supports. Tank to be covered with 2-inch 85 per cent Magnesia, canvased. Approximate Price, \$160.00. Extra charge for galvanized and copper tanks.

For 200 Gallon Storage System—One 200 gallon, extra heavy, charcoal iron tank, No. 200 Multi-Coil "Belér" Storage heater, Thermometer, Thermostat, Brass Circulating Pipes, Stop-Cock and Tank Supports. Tank to be covered with 2-inch 85 per cent Magnesia, canvased. Approximate Price, \$255.00. Extra charge for galvanized and copper tanks.

For 250 Gallon Storage System—One 250 gallon, extra heavy, charcoal iron tank, No. 200 Multi-Coil "Belér" Storage Heater, Thermometer, Thermostat, Brass Circulating Pipes, Stop-Cock and Tank Supports. Tank to be covered with 2-inch 85 per cent Magnesia, canvased. Approximate Price, \$270.00. Extra charge for galvanized and copper tanks.

For 300 Gallon Storage System—One 300 gallon, extra heavy, charcoal iron tank, No. 200 Multi-Coil "Belér" Storage Heater, Thermometer, Thermostat, Brass Circulating Pipes, Stop-Cock and Tank Supports. Tank to be covered with 2-inch 85 per cent Magnesia, canvased. Approximate price, \$300.00. Extra charge for galvanized and copper tanks.



"BELER" HEATER AND STORAGE TANK

**STORAGE
SYSTEM,
CAPACITY.**

**SPECIFICA-
TIONS.**

THE HOFFMAN HEATER COMPANY

MANUFACTURERS OF

The "Hoffman" Water-Heaters and Thermostatic Valves

FACTORY AND EXECUTIVE OFFICES

Washington Street and N. Y. C. & St. L. R. R.

LORAIN, OHIO

LONG DISTANCE TELEPHONE

PRODUCTS.

The "HOFFMAN" INSTANTANEOUS AUTOMATIC GAS WATER-HEATER, the "BEST" COPPER-COIL TANK WATER-HEATER (non-automatic), the "HOFFMAN" COPPER-COIL TANK WATER-HEATER, "HOFFMAN" STORAGE HEATERS, and "HOFFMAN" THERMOSTATIC VALVES.

INSTANTANEOUS AUTOMATIC GAS WATER-HEATERS.

Our Instantaneous Automatic Gas Water-Heaters are built both with cast iron and steel. The Nos. 3 and 4 are constructed of double steel jacket with asbestos board between. Our No. 5 Automatic Heater, which is for artificial gas only, is constructed of a combination of cast iron and steel. These Heaters mentioned above have $\frac{5}{8}$ -in. copper tubing.

Our Nos. 4-D and 6-F Instantaneous Automatic Gas Water-Heaters are constructed with double cast iron jackets, with $\frac{7}{8}$ -in. air space between, and have a thermostatic control regulating the water to any desired temperature. The No. 4-D is equipped with $\frac{3}{4}$ -in. copper tubing and the No. 6-F is equipped with $\frac{7}{8}$ -in. copper tubing. Base and Tops are made of heavy cast-iron japanned, and are heavy enough to stand considerable rough handling in shipping or in use. Improved Burners are of cast-iron, and are very powerful and efficient. Improved Automatic Water and Gas Valves are of the best grade of red brass castings, specially ground and fitted by our own expert mechanics. The Water Valve is of the diaphragm type, and cannot stick as do valves in which plungers are used. All our Automatic Heaters are equipped with brass strainer valves, through which water must pass before reaching the Automatic Valves. Should a sluggish pressure of water be experienced, remove cap from bottom of strainer and clean off brass gauges—the work of but a moment. Flame Spreaders are made of cast-iron, and do not rust or burn out.

The "Hoffman" Thermostatic Valves are very simple in construction and depend upon the law of expansion and contraction of metals from heat and cold, the gas supply being controlled by the temperature of the water.

The Valve may be set for any temperature between 130 and 190 degrees, and no further attention is necessary. The cost of the Valve is saved many times over in the course of a few months, on account of the small amount of gas used.



"HOFFMAN" THERMOSTATIC VALVE

ADAPTABILITY.

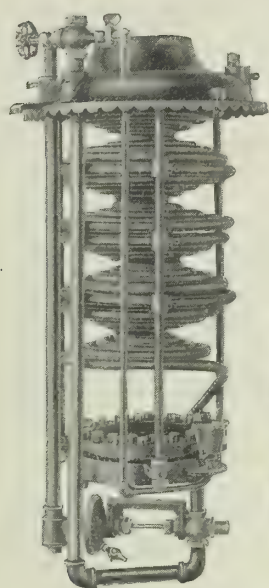
The "Hoffman" Instantaneous Automatic Gas Water-Heaters furnish hot water to any part of the house, simply by opening any hot-water faucet. They cost less to operate than the common tank heater because gas is consumed only while hot water is being drawn.

The "Hoffman" does away with the necessity of a hot-water boiler, which in summer makes life a burden to those compelled to work in a kitchen where it is usually located. We aim to install our Heater in the basement, out of the way, yet near the kitchen.

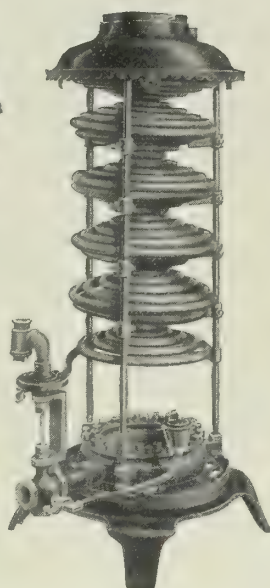
When the Heater is installed and properly adjusted and the tiny Pilot Light lit, all you have to do is to open your hot-water faucet and the Heater does the rest. Your Heater is ready day and night.

ADVANTAGES.

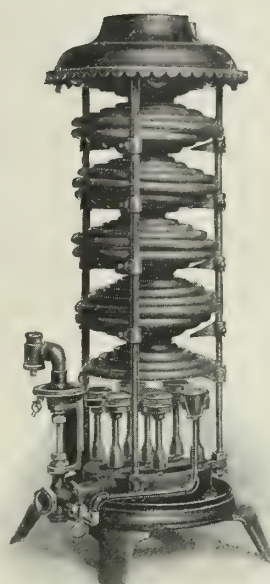
The Improved "Hoffman" Instantaneous Automatic Gas Water-Heater is the cheapest heater in the market, as it costs about one third less than other heaters of similar construction, and will heat water cheaper than you can heat it in any other way with gas. In thirty seconds after opening the faucet you will have an inexhaustible supply of scalding hot water. You are at no expense except while you are drawing hot water—the instant you close the faucet your fire is out. The "Hoffman" Heater is an economical device as well as a marvelously convenient one, and any one using one of these Heaters would never be without one.



No. 3



No. 4

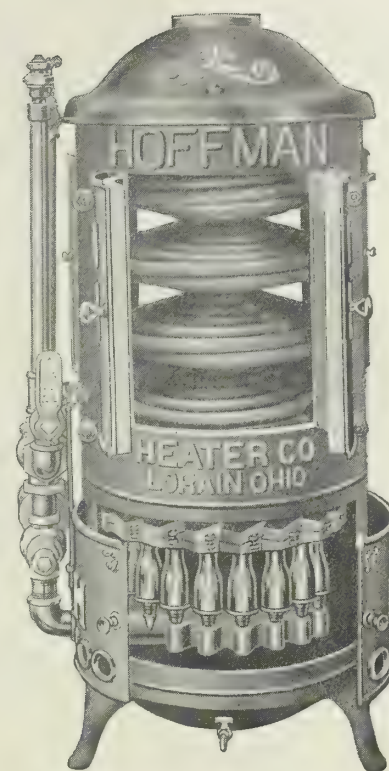


No. 5

"HOFFMAN" INSTANTANEOUS AUTOMATIC GAS WATER-HEATERS
Showing Interior Construction

PRICE LIST "HOFFMAN" INSTANTANEOUS AUTOMATIC GAS
WATER-HEATERS

Catalogue Number	Price	Height, Inches	Diameter of Jacket, Ins.	Copper Diam. Ins.	Coils Length, Feet	Inlet Gas Connections, Ins.	Capacity per minute	Natural or Artificial Gas	Size of Meter, Inches	Shipping Weight, Lbs.
No. 3 Brackets	\$45.00	36	13	5/8	60	1/2	3	Natural	10	97
3 On legs.	45.00	31 1/2	13	5/8	60	1/2	3	Natural	10	104
4 Steel...	60.00	38	13	5/8	75	1	4	Natural	20	120
4-D Iron	100.00	46	17	3/4	100	1	4	Either	20	300
5.....	65.00	38	13	5/8	75	1	3	Artificial	20	135
6-F	130.00	50	20	7/8	125	1 1/4	6	Either	40	520



No. 4-D and 6-F

"HOFFMAN" INSTANTANEOUS
GAS WATER-HEATER

PRICE-LIST COPPER-COIL TANK HEATER (NON-AUTOMATIC)
For use with either Natural or Artificial Gas

Catalogue Number	Polished Steel Jacket	Polished Brass Jacket	Diameter of Jacket, Ins.	Diameter of Copper Coils, Ins.	Height, Ins.	Gallons Capacity	Shipping Weight 6 in. Crate, Lbs.
No. 0	\$11.00	\$13.00	7 1/2	3/4	13	24 to 30	85
1	12.50	15.00	7 1/2	3/4	15	30 to 40	95
1 1/2	15.00	18.00	7 1/2	3/4	18	40 to 60	105
2	20.00	24.00	7 1/2	3/4	21	60 to 100	120
10	20.00		8 1/2	1	19	60 to 80	140
12	25.00		8 1/2	1	22	80 to 100	160

TANK HEATERS.

Our Tank Heaters are very popular among plumbers who have used them, because of their great efficiency in furnishing good hot water with rapidity, and because of their small consumption of gas.

FACILITIES.

We carry a large stock and can therefore fill orders promptly.

OUR GUARANTEE.

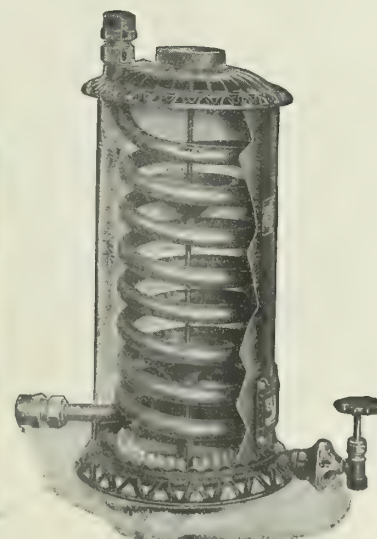
We guarantee our entire line to be exactly as represented. If our Instantaneous Automatic Gas Water-Heaters are not satisfactory after a thirty-day trial, they may be returned. We will replace any defective material, make good any defects in workmanship and look to the repair and adjustment for a period of one year from date of purchase, providing repairs are not made necessary through carelessness on the part of the user, and that Heaters have been installed according to directions.

REFERENCES.

Send for list containing testimonials from hundreds of satisfied customers.



NO. 12. THE
"HOFFMAN"
TANK HEATER



NO. 11. THE "BEST" TANK
HEATER

Showing Interior Construction

HUMPHREY COMPANY

Instantaneous Gas Water-Heaters for Bathrooms
KALAMAZOO, MICH.

PRODUCTS.

We manufacture "HUMPHREY" INSTANTANEOUS GAS WATER-HEATERS for bathrooms; "HUMPHREY" AUTOMATIC THERMAL INSTANTANEOUS WATER-HEATERS for furnishing hot water to all parts of a building.

"HUMPHREY" INSTANTANEOUS WATER-HEATERS FOR BATHROOMS—SPECIAL FEATURES.

These heaters are made of copper, nickel-plated, with brass interlocking valves and large, powerful cast-iron burners.

Every heater has interlocking valves and a gas locking device to prevent the gas being turned on without the water and without first turning on the pilot. With the pilot lighted first, an explosion is impossible. There is also a regulator to adjust the supply and temperature of the water; a white porcelain enameled shelf that is absolutely rust-proof; a removable base plate for burner inspection and cleaning, and a cast-iron burner so arranged that perfect combustion and the greatest possible heat are assured.

VENT PIPE.

Every heater must be connected with a vent pipe. The vent pipe can end in a chimney, attic, or out of doors. If it ends out of doors, it must be carried up above the highest point of the roof, and a vent hood, or cap, used to prevent any down draft.

GAS SUPPLY.

Gas supply pipes must be of ample size. Small pipes will not sustain the necessary gas pressure. The gas supply pipe to every heater should be of $\frac{3}{4}$ -inch pipe, connecting the heater direct with a 10-light meter.

PRICE-LIST.

No. of Heater	Price	Gas Supply from Meter	Heats Gallons per Minute	Diameter	Shipping Weight
10	\$52.00	$\frac{3}{4}$ "	3	12"	97 lbs.
2	40.00	$\frac{3}{4}$ "	2 $\frac{1}{2}$	12"	72 "
6	29.00	$\frac{3}{4}$ "	3	12"	64 "
8	23.50	$\frac{3}{4}$ "	2 $\frac{1}{2}$	10 $\frac{1}{2}$ "	55 "

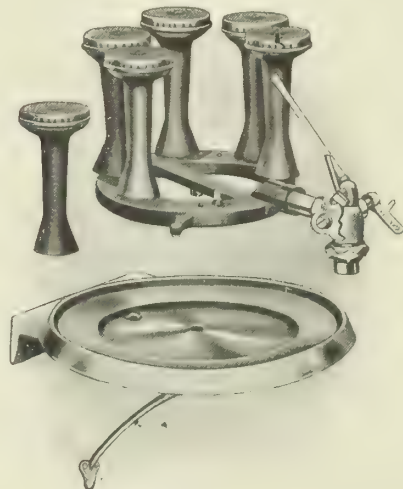


FIG. 2. BURNER AND SHELF

COMPLETE HOUSE SUPPLY.

The "Humphrey" Automatic Water-Heaters supply hot water to the entire house.

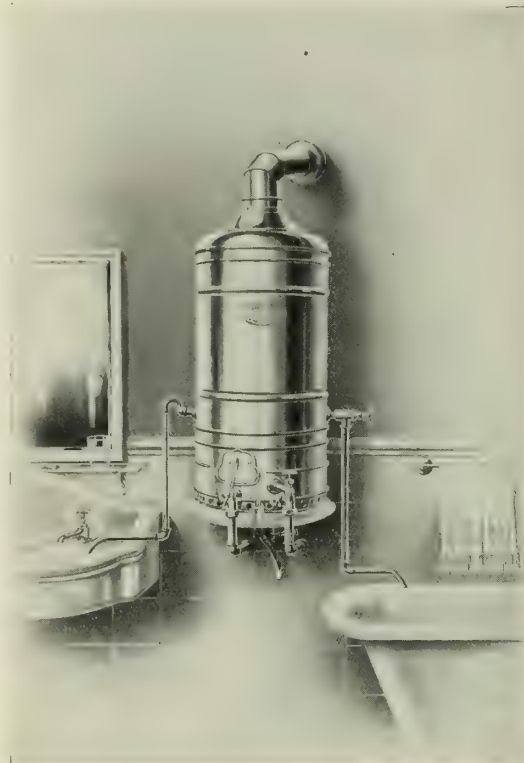


FIG. 1. COMPLETE VIEW OF NO. 2 INSTANTANEOUS HEATER

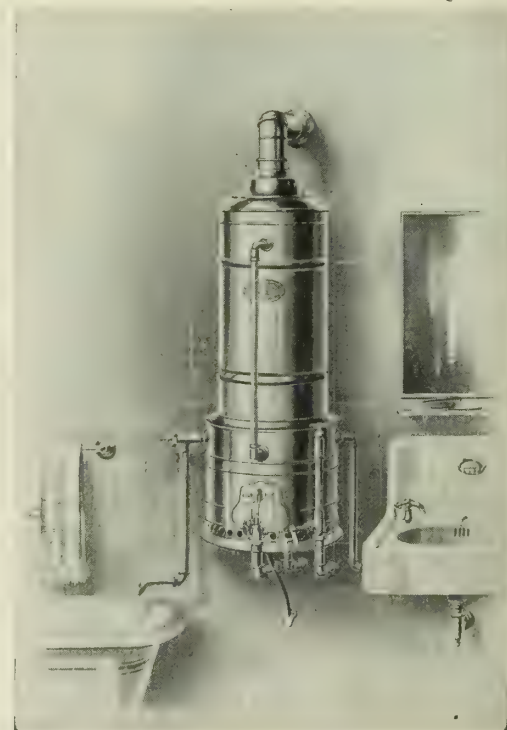


FIG. 3. COMPLETE VIEW OF NO. 6 INSTANTANEOUS HEATER

"HUM-
PHREY"
AUTO-THER-
MAL INSTAN-
TANEOUS
WATER-
HEATERS.
HOT WATER
BY OPENING
THE FAUCET.

CONSTRUC-
TION.

HEATING
COILS.

COPPER
COIL.

BURNERS.

AUTO-THER-
MAL VALVE
MOST
ACCESSIBLE.

PILOT LIGHT.

Our Automatic Water-Heaters (Fig. 4) are placed in the basement or any other convenient place, and are connected direct with the entire hot-water supply of the building. Instantly a hot-water faucet is opened, the automatic valve operates, opening the gas supply, and hot water is delivered at once. Closing the hot-water faucet shuts off the gas. You pay only for the hot water used. There is no fuel expense beyond the small pilot flame, except when hot water is being drawn.

These heaters are so arranged that any part can be removed quickly, or inspected at will. All parts are readily accessible. The casing or jackets are of cast-iron.

The heating coils, of seamless copper tubing, are guaranteed to stand a working pressure of 300 pounds. They are so wound that the heat strikes every portion of them, using all the heat from the burners.

This is made of finest quality of seamless brass tubing. The lower section of the coil is removable for cleaning whenever necessary.

The powerful, patented burners consume the gas with a blue Bunsen flame, assuring the highest possible heat value and economy. They are made so that they cannot "fire back" or light back at the mixing chamber. Most burners do fire back, depositing soot on the copper coils, thereby making the heater wasteful in operation. The burners are so arranged that they cannot be injured by the condensation from the heating coils.

The Auto-thermal Valve, located at the top instead of the bottom of the heater, is the simplest, most positive, and in every way the most perfect arrangement of its kind. It is the most accessible for the making of adjustments necessary to adapt every automatic heater to the most satisfactory service with the conditions under which it has to work.

The economy and success of an automatic heater depend on this little light. The "Humphrey" patented flash pilot burns a Bunsen flame and will not soot the coils. The light can be made to burn high or low, as desired. It is so arranged that it will never blow out by the inrush of gas to the burner, because when the water faucet is turned on the first movement of the valve supplies gas by means of a special by-pass to the pilot, which then flames up. Immediately after this the gas flows to the burners.

The automatic decrease economizes gas when hot water is not being drawn.

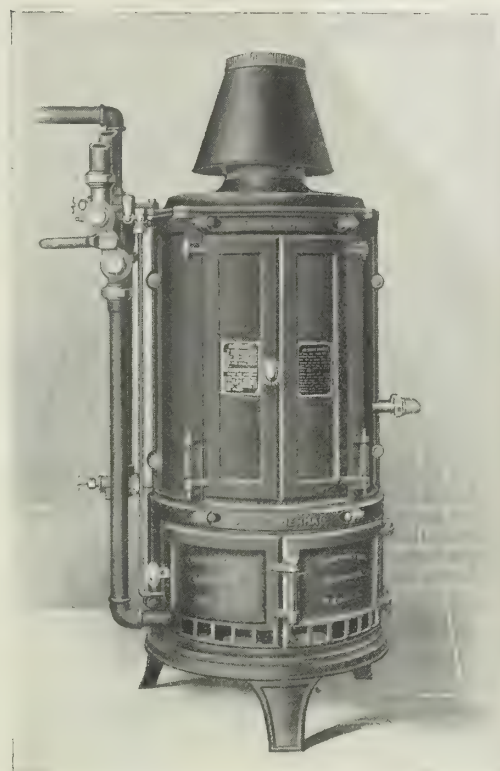


FIG. 4. COMPLETE VIEW OF
AUTO-THERMAL HEATER

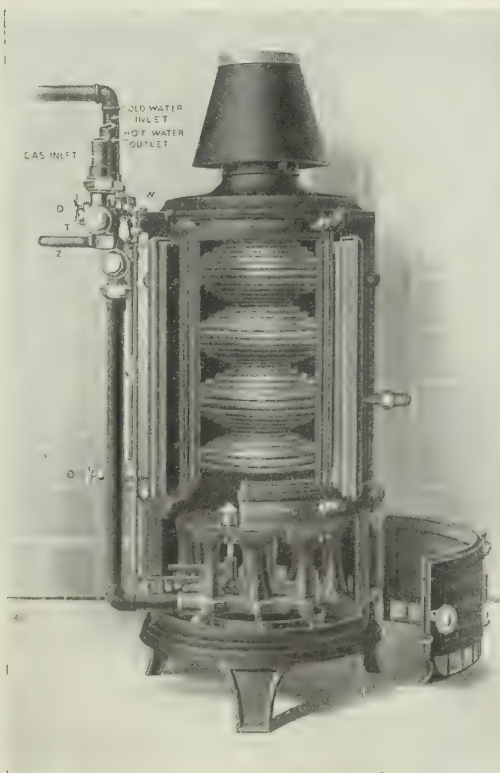


FIG. 5. SECTIONAL VIEW OF HEATER

PRICE-LIST.

No. of Heater	Price	Gas Supply from Meter	Heats Gals. per Min. 63° in temperature	Height	Diameter	Shipping Weight	Gas Consumed per Minute
3A	\$ 85.00	$\frac{3}{4}$ "	3	40"	13 $\frac{1}{2}$ "	278 lbs.	3 cu. ft.
4A	100.00	1 "	4	45"	16 "	352 lbs.	4 $\frac{1}{2}$ cu. ft.
6A	130.00	1 $\frac{1}{2}$ "	6	52"	20 "	478 lbs.	6 cu. ft.
8A	160.00	2 "	8	50"	28 "	550 lbs.	8 cu. ft.

PITTSBURG WATER HEATER COMPANY

MANUFACTURERS OF

Automatic and Instantaneous Gas Water-Heaters

PITTSBURG, PA.

BRANCH OFFICES

BOSTON, MASS.
BALTIMORE, MD.
BUFFALO, N. Y.
CLEVELAND, OHIO
CHICAGO, ILL.
COLUMBUS, OHIO
CINCINNATI, OHIO
DALLAS, TEX.

DETROIT, MICH.
KANSAS CITY, MO.
LOUISVILLE, KY.
LOS ANGELES, CAL.
MILWAUKEE, WIS.
MOBILE, ALA.
NEW YORK, N. Y.
PHILADELPHIA, PA.

PORTLAND, ORE.
ROCHESTER, N. Y.
SALT LAKE CITY, UTAH
SEATTLE, WASH.
ST. LOUIS, MO.
SAN FRANCISCO, CAL.
SYRACUSE, N. Y.
TOLEDO, OHIO.

PRODUCTS.

The "PITTSBURG" AUTOMATIC INSTANTANEOUS GAS WATER-HEATERS, "JUNIOR" INSTANTANEOUS HEATERS for Bathrooms, and "LION" DOUBLE COPPER-COIL TANK WATER-HEATERS.

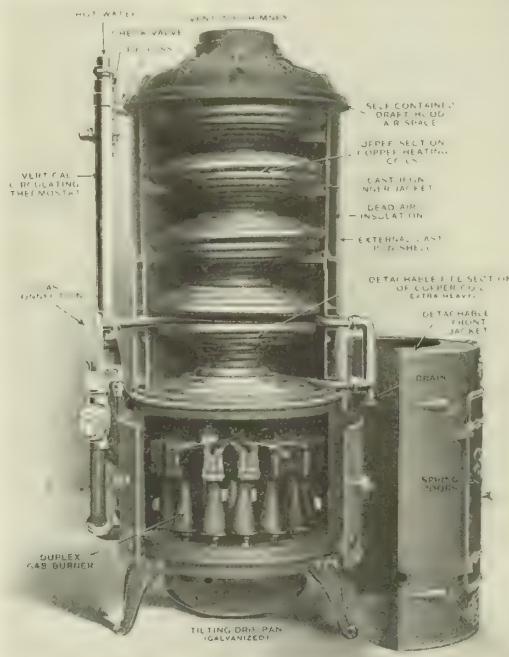


FIG. 1. INTERIOR VIEW OF THE "PITTSBURG" WATER-HEATER

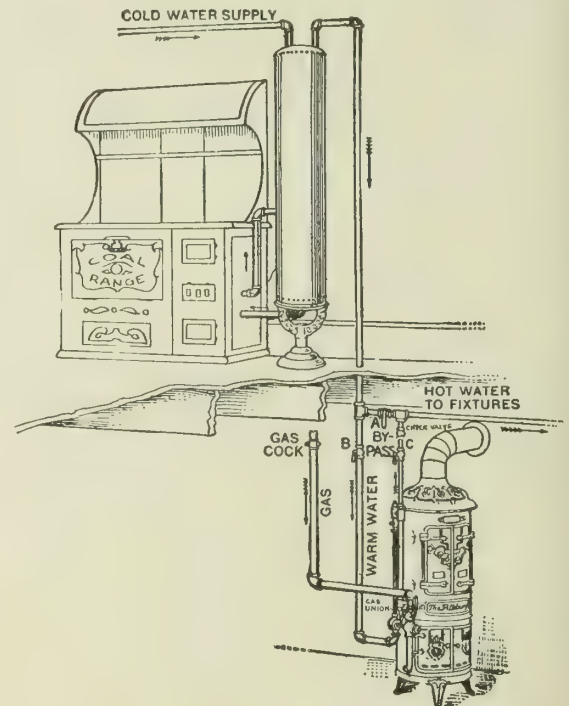


FIG. 2. "PITTSBURG" AUTOMATIC SUPPLEMENTARY HOT-WATER SYSTEM (For Artificial Gas)

"PITTSBURG"
AUTOMATIC
INSTANTANEOUS GAS
WATER-
HEATERS.

The "Pittsburg" Automatic Gas Water-Heater (Figs. 1 and 2) is usually installed in the basement and connected to the regular hot and cold water pipes and gas service, furnishing an inexhaustible supply of hot water automatically, in response to the mere opening of any hot-water faucet. No gas is burned except during the actual time hot water is being drawn. Hot water is always available. Open the faucet, and hot water flows; close the faucet, and the gas is shut off instantly.

In the Supplementary System (Fig. 2) the water is taken from the kitchen or basement tank and passed through the heater before supplying the hot-water fixtures. If the water in the tank is hot, no gas is burned; if only lukewarm, sufficient gas is burned to raise the tem-

perature of the water to 140 degrees as it passes through the heater. If the water is cold, additional gas is burned, since more heat is needed. The "Pittsburg" does not heat or circulate the tank; it simply intercepts the flowing water on its way from tank to fixture and automatically adds, as needed, the necessary amount of heat to guarantee maximum hot water (always ready) at minimum cost for fuel. In a nutshell, combining the advantages of the two systems, coal and gas, to give a perfect hot-water service at lowest possible cost of operation. Especially desirable during the summer, when the use of a coal range is abandoned for that of a gas range.

SIZES OF "PITTSBURG" AUTOMATIC HEATERS.

The proper sizes of "Pittsburg" Automatic Heaters for general installation are given below:

No. 3 is suitable for small dwellings having only bathroom and kitchen.

No. 4 is the standard size, and recommended for the modern home having bathroom, kitchen and laundry.

No. 6 is adapted for dwellings having two or three bathrooms, etc.

No. 8 is suitable for large dwellings, etc., having from three to six bathrooms.

"PITTSBURG" CIRCULATING THERMOSTAT (PATENTED).

High efficiency and perfect safety are gained through the use of our patented External Circulating Thermostat, which consists of but few parts and is connected to both terminals of the copper coil. It is noted for its accuracy and reliability and is a positive temperature regulator, giving economy in gas, safety and durability.

SECTIONAL DETACHABLE COPPER COILS.

The lower or fire section copper coil is easily detached at unions, for cleaning or replacement. The inverted construction adds greatly to the efficiency. The "Pittsburg" Coil is also constructed out of extra heavy copper tubing, adding greatly to its durability and low expense for repairs.

INSTALLA- TION AND FUEL.

Any competent plumber can install the "Pittsburg" Heaters, as complete directions are furnished with each machine. These Heaters will operate on as low as four pounds water pressure, using either artificial, natural or gasoline gas as fuel, where at least a $\frac{3}{4}$ -inch gas supply is available.

FLUE AND GAS CON- DITIONS REQUIRED.

Where it is intended to use a "Pittsburg" Heater, show on the plans a separate flue opening in the basement where heater is to be located. Further, provide for an ample gas service, not only from the main to the house, but from the meter to the heater. Usually a $1\frac{1}{2}$ -inch gas-supply pipe for modern homes having not over two bathrooms, and a 2-inch supply pipe for homes having more, will be sufficient.

COST OF OPERATING "PITTSBURG" AUTOMATIC HEATER.

To every cubic foot of gas burned one gallon of water is heated. With gas at \$1.00 per thousand, the "Pittsburg" Heaters furnish ten gallons of hot water for one cent, or an ordinary hot bath for two cents. Figuring fifty gallons as the average consumption of hot water used daily in the ordinary home, the cost per month will vary from \$2.00 in summer to \$3.00 in winter, including pilot.

Under the "Pittsburg" Supplementary Heating System the operating cost is even less.

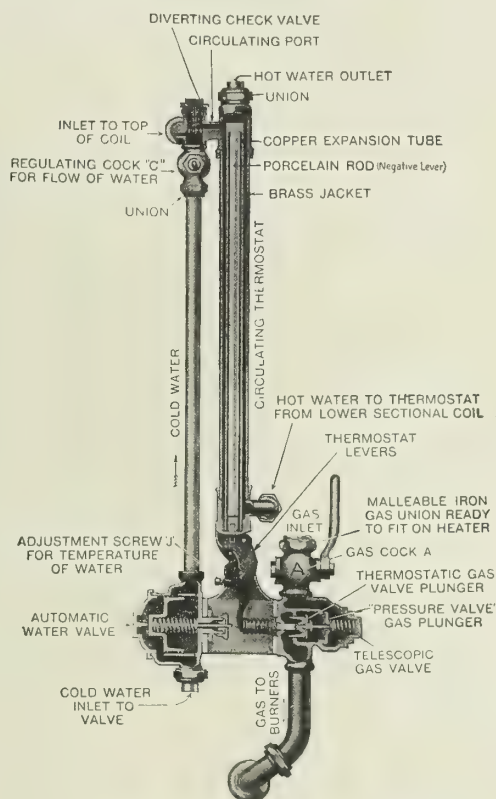


FIG. 3. SECTIONAL VIEW OF "PITTSBURG" CIRCULATING THERMOSTAT (Patented)

SIZES,
CAPACITIES,
PRICES,
WEIGHTS.

Size	Price f. o. b. destination to Rocky Mountains	Average capacity in gallons per minute	Size of water con- nections: cold inlet hot outlet	Gas supply direct line from meter	Minimum size of meter	Size of flue connection	Height	Diameter of Heater, including mechanism	Weight, crated
"Pittsburg" No. 3	\$ 85.00	3	½ inch	1 inch	20 lt.	6 inch	43 inch	23 inch	285 lbs.
"Pittsburg" No. 4	100.00	4	½ inch	1¼ inch	30 lt.	6 inch	46 inch	24½ inch	350 lbs.
"Pittsburg" No. 6	130.00	6	¾ inch	1¼ inch	45 lt.	7 inch	51 inch	26 inch	470 lbs.
"Pittsburg" No. 8	160.00	8	¾ inch	1½ inch	60 lt.	8 inch	58 inch	28 inch	650 lbs.

For prices on Heaters west of Rocky Mountains add \$15.00 to above list.

NOTE—The above heating capacities, based on 63° Fahr. rise in temperature of water, are guaranteed. When gas is also to be used for cooking and lighting purposes the meter must be one size larger than indicated above. When a single-service pipe from meter to rear of house is to supply all gas fixtures, the pipe must be one size larger than indicated.

MODEL
SPECIFICA-
TIONS.

The following specification form is used for "Pittsburg" Automatic Gas Water-Heaters: "Install complete in basement, at point shown on plans, one No. 'Pittsburg' Automatic Gas Water-Heater (to be furnished by owner), to be connected to gas, water and flue in exact accordance with directions, as furnished by the manufacturers, PITTSBURG WATER HEATER COMPANY, Pittsburg, Pa."



FIG. 4. "JUNIOR" INSTANTANEOUS
HEATER FOR BATHROOMS

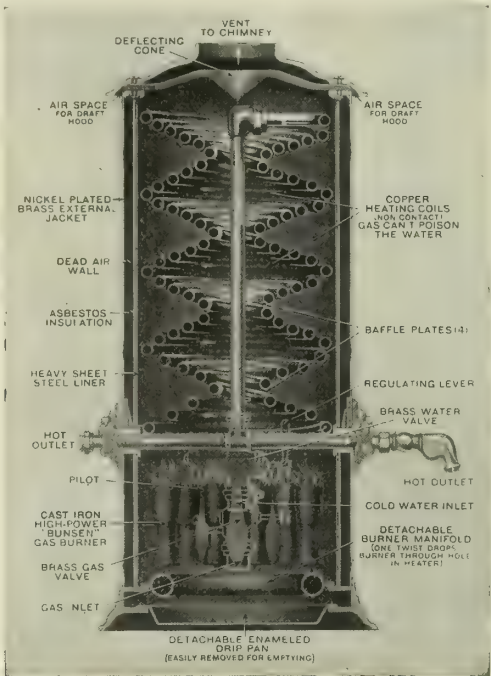


FIG. 5. SECTIONAL VIEW OF A "JUNIOR"
INSTANTANEOUS HEATER

"JUNIOR"
INSTANTA-
NEOUS
HEATER FOR
BATHROOM.

The "Junior" Heater with a copper heating coil is designed for the bathroom, guaranteeing plenty of hot water at all times. When you have enough, one turn of the lever turns off gas and water together, and the expense stops instantly.

This Heater is a non-contact machine, hence the water heated is never poisoned. It is good for all purposes, as the gas does not touch the water. It can be operated under pressure, supplying one or more fixtures in the same room or on separate floors; it will also heat water for an overhead shower bath. It is equipped with a "Bunsen" burner with which a vent pipe is necessary, or with a carbon burner composed of lava tops, requiring no vent pipe, and it can be used with artificial, natural, or gasoline gas. The copper coil is detachable at the unions. It is safe, economical, and efficient.

"JUNIOR"
HEATERS—
SIZES,
PRICES,
CAPACITIES,
WEIGHTS,
ETC.

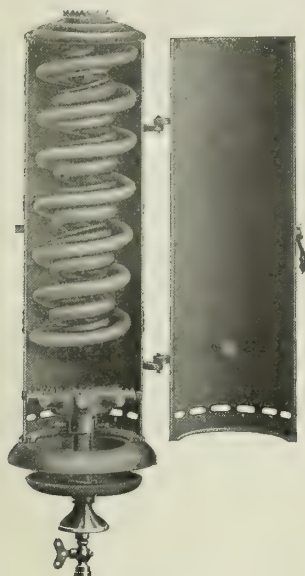
Size	Price f. o. b. Pittsburg	Gas supply direct from meter if possible	Minimum size of meter	Capacity heats continuous flow per minute	Gas used per minute	Size flue	Height	Width	Weight
"Junior" No. 2	\$30.00	not less than $\frac{1}{2}$ in.	10 lt.	2 gals.	2 cu. ft.	no vent	30 inch	13 inch	53 lbs.
"Junior" No. 3	30.00	" " " $\frac{1}{2}$ in.	10 lt.	2 gals.	2 cu. ft.	3 in. vent	30 inch	13 inch	70 lbs.
"Junior" No. 5	40.00	" " " $\frac{3}{4}$ in.	10 lt.	3 gals.	3 cu. ft.	4 in. vent	34 inch	14 inch	80 lbs.

For Prices on Heaters west of Rocky Mountains add \$5.00 to above list.

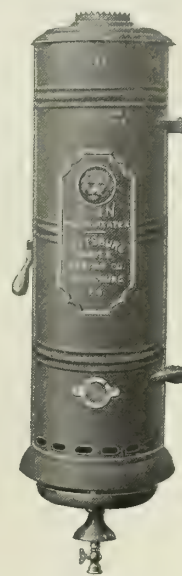
On special orders "Junior" Heaters are fitted with automatic water valves which enable the heater to be installed in kitchen and worked from bath or kitchen faucets. For "Juniors" equipped with automatic valve add \$15.00 to above lists.

MODEL
SPECIFICA-
TION.

In specifying "Junior" Instantaneous Heaters use the following form: "Install complete, at point shown on plans, one No. 'Junior' Instantaneous Water-Heater (furnished by owner), in exact accordance with instructions as furnished by the manufacturers, PITTSBURG WATER HEATER COMPANY, Pittsburg, Pa., connecting vent pipe if so required."



Door Open



Door Closed

FIGS. 6 AND 7. "LION" STORAGE TANK HEATER

Note immense copper-coil heating surface

"LION"
TANK
WATER-
HEATER
(GAS).

The "Lion" Independent Tank Heater has a double copper-coil, cast-iron jacket, hinged door with self-closing latch, and is designed for heating the kitchen boiler, independent of range or water back. The door is kept closed except when lighting gas. The heater is equipped with our self-contained draft-hood (patented) which absolutely prevents down drafts blowing out flame when gas is turned low. Heating results are quick and economical on gas. The jacket is handsomely finished in baked black japan.

SIZES,
PRICES, AND
WEIGHTS
OF "LION"
HEATERS.

Size	Price f. o. b. Pittsburg	Designed for	Gas Supply	Size of flue	Height	Diameter	Weight
"Lion" No. 1	\$20.00	30-40 gal. tanks	$\frac{3}{8}$ inch	3 inch	24 inch	7 inch	50 lbs.
"Lion" No. 2	35.00	40-50-60 gal. tanks	$\frac{1}{2}$ inch	3 inch	27 inch	8 inch	80 lbs.

NOTE—The No. 2 "Lion" has a triple (3) copper heating coil.

MODEL
SPECIFICA-
TION.

In specifying "Lion" Storage Tank Heaters use the following form: "Furnish and install one extra heavy galvanized-iron tank of 40 gallons' capacity at point indicated, and connect to same one No. 1 'Lion' Tank Water-Heater, in accordance with directions of manufacturers, PITTSBURG WATER HEATER COMPANY, Pittsburg, Pa."

RUUD MANUFACTURING COMPANY

Instantaneous Automatic Gas Water-Heater, Automatic Gas Storage Water-Heater

MAIN OFFICE

Twenty-Ninth and Smallman Streets
PITTSBURG, PA.

TELEPHONE CONNECTIONS

BOSTON, MASS.
NEW YORK, N. Y.
PHILADELPHIA, PA.
BALTIMORE, MD.
WASHINGTON, D. C.
ATLANTA, GA.

BUFFALO, N. Y.
CLEVELAND, OHIO
COLUMBUS, OHIO
CINCINNATI, OHIO
LOUISVILLE, KY.
TOLEDO, OHIO

BRANCHES

HAMBURG, GER., Ruud Heisswasser Apparatebau

DETROIT, MICH.
CHICAGO, ILL.
MILWAUKEE, WIS.
DULUTH, MINN.
ST. LOUIS, MO.
KANSAS CITY, MO.

FACTORIES
PITTSBURG, PA.
HAMBURG, GERMANY.

DALLAS, TEX.
PORTLAND, ORE.
SAN FRANCISCO, CAL.
LOS ANGELES, CAL.
LONDON, ENG., 28 Audrey House
TORONTO, CANADA

PRODUCTS.

The "RUUD" INSTANTANEOUS AUTOMATIC GAS WATER-HEATER and "RUUD" MULTICOPPER-COIL AUTOMATIC GAS WATER STORAGE SYSTEMS.

"RUUD" INSTANTANEOUS AUTOMATIC GAS WATER-HEATER.

This Heater, when installed in the basement and connected to the regular hot and cold water pipes and gas service, furnishes an inexhaustible supply of scalding hot water automatically, in response to the mere opening of any of the hot-water faucets. No gas is burned except during actual time hot water is being drawn.

"RUUD" MULTICOPPER-COIL AUTOMATIC STORAGE SYSTEM.

This System is designed for large residences, apartment buildings, hotels, institutions, and every class of work requiring large quantities of hot water simultaneously at many faucets. The Heater operates until tank is filled with hot water. The gas is then shut off automatically, and remains off until the hot water is removed from the tank.

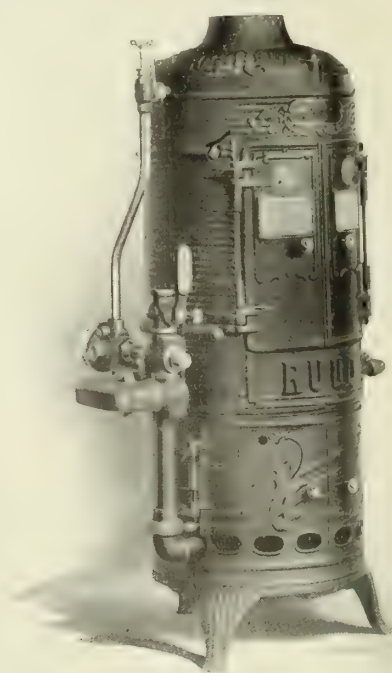


FIG. 1. THE "RUUD" INSTANTANEOUS AUTOMATIC WATER-HEATER

Showing Spring Doors closed; all working parts outside

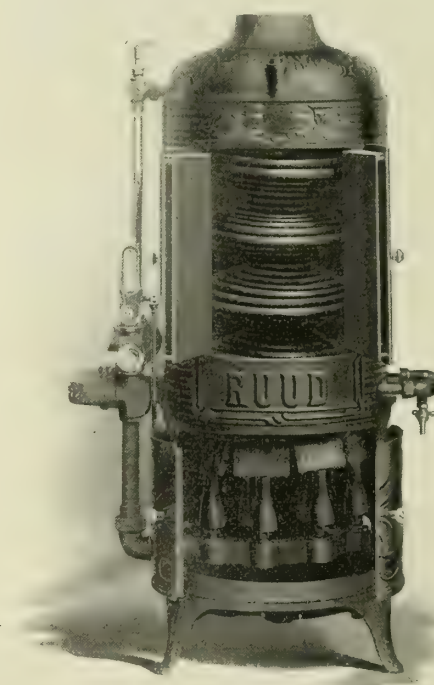


FIG. 2. THE "RUUD" INSTANTANEOUS AUTOMATIC WATER-HEATER

Opened to show Copper Heating-Coils, High-Power Gas Burners, Automatic Internal Thermostat, etc.

PATENTS.
GOLD MEDALS.

The "Ruud" Heater is protected by patents in all countries. The "Ruud" Heater was awarded Gold Medals at the World's Fair, 1904, and at Franklin Institute, 1905.

COST OF
OPERATION
"RUUD" IN-
STANTA-
NEOUS AUTO-
MATIC
WATER-
HEATER.

One cubic foot of gas will heat one gallon of water. With gas at \$1.00 per thousand cubic feet the "Ruud" furnishes ten gallons of hot water for one cent, or an ordinary hot bath for two cents.

Allowing for fifty gallons of scalding hot water to be used daily the cost per month ranges from \$2.00 in summer to \$3.00 in winter, including pilot.

Under the "Ruud" Reheating System the operating cost is even less than the above estimate.

Through its 80 per cent heating efficiency, and the elimination of the radiation and "chimney" losses peculiar to all other gas water-heating systems, the "Ruud" is much the most economical and practical, and as it lasts a lifetime the ultimate saving is very great.

SPECIFICA-
TIONS
"RUUD"
INSTANTA-
NEOUS AUTO-
MATIC
WATER-
HEATER.

Specify "One 'Ruud' No. Instantaneous Automatic Gas Water-Heater to be furnished and installed in the basement at point shown on plans. The connecting of the necessary water, gas and flue pipes to be in exact accordance with instructions furnished by the RUUD MANUFACTURING COMPANY of Pittsburg, Pa., or its Branches."

AUTOMATIC
REHEATING
SYSTEM.

Under the Automatic Reheating System, shown in Fig. 3, all water from the tank has to pass through the heater on its way to the fixtures. If the water is hot, no gas is burned at the heater; if moderately warm, sufficient gas is burned to raise the temperature of the water to 140° F. as it passes through the heater. If the water is cold, more gas is burned, since more heat is needed. The whole operation is entirely automatic, and made possible by the "Ruud Internal Thermostat."

It will be noted that the "Ruud" does *not* circulate or heat the water in the tank—simply intercepts the flowing water on its travel to the fixtures, and automatically adds (only when needed) the necessary degrees of heat to guarantee the household inexhaustible yet economical hot-water service—always available; especially desirable during warm weather months when the use of the coal range has been abandoned for that of the gas range.

We have over five thousand of these reheating systems in successful operation.

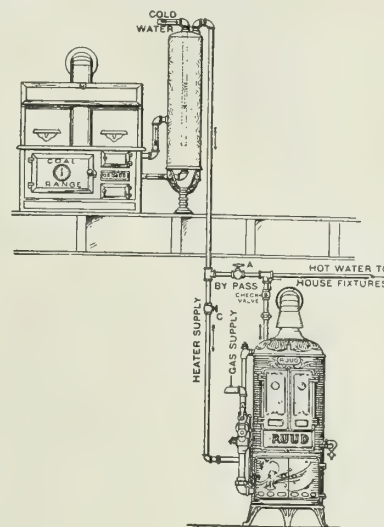


FIG. 3. SHOWING THE "RUUD" INSTALLED UNDER THE AUTOMATIC REHEATING SYSTEM

THE "RUUD
INTERNAL
THERMO-
STAT"
(PATENTED).

The many points of high efficiency and perfect safety of the "Ruud" are gained through the use of our "Patented Internal Thermostat." This device not only controls the temperature of the heated water and regulates the flow of the gas, but also automatically shuts off the gas and prevents explosion in case the automatic "water pressure valve" should "stick" or refuse to close—an exclusive feature.

Over 50,000 "Ruuds" in successful operation prove superiority and durability.

FLUE AND
GAS CONDI-
TIONS
REQUIRED.

We recommend that where it is intended to use a "Ruud" the architect provide for a separate flue opening in the basement, and particularly provide for an ample gas service, not only from the main to the house, but from the meter to the heater. Usually a 1½" supply pipe, for modern homes having not over two baths, and a 2" pipe for homes having more, will be sufficient.

SPECIFICA-
TIONS "RUUD"
MULTI-
COPPER-COIL
STORAGE
SYSTEM.

Specify "One gallon extra heavy "Ruud" (Black or Galvanized) Iron Tank (or Copper) to be supported securely in horizontal position on "Ruud" Tank Supports and fitted in automatic connection with No. "Ruud" Multicopper-Coil Storage Heater and "Ruud" Thermostatic Moment-Valve, using inch (brass or galvanized) pipe as circulators between heater and tank, with inch gate valves and elbows; the system to be fitted up in exact accordance with RUUD MANUFACTURING COMPANY's printed directions and instructions, running inch gas line to heater, with unions and inch gas cock in same. A independent flue pipe with 'Ruud' Draft Hood to be run from heater to chimney having good draft. Cover tank with 2" wall of 85 per cent 'Ruud' Magnesia Insulation, canvased."

SIZES,
CAPACITIES,
PRICES, ETC.,
"RUUD" IN-
STANTANEOUS
AUTOMATIC
WATER-
HEATER.

Size Number	Price f. o. b. destination	Price f. o. b. destination Pacific Coast	Heats continuous flow, gals. per minute	Gas used per minute	Minimum size of meter required	Gas supply from meter	Size of flue connection	Height of heater	Diameter of heater proper	Weight
"Ruud" No. 3	\$ 85.00	\$100.00	3 gals.	3 cu. ft.	20 lgt.	1"	6"	46"	15"	250 lbs.
"Ruud" No. 4	100.00	115.00	4 gals.	4 cu. ft.	30 lgt.	1 1/4"	6"	48"	17"	310 lbs.
"Ruud" No. 6	130.00	150.00	6 gals.	6 cu. ft.	45 lgt.	1 1/2"	7"	56"	20"	425 lbs.
"Ruud" No. 8	160.00	175.00	8 gals.	8 cu. ft.	60 lgt.	2"	8"	59"	22"	525 lbs.

NOTE—The above heating capacities, based on 63° F. rise in temperature of the water, are guaranteed. When gas is also to be used for cooking and lighting purposes the meter must be one size larger than indicated above. Where a single gas service pipe from meter to rear of house is to supply all gas fixtures, the pipe must be one size larger than indicated above for size of heater to be used.

SIZE TO USE
IN DWELLING.

"Ruud" No. 3—Suitable for small dwellings, usually having only bathroom and kitchen connections for hot water.

"Ruud" No. 4—This is the standard size, and is the heater we recommend for the modern home, bathroom, kitchen and laundry. This size will supply the average household with all the hot water needed.

"Ruud" No. 6—This size is adapted for dwellings having two or three bathrooms, butler's pantry, and one or more hall bedroom lavatories.

"Ruud" No. 8—This size is suitable for large dwellings having from three to six bathrooms, butler's pantry, several hall or bedroom lavatories, etc. It is also well adapted for small hotels, restaurants, small apartment houses, etc.

The No. 100 is suitable for residences having two or three baths, one shower-bath, kitchen, pantry and laundry.

Flat-buildings, having from three to six apartments of from four to six rooms each.

Heating Capacity of Heater in Gallons per Hour		Capacity of Tank in Gallons		Dimensions of Iron Tanks		Size of Circulating Pipes		Size of Hot Supply to House, also Cold Inlet to Tank		Complete with No. 100 Heater, Black Charcoal Iron Tank, Thermometer, Supports for Tank, Thermostatic Moment-Valve, and 85 per cent Magnesia Insulation		Complete with No. 100 Heater, Galvanized Charcoal Iron Tank, Thermometer, Supports for Tanks, Thermostatic Moment-Valve, and 85 per cent Magnesia Insulation		Complete with No. 100 Heater, Standard (200 lb. test) Copper Tank, Thermometer, Supports for Tank, Thermostatic Moment-Valve, and 85 per cent Magnesia Insulation		Complete with No. 100 Heater, Extra Heavy (300 lb. test) Copper Tank, Thermometer, Supports for Tank, Thermostatic Moment-Valve, and 85 per cent Magnesia Insulation	
Heating Capacity of Heater in Gallons per Hour		Capacity of Tank in Gallons		Dimensions of Iron Tanks		Size of Circulating Pipes		Size of Hot Supply to House, also Cold Inlet to Tank		Complete with No. 100 Heater, Black Charcoal Iron Tank, Thermometer, Supports for Tank, Thermostatic Moment-Valve, and 85 per cent Magnesia Insulation		Complete with No. 100 Heater, Galvanized Charcoal Iron Tank, Thermometer, Supports for Tanks, Thermostatic Moment-Valve, and 85 per cent Magnesia Insulation		Complete with No. 100 Heater, Standard (200 lb. test) Copper Tank, Thermometer, Supports for Tank, Thermostatic Moment-Valve, and 85 per cent Magnesia Insulation		Complete with No. 100 Heater, Extra Heavy (300 lb. test) Copper Tank, Thermometer, Supports for Tank, Thermostatic Moment-Valve, and 85 per cent Magnesia Insulation	
100	80	5'	×	20"	1 1/2"	1"	\$194.60	\$201.20	\$252.90	\$280.40							
100	100	5'	×	22"	1 1/2"	1 1/4"	201.75	208.25	304.85	332.35							
100	120	5'	×	24"	1 1/2"	1 1/4"	211.65	219.35	342.00	369.50							
100	150	6'	4"	×	24"	1 1/2"	226.50	238.60	372.80	400.30							
200	100	5'	×	22"	2"	1 1/4"	\$234.75	\$241.35	\$334.85	\$362.35							
200	120	5'	×	24"	2"	1 1/4"	242.45	261.15	371.70	399.20							
200	150	6'	4"	×	24"	2"	259.50	271.60	405.80	433.30							
200	200	8'	6"	×	24"	2 1/2"	278.75	302.90	474.55	502.05							
200	250	8'	6"	×	24"	2 1/2"	296.90	333.20	502.05	608.20							
200	300	8'	×	30"	2"	1 1/2"	311.75	362.35	502.05	608.20							
300	200	8'	×	24"	2"	1 1/2"	\$234.75	\$241.35	\$334.85	\$362.35							
300	250	7'	×	30"	2"	1 1/2"	242.45	261.15	371.70	399.20							
300	300	8'	×	30"	2"	2"	259.50	271.60	405.80	433.30							
300	325	9'	×	30"	2"	2"	278.75	302.90	474.55	502.05							
300	365	10'	×	30"	2"	2"	296.90	333.20	502.05	608.20							
300	400	10'	×	30"	2"	2"	311.75	362.35	502.05	608.20							
400	300	8'	×	30"	2 1/2"	2"	\$234.75	\$241.35	\$334.85	\$362.35							
400	365	10'	×	30"	2 1/2"	2"	242.45	261.15	371.70	399.20							
400	425	8'	×	36"	2 1/2"	2"	259.50	271.60	405.80	433.30							
400	500	9'	6"	×	36"	2 1/2"	278.75	302.90	474.55	502.05							
400	575	8'	×	42"	2 1/2"	2"	296.90	333.20	502.05	608.20							

Continued on next p

The No. 200 is suitable for large residences having from three to six baths, one or two shower-baths, kitchen, pantry, laundry, etc.

Flat-buildings, having from six to twelve apartments, averaging five or six rooms, kitchen and bath in each.

Small hotels, having from three to five baths, not over ten bedroom lavatories, kitchen, laundry, etc.

The No. 300 is suitable for large residences having from eight to fifteen baths, several shower-baths, bedroom lavatories, kitchen, butler's pantry, laundry, etc.

Flat-buildings, having from ten to eighteen apartments, averaging seven rooms and bath.

Hotels, having from four to ten baths, not over fifty bedroom lavatories, kitchen, large laundry, etc.

Small gymnasiums, having not more than ten to fifteen hot-water outlets and a membership of not more than two hundred.

The No. 400 (with extra heavy iron tank) is suitable for large flats, having from eighteen to twenty-four apartments, averaging seven rooms and bath.

Hotels, having from ten to twenty bathrooms (use 500-gallon tank).

Gymnasiums having from twenty to thirty hot-water outlets, and membership of not over five hundred (use 500-gallon tank).

Above lists include "Ruud" Moment-Valve (Tank Thermostat). Systems installed on natural gas, moment-valve may be omitted, in which case all lists are reduced \$45.00.

We guarantee all Heaters delivered in perfect mechanical condition, free from defects in workmanship or materials.

With artificial gas testing 650 heat units, the "Ruud" Heater will use not more than one cubic foot of gas to each one gallon of water raised 63° F. in temperature.

With natural gas testing 1,000 heat units, the "Ruud" Heater will use less than one cubic foot of gas to each one gallon of water raised 85° F. temperature.

After being connected up in exact accordance with the printed directions furnished, should any "Ruud" Heater, after a fair thirty days' trial, fail to heat the water with the amount of gas above stated, or fail to do exactly what we say it will—your money back without a word.

With adequate gas and water supplies, the "Ruud" Storage System (of proper size) will supply hot water in large quantities at any desired temperature, winter or summer, with a very reasonable consumption of gas.

We guarantee both workmanship and material for a period of two years from date of installation, and, furthermore, warrant our System unequalled in hot-water capacity and service, and superior in gas efficiency to any storage system on the market.

The "Ruud" can be installed by any competent plumber in any place having at least a one-inch gas supply (artificial, natural or gasoline gas), and where at least four pounds water pressure is available.

We gladly furnish detailed plans and specifications for all manner of Gas Hot-Water Systems.

Correspondence solicited. A representative from our nearest Branch Office will personally assist in drawing specifications, and will superintend installations.

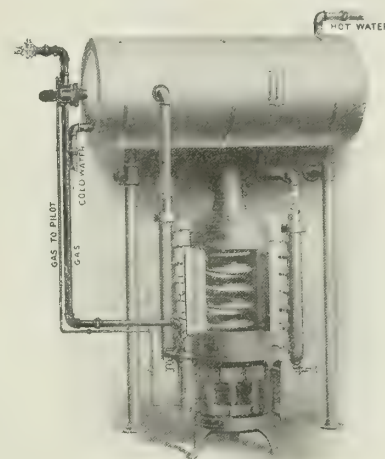


FIG. 4. SHOWING THE SYSTEM INSTALLED COMPLETE

Spring Doors opened to show simplicity and accessibility

MOMENT-
VALVE.

GUARANTEE
"RUUD"
INSTANTANEOUS
AUTOMATIC
WATER-
HEATER.

GUARANTEE
"RUUD"
MULTI-
COPPER-COIL
STORAGE
SYSTEM.

INSTALLA-
TION.

CO-OPERATIVE
SERVICE.

JOHN WOOD MANUFACTURING COMPANY

MANUFACTURERS OF

"Electric Weld" Products

OAKLAND, CAL.

CONSHOHOCKEN, PA.

SAN FRANCISCO, CAL.

PRODUCTS
AND
SERVICES.

"ELECTRIC WELD" RANGE BOILERS and EXPANSION TANKS;
 "ELECTRIC WELD" COMBINATION BOILER and GAS WATER-HEATER;
 "ELECTRIC WELD" INDEPENDENT GAS WATER-HEATER; "ELECTRIC
 WELD" SPECIAL TANKS (Black or Galvanized), and "ELECTRIC
 WELD" SOIL PIPE and FITTINGS; also, GALVANIZING WORK.

Electric Weld
PRODUCTS

TRADE-MARK
 Registration pending

"ELECTRIC
WELD"
SEAM.

The "Electric Weld," as used in our Boilers and Tanks, forms practically a seamless tube, stronger and more dependable than a piece of pipe or a seamless drawn tube. See Fig. 1, from actual photograph of the "Electric Weld" seam subjected to tensile test, showing that the break occurs in the body of the metal, thus proving the weld itself to be of greatest possible strength.

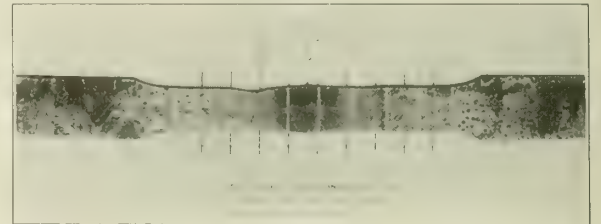


FIG. 1. TEST SAMPLE FROM PHOTOGRAPH
 Showing strength of "Electric Weld"

"ELECTRIC
WELD"
RANGE
BOILER.

Fig. 2 illustrates the "Electric Weld" Five-Year Guaranteed Boiler with malleable head and bottom. This is a popular form of high-class Range Boiler which has met the needs of the market and is to-day more generally used than any other five-year guaranteed boiler manufactured.

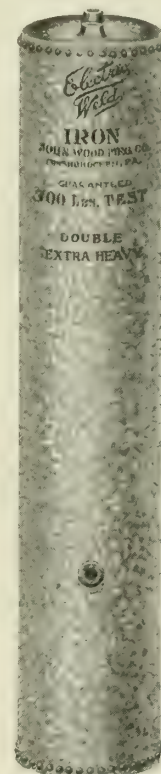


FIG. 2. "ELECTRIC WELD"
 RANGE
 BOILER

HYDROSTATIC
AND
MECHANICAL
TESTS.

"Electric Weld" Boilers and Tanks are tested both mechanically and by hydrostatic pressure; the hydrostatic test being made under pressures much in excess of any service under which they would be installed.

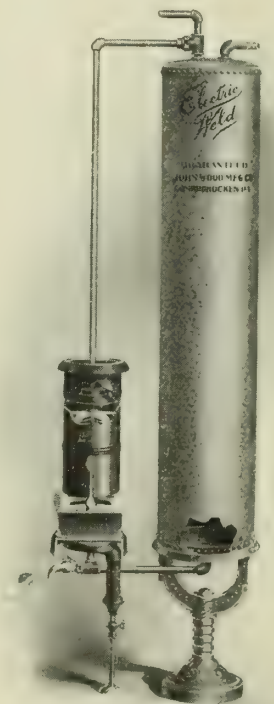


FIG. 3. "ELECTRIC WELD" NO.
 10 INDEPENDENT GAS WATER-
 HEATER

"ELECTRIC
WELD"
GAS WATER-
HEATER
NO. 10.

The "Electric Weld" No. 10 (Fig. 3) is an Independent Gas Water-Heater of very high efficiency. It consists of an "Electric Weld" heating coil and burner enclosed in a polished steel jacket with double asbestos lining and inner casing of galvanized steel. The jacket is made to slide up, as shown in the illustration, for lighting or brushing off the coil. This Heater is made in one size only, supplying ample hot water for a regular kitchen boiler up to and including fifty-two gallon size. Price \$11.00, list.

COMBINATION
BOILER AND
GAS WATER-
HEATER

The "Electric Weld" Combination Boiler and Gas Water-Heater (Fig. 4) combines in one fixture both features of Range Boiler and Gas Water-Heater. It is adapted for use with either coal range or gas without changing the connections. It has no delicate parts to get out of order.

SIZES AND LIST PRICES OF "ELECTRIC WELD" COMBINATION BOILERS

No.	Size of Shell	No. of Burners and Heating Coils	Capacity, Gals.	Heating Capacity, Gals. per hour to 140°	List Price
18	3 ft. by 12 ins.	1	11½	62	\$23.00
24	3 ft. by 14 ins.	1	17½	68	25.00
30	5 ft. by 12 ins.	1	22	70	30.00
40	5 ft. by 14 ins.	1	32	78	35.00
52	5 ft. by 16 ins.	1	43	86	40.00
66	5 ft. by 18 ins.	1	56	96	50.00
82	5 ft. by 20 ins.	2	68	159	100.00
100	5 ft. by 22 ins.	2	85	172	125.00
125	5 ft. by 24 ins.	2	103	185	150.00
180	5 ft. by 30 ins.	3	169½	289	215.00
245	4 ft. by 36 ins.	4	232	390	315.00
300	4½ ft. by 42 ins.	4	287	431	380.00

Thermo-valve for single heating chamber, list, \$10.00.

Boiler Stand not included in above prices.

Prices on Thermo-Valves for multiple installations quoted on application.

CONSTRUC-
TION.

The heating chamber is located within the body of an "Electric Weld" Range Boiler, enclosing a burner and series of brass heating coils. This heating chamber is vented to the chimney. The arrangement is such that every atom of heat is put to work on the water. There is absolutely no heat leak. This apparatus is illustrated in Fig. 4.

WITH
THERMO-
VALVE AND
ATTACHED
TO COAL
RANGE.

The illustration shows a Combination Boiler connected with coal range and fitted with Thermo-valve. When coal range connection is not desired, the outlets providing for this purpose are sealed with screw plugs. The apparatus is furnished with or without Thermo-valve, as may be desired.

RAPID
HEATING.

The heating is very rapid, as the coils are kept at a high temperature and have a very large heating surface.

RAPID
CIRCULATION.

Circulation within the boiler is also very rapid, and as a result of this arrangement the whole contents of the boiler are heated at practically one and the same time, insuring to the user an abundance of hot water at a minimum of cost.

THE BURNER.

The burner of the "Electric Weld" Combination Boiler is of the Bunsen type and can be adjusted to consume from thirty to fifty feet of gas per hour. The burner is provided with suitable air-mixer with adjustable shutter. This apparatus is a real boon to housewives, removing the last excuse for a hot kitchen.

"ELECTRIC
WELD"
MULTIPLE
COMBINA-
TION.

The "Electric Weld" Combination Boiler is also made in multiple, as shown in Fig. 5. The "Electric Weld" Combination Boiler is equally adapted for domestic service or for apartment houses, clubs, factories, hospitals, or other places where there is a constant heavy demand. It can be installed in either kitchen, basement, or bathroom, as may be desired.

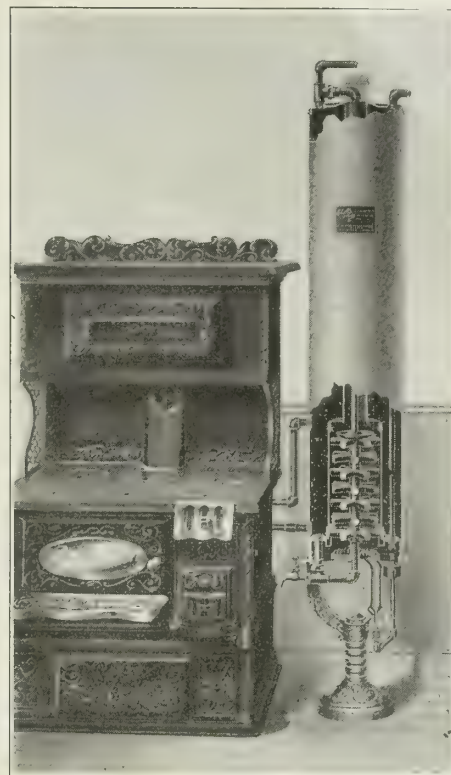


FIG. 4. COMBINATION BOILER AND
GAS WATER-HEATER



FIG. 5. MULTIPLE COMBINATION
BOILER

- ECONOMY OF OPERATION.** The "Electric Weld" Combination Boiler gives all the advantages of an instantaneous heater without abnormal expense.
- DURABILITY.** Durability is a prime factor in a fixture of this class. This fact has had our consideration.
- REPAIR PARTS.** All parts of the "Electric Weld" Combination Boiler are standardized and may be separated or assembled by any plumber. Cleaning and repairs are quick and cheap.
- RADIATION.** The "Electric Weld" Combination Boiler will supply radiation in addition to its other domestic uses.
- SIZES.** The "Electric Weld" Combination Boilers and Gas Water-Heaters are made in capacities of eleven and one half to two hundred and eighty seven gallons. Note sizes and list price in accompanying table.
- The "Electric Weld" Combination Boiler and Gas Water-Heater is covered by the "Electric Weld" Guarantee. See preceding page.
- GALVANIZING AND SPECIAL WORK.** We are in a position to produce first-class work in this department, having had years of experience and having an equipment ideal for the purpose. We are also in a position to furnish special tanks of all descriptions (either black or galvanized), absolutely tight, for air, water, or oil.
- "ELECTRIC WELD" SOIL PIPE.** "Electric Weld" Soil Pipe and Fittings are made from new patterns designed to meet the requirements of up-to-date plumbing regulations. Uniformly soft grades of iron are used, the standard being maintained by chemical analysis of the actual mixtures used.
- FACILITIES, DISTRIBUTION, ETC.** We have a large plant, fully equipped, and are always in a position to fill orders for "Electric Weld" products at short notice. Your plumbing contractor or your nearest jobber will be glad to show you our products. Catalogues furnished upon application. Correspondence from architects and others solicited.
- GUARANTEE.** "Electric Weld" Products are covered by the "Electric Weld" Guarantee, which covers defects in material or workmanship and embraces cheerful replacement in the event of the goods proving defective when used under service conditions for which they are intended or recommended.



FIG. 6. "ELECTRIC WELD" SOIL PIPE

EAGLE WHITE LEAD COMPANY

CINCINNATI, OHIO

BRANCH OFFICES

BOSTON, MASS., 60 Broad Street
 PHILADELPHIA, PA., The Bourse
 BUFFALO, N. Y., Builders' Exchange

CHICAGO, ILL., 415-417 North Peoria Street

NEW YORK, N. Y., 100 William Street
 BALTIMORE, MD., 447 North Street
 ST. LOUIS, MO., Benoist Building

AGENCIES

PITTSBURG, PA., THE PITTSBURG PAINT SUPPLY Co.
 CLEVELAND, OHIO, THE HALE & HOLMES Co.
 ST. PAUL, MINN., BAZILLE & PARTRIDGE Co.

MINNEAPOLIS, MINN., TWIN CITY PAINT Co.
 KANSAS CITY, MO., WESTERN CHEMICAL & SUPPLY Co.
 NEW ORLEANS, LA., JOHN R. TODD & BRO.

TELEPHONE CONNECTIONS AT ALL BRANCHES AND AGENCIES

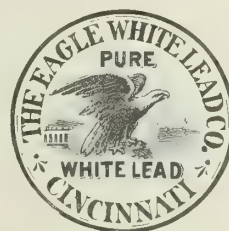
PRODUCTS.

Manufacturers of WHITE LEAD, DRY and in OIL; RED LEAD; LITHARGE and ORANGE MINERAL, LEAD PIPE, TRAPS, BENDS and FERRULES; SOLDER and BABBITT METAL, GLAZIERS' LEAD and WEDGE LEAD.

EAGLE WHITE LEAD.

This brand has now been on the market over sixty-five years. It is made only by the "Old Dutch" process, is not "pulp" ground but a genuine old fashioned lead of great body and fineness. It is ground only in pure, old, well settled Linseed Oil, and is not artificially whitened.

It can not be excelled for economy and durability and is unsurpassed for opacity and spreading qualities.



TRADE-MARK

ENDORSE- MENT.

Eagle White Lead was given the highest awards in competition with twenty-four brands by the Master Painters' Association of the State of Ohio, at the convention held July 30-31, 1895.

EAGLE RED LEAD.

This is a pure product with a texture finer than any other brand. It will not settle when properly mixed with Pure Linseed Oil, and will take more thinner than any other Red Lead on the market.

There is no waste in the paint pot from settling, and it will not run or sag when properly applied to a vertical surface, and will spread easier than other brands and make a more uniform coating and wear longer.

It is a standard protective covering for iron, steel and other metals.

PIPE, TRAPS AND OTHER PLUMBERS' SUPPLIES.

Our Plumbers' Goods are made by the most modern machinery (some of which is our own invention), are not excelled by any on the market, and are always up to the standard.

Our Solder is made entirely from new metals only.

CLAIMS.

We claim that our goods are the best made, and we invite prospective users to test them for themselves and be their own judge. We are independent manufacturers and have no connection with any trusts.

ASHLEY HOUSE-SEWAGE DISPOSAL CO.

Sanitary Engineers

6515 Normal Boulevard

CHICAGO, ILL.

TELEPHONE, WENTWORTH 7321

SPECIAL REPRESENTATIVES

NEW YORK, N. Y., 45 West 34th Street
(Opposite Waldorf-Astoria)
TELEPHONE, MURRAY HILL 3443

SAN FRANCISCO, CAL., 303 Monadnock Building
TELEPHONE, DOUGLAS 2279
BALTIMORE, MD., 413 North Calvert Street
TELEPHONE, C. & P. MT. VERNON 1074

PRODUCTS AND SERVICES.

COMPARATIVE DESCRIPTION.

The "ASHLEY" SEWAGE PURIFICATION and DISPOSAL SYSTEM (Patented). The "ASHLEY" BIOLOGICAL REDUCTION TANK and ACCESSORIES. A superior engineering design and apparatus for the sanitary disposal of sewage without the use or necessity of sewers.

The "Ashley" System of Sewage Disposal is an advance on all similar methods of absorption. It provides a method of sewage purification, conversion and utilization that is scientific and thorough. It is based on the processes of nature itself. While the ordinary crude filtration systems merely collect the sewage in a tight receptacle and thence distribute it in its poisonous unaltered state for absorption by the ground, the "Ashley" System first converts the sewage by natural oxidation underground into an antiseptic and beneficial fertilizing liquid.

DETAILS OF THE "ASHLEY" BIOLOGICAL REDUCTION TANK.

The process of our system is as follows: The sewage from an individual suburban dwelling or institution is collected in salt glazed sewer pipes into a tight receptacle—the "Ashley" Biological Reduction Tank, which is a strong circular cast-iron tank with man-hole cover, inlet, outlet, baffle wall, etc., as shown in the illustrations. In this Tank the first step in the transformation of the sewage takes place, partly by mechanical sedimentation and partly by the action of the anaerobic bacteria (those that live and thrive without air or oxygen) generated in the sewage. These bacteria act as decomposers breaking up the solid organic compound of the sewage into a simplex liquid form, thus preparing it for further changes and purification. The process is a combination of sedimentation and putrefaction, nature's own processes.

ACTION OF OUR SEPTIC TANK.

In the course of the above action a precipitate, called sludge, is formed in the bottom of the tank, but this accumulates only very slowly, being in a large measure re-converted into liquid in the course of the action. Right here two important points must be made for the "Ashley" System: First, that the tank process is not and can never be a purification process, as some other systems erroneously claim, but only one of decomposition and liquefaction; second, that this process must not be continued too long, not be carried too far by employing needlessly large tanks or a series of tanks, as in this case the toxins become permanently fixed in a liquid form and unfit for beneficial oxidation and absorption by the ground. The "Ashley" Reduction Tank is properly proportioned.



BIOLOGICAL TANK

THE
"ASHLEY"
NITRIFICA-
TION DUCT.

The second step in our system consists of the purification of the liquid sewage in the "Ashley" Nitrification Duct or Subsoil Bacteria Beds. These are constructed in size, number, depth below ground, and location to suit the quantity of liquid to be disposed of, the absorption qualities of the ground, and the size and topography of the property in question. They are built of ordinary masonry materials. The trenches are traversed by combined air and distributing ducts which connect with the open air by special fittings.

ACTION OF
THE
BACTERIA
BED.

The Nitrification Bed is so designed as to allow the liquid sewage to percolate uniformly through the filtration material of which it is partly composed. The fluids in combination with the air now produce a second set of animal decomposers, the Aerobic Bacteria, being such as thrive and propagate in the presence of air. By their action the sewage is further decomposed, aerated, purified; the poisonous nitrites are transformed into harmless nitrates in solution, free nitrogen gas and carbonic acid gas for the nourishment of plant life. This transformation is fostered and protected by its taking place below ground at a depth which insures natural warmth and protection against frost. The organic matter is thus completely consumed, the entire process being automatic, continuous, natural, odorless and out of sight.



AN "ASHLEY" BIOLOGICAL REDUCTION TANK WITH COMPOUND NITRIFICATION AND ABSORPTION DUCT (PATENTED)

PATENTEES.

The "Ashley" System of Sewage Disposal is the only one using the combined plan of sewage reduction and sub-soil aeration, with its incidental but important merits of economy and inoffensiveness.

SIZES OF
TANKS, ETC.

The "Ashley" Biological Tanks are manufactured of soft cast-iron in various capacities for houses accommodating up to fifteen persons. Beyond that size the tanks are built of masonry materials according to plans which we furnish, and in such cases we sell the cast-iron manhole cover, pipe connections, deflection gate and vent covers and caps.

APPLICA-
TION, COST.

As to the cost of the application of the "Ashley" System of Sewage Disposal, no definite figures can be given, as each case is a proposition by itself. Write for our literature (mentioning "SWEET'S") and from it you will get further information.

OUR
SERVICES.

We are sanitary engineers, properly speaking, and not manufacturers. Each system is designed in our Chicago office, by our engineers, and its construction, whether done by us or our agents or by outside contractors, must take place according to our plans and specifications which we furnish as part of the cost of installation of apparatus.

REFERENCES.

Our plants are in successful operation in all parts of this country, Mexico, and Central America. References to satisfied customers in every locality can be given.

PHILIP BRAENDER

MANUFACTURER OF

The "Braender" Automatic Cellar Drainer, Bilge Siphon and Cesspool Box

143 West 125th Street

NEW YORK, N. Y.

PRODUCTS.

The "BRAENDER" AUTOMATIC CELLAR DRAINER, the "BRAENDER" AUTOMATIC BILGE SIPHON, and the "BRAENDER" CESSPOOL BOX.

"BRAENDER" CELLAR DRAINER.

The mechanism of this Cellar Drainer is simple, durable, and not liable to injury. It consists of only three working parts. The jet which sucks

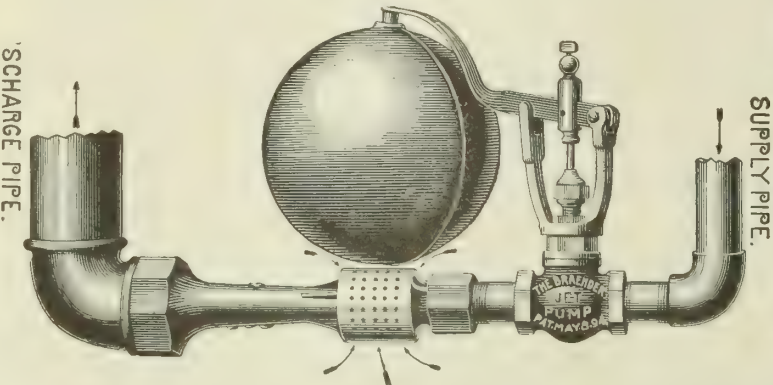


FIG. 1. THE "BRAENDER" CELLAR DRAINER

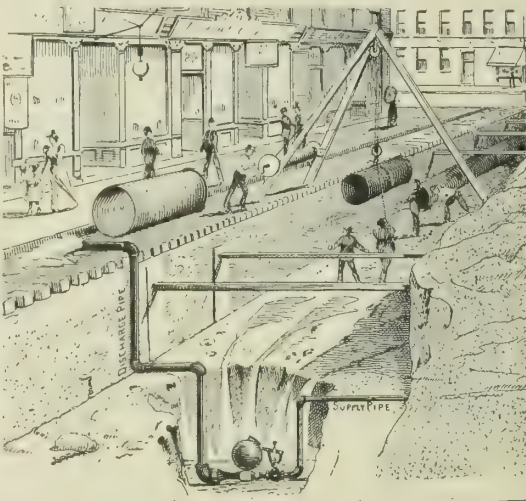


FIG. 2. USE OF DRAINER IN TRENCH

and elevates the water to be removed, is constructed of brass (steam metal), will not corrode, and being entirely free from working parts, such as plungers, stems, and valves, has nothing exposed to injury or wear. To this Cellar Drainer is connected a double-disk brass valve with metal seats and ground joints, requiring no leather or packing, and as the water to be removed does not pass through this valve, being used only to regulate the supply of pressure water, it is not exposed to injury nor liable to stick or clog. The valve is operated by a brass lever and copper float-ball, which is so attached to the stem of the valve as to make the opening and shutting of the valve (regulating the water supply) entirely automatic and at all times perfectly reliable.

ILLUSTRATION.

The mechanism of this Cellar Drainer is shown in Fig. 1. Fig. 2 shows its use in removing water from trenches.

This automatic device for removing water from cellars, excavations, trenches, wheel-pits, or any depression where water accumulates, either from springs, surface water, leakage or tide water, is so constructed as to be not only reliable at all times, but will, with a very small amount of water under moderate pressure, remove a large body of water and discharge it to a higher level. It will prevent the accumulation of water, and its construction is strong, durable, non-corrosive, and is so simple that it will last for years without attention.

When idle, the supply water is cuff off, but it commences pumping the moment water accumulates, either operation being automatic.

ORDERS,
CAPACITIES,
PRICES AND
WEIGHTS.

In ordering Cellar Drainers for immediate use, give the following information: Approximate amount of water in gallons to be removed; height to which water is to be elevated; estimated pressure in the water supply pipe; is the water supply from a street main or tank?

Write for discounts.

The Cellar Drainers are made in three sizes, with capacities, weights and prices given in the following table:

Number of Cellar Drainers.....	1	2	3
Capacity, gallons per hour	375	600	1275
Size of water pressure pipe (supply), inch.....	$\frac{1}{2}$	$\frac{3}{4}$	1
Size of discharge pipe, inch	1	1 $\frac{1}{2}$	2
Weight complete, pounds	6 $\frac{1}{2}$	8	11
Lift or height of point of discharge, feet.....	12	12	12
Prices	\$32.00	\$44.00	\$56.00

All Cellar Drainers are shipped by express unless otherwise ordered.

**"BRAENDER"
BILGE
SIPHON.**

This siphon is simple in construction, entirely automatic in operation and not liable to get out of order. It is made of the best steam metal and is guaranteed to keep the hold of a vessel properly dry. Its simple construction, durability and entire freedom from possible disarrangement, together with its nominal cost of operation, have won the approval of all leading engineers throughout the country.

This Siphon may also be used where excavations are made and steam is used for discharging water from trenches or caissons by using jet and short suction pipe.

Prices on this arrangement will be given on application to the manufacturer.

**CAPACITY,
PRICES.**

The following table gives the capacity and price of each of the various sizes of the "Braender" Bilge Siphon:

Numbers of Bilge Siphon and Ejectors,
Size of steam-pipe,
Size of suction and discharge pipes,
Capacity, gallons per hour, 50 pounds steam pressure,
Price,

1	2	3
$\frac{3}{4}$ inch	1 inch	$1\frac{1}{2}$ inches
$1\frac{1}{4}$ inch	$1\frac{1}{2}$ inch	2 inches
1,500	2,000	3,000
\$90.00	\$110.00	\$130.00

**"BRAENDER"
CESSPOOL
BOX.**

This box is used in connection with the "Braender" Jet Pump and Cellar Drainer. It is so constructed that the water is filtered in passing through two strainers before reaching the Jet Pump. Any dirt passing through the first strainer will settle to the bottom of the annex box, which can easily be cleaned by simply lifting the strainer plate. Outside measurements of box are 17 inches in height, 19 inches in width, and 20 inches in length. Price, \$8.00.

CAPACITIES.

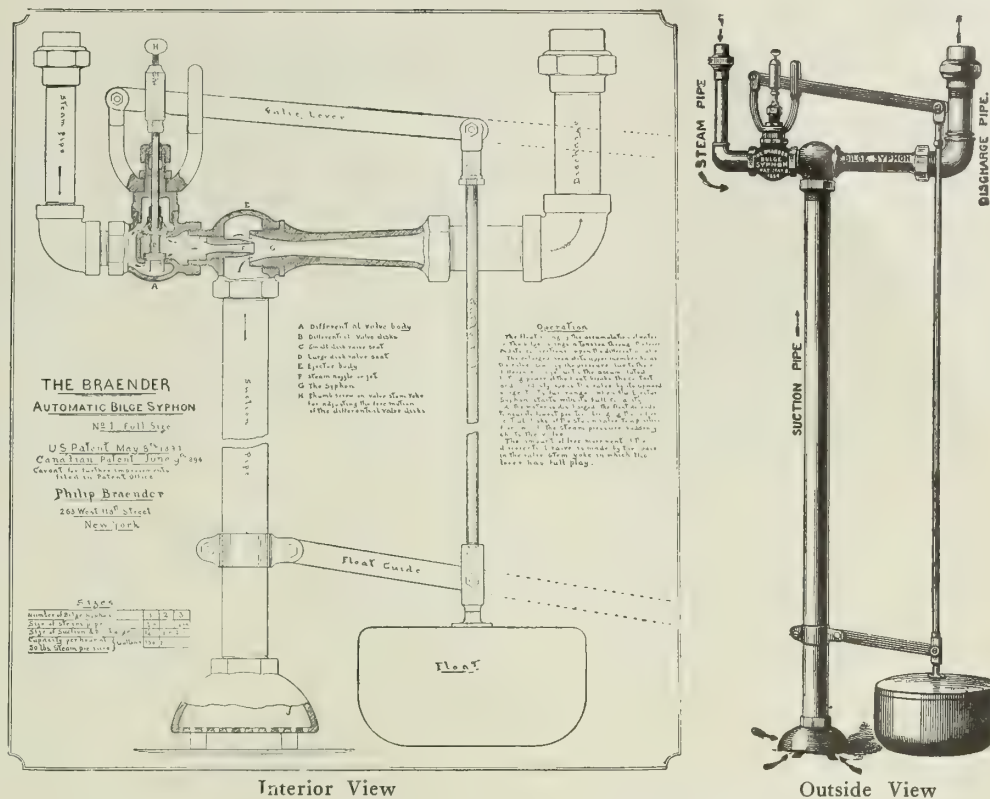
The following table gives sizes and capacities, also height of lift; the latter is based on a pressure of five pounds for every one foot in height desired lift:

No. 1 Size, 375 gallons per hour, 12 feet high
No. 2 Size, 600 gallons per hour, 12 feet high
No. 3 Size, 1,275 gallons per hour, 12 feet high

The following table gives pressure required to raise water and desired height up to 12 feet:

4 to 5 pounds pressure to raise 1 foot
8 to 10 pounds pressure to raise 2 feet
12 to 15 pounds pressure to raise 3 feet
16 to 20 pounds pressure to raise 4 feet
20 to 25 pounds pressure to raise 5 feet
On the same proportion up to height of 12 feet

Write for discounts.



FIGS. 3 AND 4. "BRAENDER" AUTOMATIC BILGE SIPHON. (Patented)

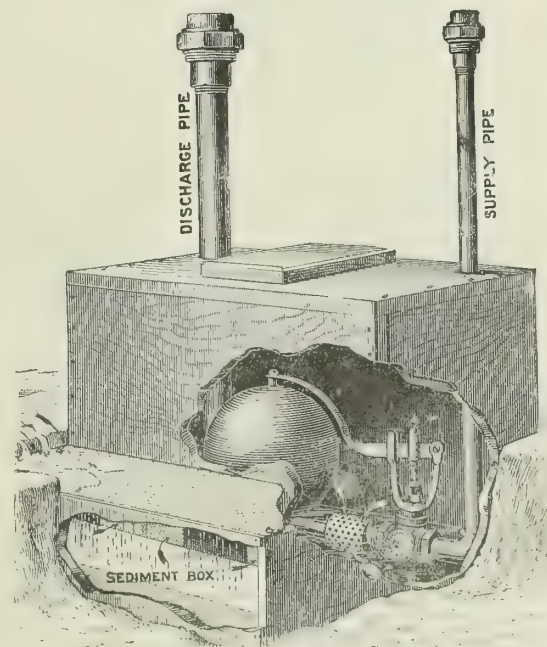


FIG. 5. "BRAENDER" CESSPOOL BOX. (Patented)

COMPOUND INJECTOR AND SPECIALTY CO.

SOLE MANUFACTURERS OF

"Dehn's" Sanitary Plumbing Specialties, Water Softener and Scale Removing Devices

419-421 North 52nd Avenue

CHICAGO, ILL.

TELEPHONE, AUSTIN 543

CABLE ADDRESS, "COMPJECSECO"
WESTERN UNION CODE USED

REPRESENTATIVES FOR GREAT BRITAIN
THE BRITISH RUUD WATER HEATER CO., LONDON,
ENGLAND, 28 AUDREY HOUSE

WESTERN REPRESENTATIVES FOR CANADA
CLARE & BROCKEST, WINNIPEG, MAN.

PRODUCTS.

Manufacturers of "DEHN'S" AUTOMATIC WATER SOFTENER and SCALE REMOVING DEVICES; COMPOUND INJECTORS; KOMPOST BRICKS; PEERLESS WATER SOFTENER; "ACME" COMBINED ADJUSTABLE FLOOR DRAINS and AUTOMATIC BACK-WATER TRAPS; "PEERLESS" GARAGE and COMBINED FLOOR DRAINS with AUTOMATIC BACK-WATER VALVES; ADJUSTABLE HOOD and FLUSH VENT CAPS; BACK-WATER VALVES for Sewer Tile or Soil Pipe; FLOOR DRAINS with LARGE RECEIVING-HOOD with CONNECTIONS UNDER CEMENT FLOORS for Receiving Surface Water and Cistern Overflows; HYGIENIC GREASE TRAPS; "ACME" CATCH BASINS, etc. Manufactured in all sizes.

SANITARY SAFE- GUARDS.

Architects and contractors will safeguard the health of their clients by specifying our Sanitary Devices. As their trade names "Acme" and "Peerless" imply, they are unexcelled in design and operation, durable in make, in every way reliable; no other devices on the market may be substituted for the "Dehn" line as being equally as good. The essential parts of our devices are patented. We will be pleased to furnish our illustrated Catalogue, No. 12, upon request.

Our operations cover the United States, Canada, and all foreign countries.

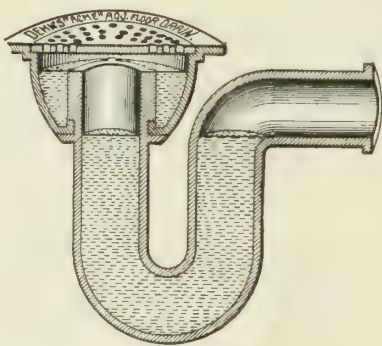


FIG. 3

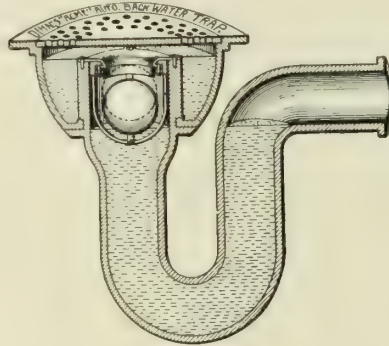


FIG. 5

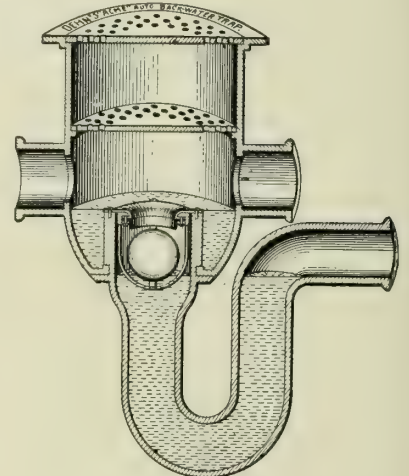


FIG. 10

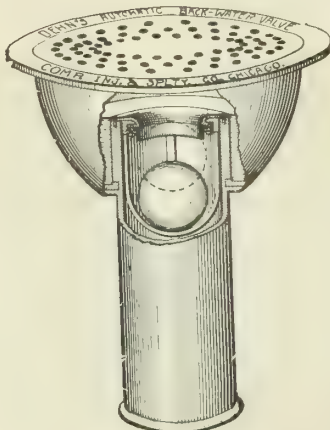


FIG. 6

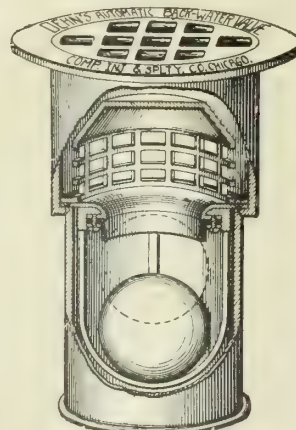


FIG. 7

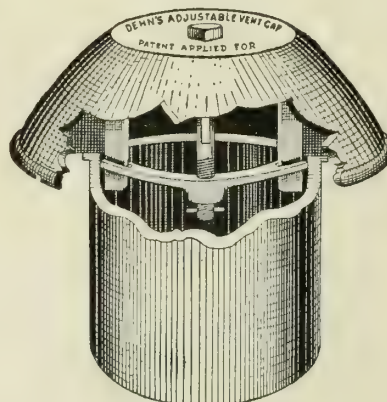


FIG. 12

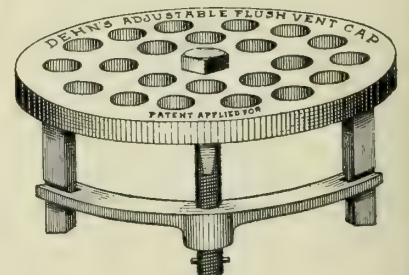


FIG. 14

ILLUSTRATIONS OF "DEHN'S ACME" COMBINED ADJUSTABLE FLOOR DRAINS AND AUTOMATIC BACK-WATER TRAPS, ET C.

"DEHN'S"
AUTOMATIC
INJECTOR,
WATER
SOFTENER,
AND SCALE
REMOVER.

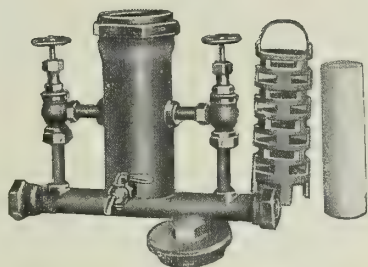


FIG. 25

No. 5— $\frac{1}{2}$ -inch Compound Injector
Patented in United States, Canada and
Foreign Countries

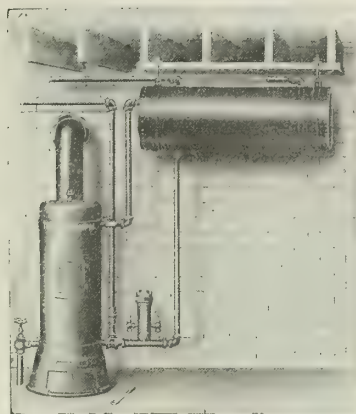


FIG. 61

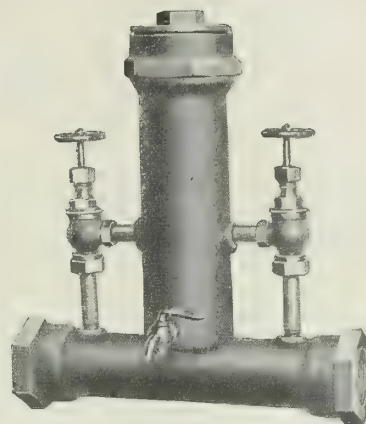


FIG. 30

"DEHN'S" AUTOMATIC INJECTOR, WATER SOFTENER, AND SCALE REMOVER

These devices will break hard water instantly, and will overcome the accumulation of lime, magnesia, and other incrusting minerals in water-backs, coils, heaters, boilers, and wherever these difficulties are experienced. These devices have now been in use for more than ten years in all parts of the United States, Canada, and foreign countries. They are giving universal satisfaction wherever installed. Manufactured in five sizes.

"DEHN'S"
PEERLESS"
GARAGE AND
COMBINED
FLOOR DRAINS
WITH BACK-
WATER
VALVES.

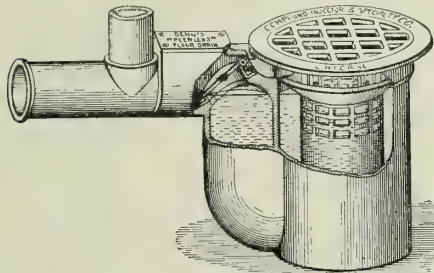


FIG. 16

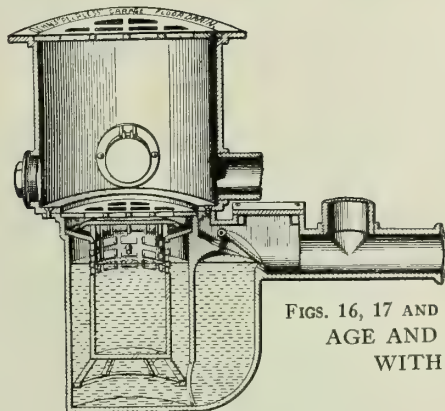


FIG. 18

These fixtures are so constructed that the waste gasoline flowing into the basin will evaporate and the gases will escape to the outside of building through the vent pipes; hence the garages will be absolutely free from dangerous gases or bad odors that would otherwise pollute the atmosphere of the garage.

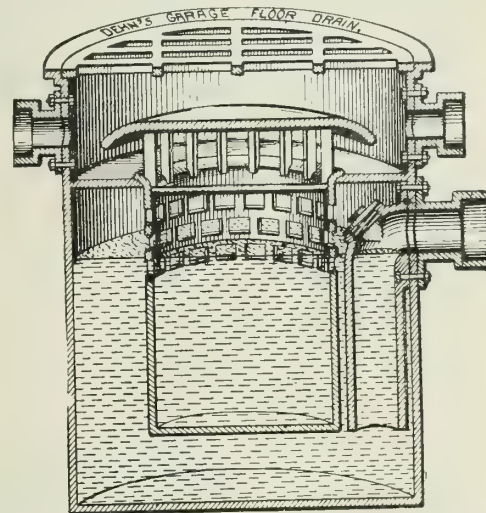


FIG. 17

FIGS. 16, 17 AND 18. "DEHN'S PEERLESS" GAR-
AGE AND COMBINED FLOOR DRAINS
WITH BACK-WATER VALVES

"DEHN'S"
HYGIENIC
AND "ACME"
GREASE
TRAPS
FOR RESI-
DENCES AND
PUBLIC IN-
STITUTIONS.

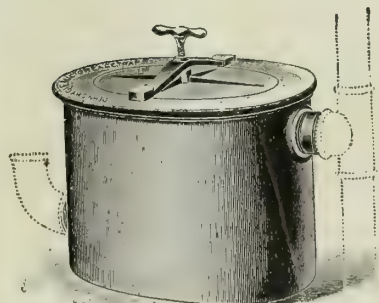


FIG. 22. "ACME" HYGIENIC
GREASE TRAP

A sure cure for
choked waste pipes.
Grease Traps are a ne-
cessity; every kitchen
sink should be provid-
ed with a Grease Trap,
regardless of where
the sink is connected.

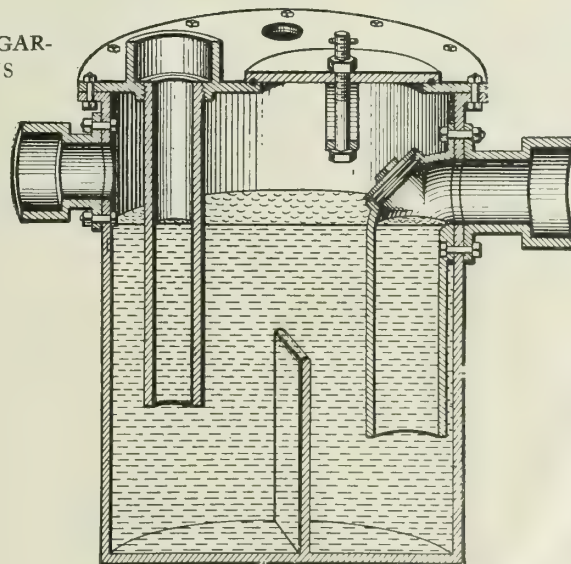


FIG. 23. "ACME" CATCH BASIN

C. H. STEPHENSON

MANUFACTURER OF

"The Stephenson" Sanitary Household Specialties

27 Furrar Street
LYNN, MASS.

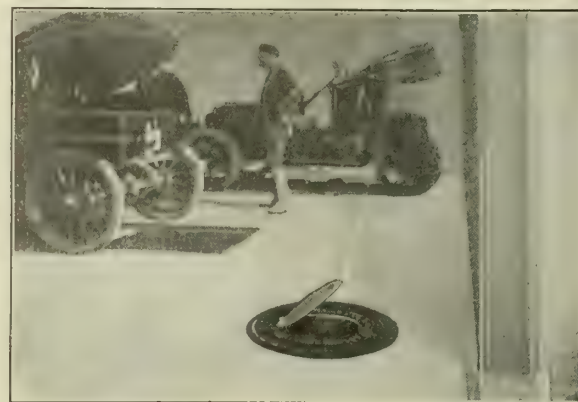
TELEPHONE 944-1

PRODUCTS
(PATENTED).

"THE STEPHENSON" UNDERGROUND GARBAGE RECEIVER, UNDERGROUND STREET SWEEPINGS RECEIVER, UNDERGROUND PORTABLE EARTH CLOSET, UNDER-FLOOR REFUSE RECEIVER, PORTABLE METAL OUTHOUSES for Contractors and Campers, PORTABLE METAL GARAGES, SPIRAL RIBBED ASH BARREL, ALWAYS CLOSED FIREPROOF BARREL, and NICKEL BATHROOM ACCESSORIES.



BATTERY OF "STEPHENSON" UNDERGROUND GARBAGE RECEIVERS, AS USED AT RESIDENCES



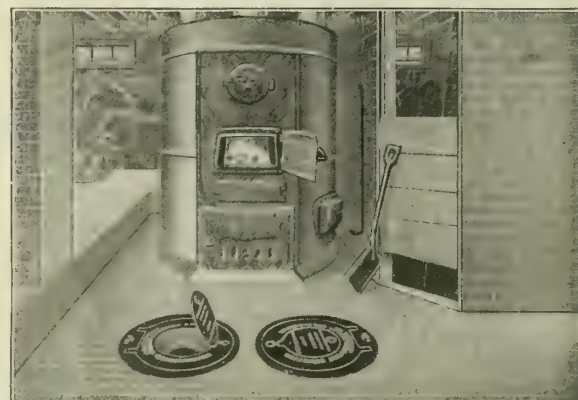
"THE STEPHENSON" REFUSE RECEIVER, FOR USE IN GARAGES

DESCRIPTION.

"The Stephenson" Underground Garbage Receiver is buried in the ground, thus avoiding the present unsightly and injurious effects of wooden boxes with the attendant annoyance of rats, cats, dogs and refuse collecting. There is no possibility of spilling garbage between barrel and receiver as the shute empties directly into the barrel, entirely overcoming existing unsanitary conditions and odors. It is suitable for use in cold climates since it will not freeze.



"THE STEPHENSON" UNDER-FLOOR FIREPROOF ASH RECEIVERS



"THE STEPHENSON" SANITARY UNDER-FLOOR ASH RECEIVERS, SHOWING HOW THEY ECONOMIZE SPACE

"The Stephenson" Under-floor Refuse Receiver stores ashes out of sight under the floor in front of the furnace. The ashes are easily moved into the ash-pit, preventing dust and saving time and space. The new method of placing the receiver in the floor, the separate receiving shute and cover for filling, and the removal cover to permit taking out the inside bucket are original with the "Stephenson" System. It is fireproof, sanitary, and will outwear the heating apparatus with which it is connected.

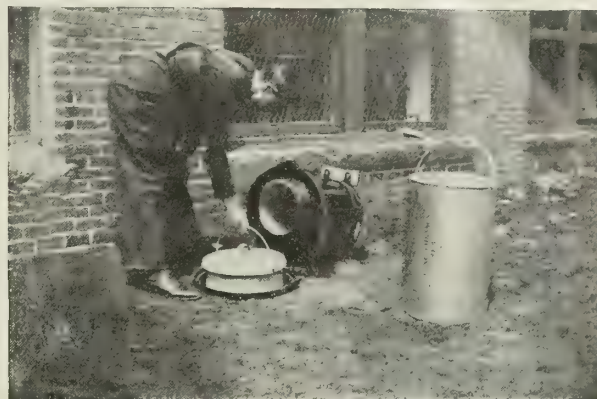
"The Stephenson" Underground Earth Closet supplies a sanitary and safe closet in situations where sewer connections are impossible. It is especially adapted for use on farms, in camps, and where closets are required during construction work.

ADAPTABILITY.

The Earth Closets are indispensable in camps, in buildings during time of construction, and generally where sewer connection is impracticable or impossible; the Metal Houses are useful where privacy is desired at beach, camp, wood or yard; the Ash Barrel wherever the correct article finds use; the Garbage Receiver on town or city premises and at camps. The Street Sweepings Receiver is adaptable in town or city where cleanliness, space and convenience is most valued.



"THE STEPHENSON" STREET SWEEPINGS RECEIVER, FIFTH AVENUE AND BROADWAY, NEW YORK, N. Y.



"THE STEPHENSON" UNDERGROUND EARTH CLOSET
Removing a Bucket and putting another inside



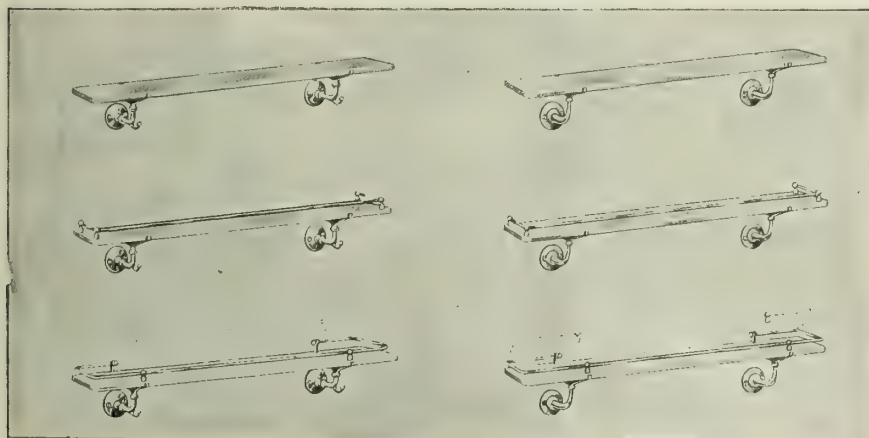
"THE STEPHENSON"
PORTABLE METAL HOUSE
WITH EARTH CLOSET FOR
CAMPS, BATH HOUSES AND
CONTRACTORS



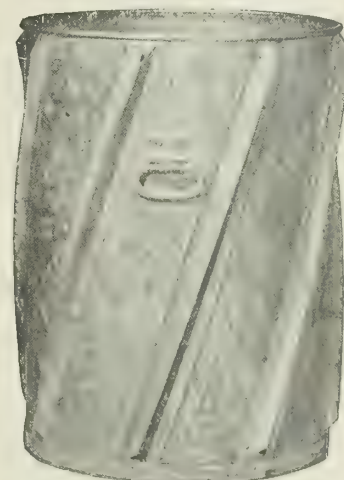
"THE STEPHENSON" EARTH
CLOSET IN CELLAR, USED BY
CONTRACTORS WHILE
BUILDING



"THE STEPHENSON" ALWAYS
CLOSED FIREPROOF BARREL
Putting in refuse



"THE STEPHENSON" WHITE OPAL GLASS SHELVES



"THE STEPHENSON" SPIRAL
RIBBED ASH-BARREL

ADVANTAGES.

Each device saves space, is sanitary, easily kept clean and portable; hence inexpensive, convenient and durable.

MATERIALS.

The best and most lasting metals are employed in all devices for out-of-door use.

GUARANTEE

All goods are guaranteed and *sold direct* f. o. b. Lynn, Mass.

AND PRICES.

Separate catalogues and price-lists on each promptly mailed upon application.

EDWARD YEOMANS

CHARLES YEOMANS

YEOMANS BROTHERS

MANUFACTURERS OF

Electric Pumping Machinery

1141 Monadnock Building
CHICAGO, ILL.

AGENCIES

SAN FRANCISCO, CAL., A. C. HANNA, Monadnock Building

PITTSBURG, PA., N. C. DAVISON & Co., Keenan Building

PRODUCTS.

"YEOMANS" DUPLEX ELECTRIC SEWAGE EJECTOR,
the "YEOMANS" ELECTRIC BILGE PUMP and
"YEOMANS" ELECTRIC HOUSE PUMP.

DESCRIPTION
OF PRODUCTS.

The "Yeomans" Duplex Electric Sewage Ejector is an automatic direct-pumping ejector, requiring but small floor space, for use where it is necessary to lift sewage or drainage to a higher level. Any desired number of gallons per minute can be discharged against any desired head. The Duplex Ejector is composed of two units, each of which is capable of doing the desired work, except under emergency conditions, when the second unit automatically adds its volume to the first, until normal conditions are restored.

The "Yeomans" Duplex Electric Sewage Ejector requires a circular floor space of but 72 inches diameter, is absolutely odorless, noiseless, and automatic, direct-pumping (without compressed air), and saves one half operating expense of any compressed air system.

The "Yeomans" Electric Bilge Pump is an automatic, self-contained, heavily constructed pump, of varied capacity, made complete with a cast-iron basin, where desired, for handling waste water under any conditions where electric power is available.

The "Yeomans" Electric House Pump is a small but efficient automatic and noiseless pump, of various capacities, for lifting water to any height desired. It is especially useful when the pressure of the water system is insufficient to raise water to roof tank, and acts as a booster at a small expenditure of power.

This pump can be used with or without a roof tank. In the latter case a pressure tank is installed beside the pump in the basement. The water in this tank is maintained at a fixed pressure by the pump through the agency of a pressure controller. This pressure must be sufficient to force the water to the highest fixtures in the building.

ADAPTABILITY.

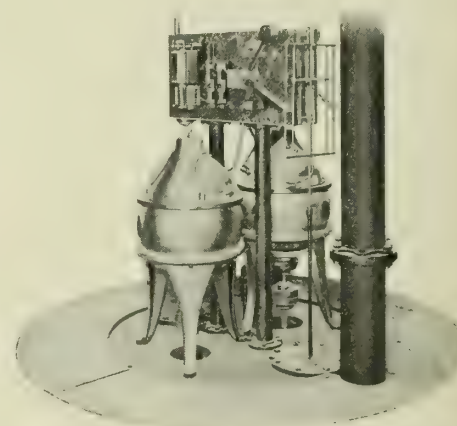
Our pumps are adapted to all classes of buildings under all conditions where sewage, drainage water, or waste water are required to be handled, or where water must be elevated for house supply.

CAPACITIES.

The standard capacities of "Yeomans" Electric Sewage Ejector are 50, 100, 150, 200, 250 gallons per minute for each unit; there being two units in each duplex Ejector, the total ejector capacity is double these amounts. "Yeomans" Electric Bilge Pump, 25, 75, 100,



"YEOMANS" DUPLEX EJECTOR ON
SHOP FLOOR



"YEOMANS" DUPLEX EJECTOR SET
IN PLACE

150, 250, 350, and 500 gallons per minute; "Yeomans" Electric House Pump, 10, 15, 25, 50, and 100 gallons per minute.

INSTALLATION.

Pumps can be installed by the average workman under supervision of ourselves or our agents, or in accordance with instructions which we will furnish.

SPECIFICATIONS AND CO-OPERATION

For pumps, always specify "Yeomans" for the work required. By calls, drawings, references, etc., we will most willingly assist architects, contractors and builders to select the proper pump on receipt of data as to the conditions under which they are to be installed and results to be obtained.

We will send printed specification for any of these pumps, suitably drawn up to fit into architects' specifications for plumbing fixtures, if we are furnished with data as to capacity, head, character of electric current, etc.

PRICES.

Prices can be furnished only upon receipt of necessary data and description of all requirements.

GUARANTEE.

All pumps are guaranteed for one year, during which time we will make good any defects of material or workmanship properly chargeable against us.

SPECIFICATION COVERING DIRECT-CURRENT EJECTOR INSTALLATION.

Furnish and install, in location indicated in building plans, a "Yeomans" Combined Duplex Electric Sewage Ejector having a total capacity of gallons per minute against a total discharge head of feet, measuring from floor level at ejector location. This ejector will be driven by volt motors of multipolar compound wound type and of ample capacity to operate the ejector without undue heating or vibration or sparking at the brushes. The armature and pump-shafts shall be connected by flexible couplings. Pump-shafts and impellers shall be supported at floor level by self-oiling thrust bearings. The automatic controlling devices shall be so arranged that should the flow of sewage to the ejector exceed the capacity of one pump the other will start automatically and the two pumps operate simultaneously until normal conditions are restored, when the second pump will cease to operate. Swing-check and gate-valves shall be provided on the discharge of each unit. The ejector shall be so constructed that either pump and motor may be disconnected and removed without interrupting operation of the other and that the motors and controllers may be used interchangeably. The float shall be of copper heavily ribbed and seamless and shall run in metal casing. The switchboard shall be mounted above and between the motors and shall consist of two panels with main line switches, fuses and self-starters for each motor. (In the case of polyphase a. c. motors overload release oil switches should be furnished.)

The ejector shall be set complete by the ejector contractor, but excavation shall be made by others. This excavation shall allow one foot of concrete under the ejector and one foot of concrete to be thrown in and tamped around the ejector up to the floor line. Concrete work to be furnished by others. Ejector contractor shall make all electrical connections between motors and an outlet not over ten feet distant from ejector, feeders to be brought to this point by another contractor. All discharge and inlet connections outside of the ejector walls shall be furnished by others.

This ejector shall be guaranteed to perform the above stated service automatically and without overheating, vibration or signs of distress in any of its parts, and shall be guaranteed against defects of workmanship and material for a period of one year.

SPECIFICATION COVERING DIRECT-CURRENT BILGE PUMP EQUIPMENT.

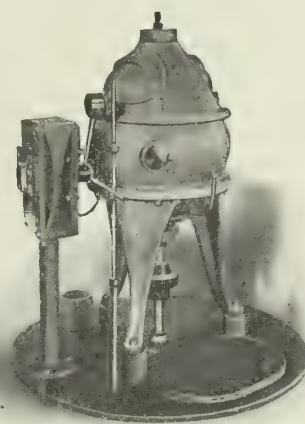
Furnish and install in location indicated on building plans, a No. "Yeomans" Electric Direct-Current Bilge Pump complete with 220-volt multipolar vertical motor, automatic controller, line switch and fuses, cast-iron catch-basin (if desired), cast-iron basin cover with manhole, controller to be mounted directly on this cover and actuated by a direct rod from a float. This bilge pump shall have capacity of gallons per minute against a total head of feet, measuring from floor level at pump location. The motor shall be of ample capacity to perform this duty without undue heating, vibration, sparking at the brushes or other indications of overload. Armature and pump shafts shall be direct-connected by a flexible coupling, and all bearings shall be self-oiling. The pump shall be so arranged that it can be removed from the catch-basin for repairs without the necessity of getting down into the basin and regardless of the amount of water in the basin.

Excavation for basin and inlet and discharge connection to same will be made by others. Feed wires will be brought by others to an outlet within 10 feet of the bilge pump motor, but the bilge pump contractor shall make all connections from this outlet to his motor.

This equipment shall be guaranteed to perform the specified duty automatically and noiselessly and shall be further guaranteed for a period of one year against all defects of workmanship or material.

REFERENCES.

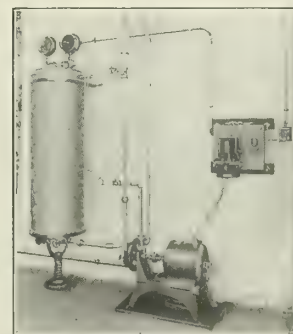
"Yeomans" Ejectors have been used on the specifications and under the supervision of such well-known architects and engineers as Holabird & Roche, D. H. Burnham & Co., Shepley, Rutan & Coolidge, Sargent & Lundy (Engineers), The Arnold Co. (Engineers), Frost & Granger, Howard Shaw, Jarvis Hunt, R. E. Schmidt, Garden & Martin, Pond & Pond, Kirchoff & Rose, Meyers & Ward, L. B. Dutton, and C. Whittlesey.



"YEOMANS" ELECTRIC BILGE PUMP



"YEOMANS" ELECTRIC HOUSE PUMP



AUTOMATIC HOUSE PUMP FOR PRESSURE SYSTEM
No roof tank required

A. P. W. PAPER COMPANY

Manufacturers of The "Onliwon" Cabinets and Paper
ALBANY, N. Y.

NEW YORK, N. Y.
PITTSBURG, PA.
BOSTON, MASS.

CHICAGO, ILL.
ATLANTA, GA.
DALLAS, TEXAS

BRANCHES

DENVER, COLO.
SAN FRANCISCO, CAL.
LONDON, ENGLAND

PARIS, FRANCE
BERLIN, GERMANY

PRODUCTS.

The "ONLIWON" TOILET PAPER CABINET and TOILET PAPER.

"ONLIWON" CABINET.

This cabinet overcomes all the objections to the other types of cabinet for holding toilet paper.

It is made to deliver units of two sheets, and operates without noise and with no effort on the part of the operator other than to withdraw the sheets as they unfold and appear at the bottom, taking the place of those previously taken out.

There are no moving parts whatever in this cabinet to get out of order, and it is smaller and more compact than any other ever devised.

The cabinets are of seamless steel construction having rounded corners and are heavily plated to match with the finest bath or toilet fittings.

ADVANTAGES.

The advantages of the "Onliwon" over other cabinets are that it holds more sheets than others of the same size, it has no mechanism to get out of order, and only the same number of sheets can be taken out at one time. The sheets, when withdrawn, are always whole with no torn corners to fall and litter the floor. It can be readily filled when empty.

THE PACKAGE.

The package of paper made expressly for the "Onliwon" cabinet is unique both in form and dimensions.

These packages are made with one thousand or fifteen hundred sheets according to the demand of the consumer.

These packages are so made that they can be readily placed in the cabinets with no waste of the preceding package.

GUARANTEE.

This Company, being the sole manufacturers of this package, guarantee count and quality whether purchased from them direct or through a dealer.

STYLES OF CABINETS.

The "Onliwon" cabinet is made in several different styles.

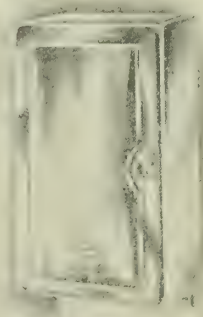
No. 1 $\frac{1}{2}$ —This style is equally adaptable to hotel or private use where space and the demand upon it are limited. It is provided with a lock and automatic indicator of its contents. It has a capacity of 1,000 sheets.

No. 2—This cabinet is designed for service in hotels, hospitals, factories, public buildings, etc. It is exactly the same as our No. 1 $\frac{1}{2}$, except that its capacity is 50 per cent greater, viz., 1,500 sheets.

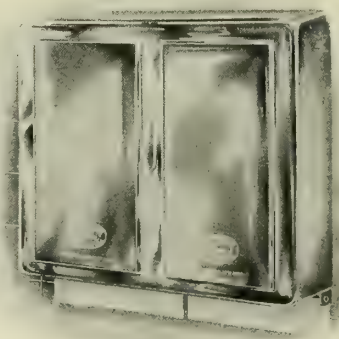
No. 3—This cabinet has a capacity of 3,000 sheets. It is fitted with duplex delivery as shown in cut, providing a means of guarding against an empty cabinet. It occupies very little more space than cabinets of one fourth its capacity and is particularly well adapted to public service.



"ONLIWON" CABINET NO. 1 $\frac{1}{2}$
Capacity 1,000 sheets



"ONLIWON" CABINET
NO. 2
Capacity 1,500 sheets



"ONLIWON" CABINET NO. 3
Capacity 3,000 sheets

RECESS
CABINET.

This cabinet exactly meets the requirements of hotel or private service, also marine and railway carriage use. It occupies no room space whatever and requires a recess in the wall, or wherever attached, of but $2\frac{1}{4}$ inches deep. It has a capacity of 1,000 sheets.

BARBER'S
CABINET.

The "Onliwon" cabinet is made also in a style suitable for use in modern barber shops. It is made so as to have a duplex delivery, which permits it being used by two operators at the same time without interference, while also reducing by one half the number necessary to equip a shop. It has a capacity of 1,000 sheets, is furnished in nickel plate, and makes a most attractive and useful fitting.

HOSPITAL
CABINET.

This cabinet is made of wood handsomely finished, and is designed for use in hospitals or sick rooms. Its lightness, appearance and sanitary features make it more desirable than an unprotected roll or package.

PRICES.

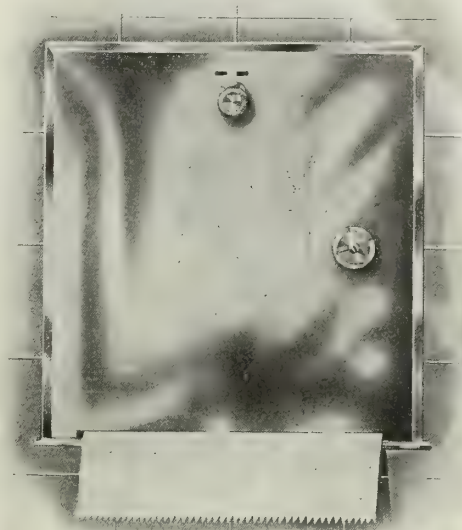
"Onliwon" Cabinet No. 1 $\frac{1}{2}$	\$2.00
"Onliwon" Cabinet No. 2.....	2.50
"Onliwon" Cabinet No. 3.....	3.00
Recess Cabinet, No. 2.....	5.00
Barber's Cabinet	5.00
Hospital Cabinet	1.50

CORRESPOND-
ENCE
INVITED.

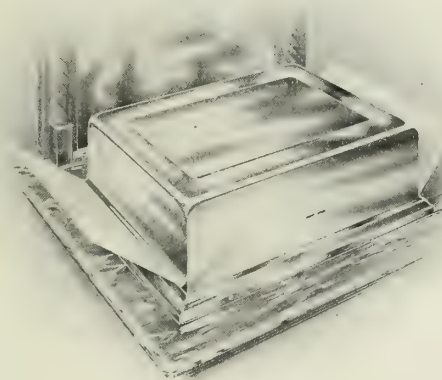
We invite correspondence from architects, engineers, contractors, plumbers and others interested, and would be pleased to furnish detail information regarding these cabinets and to quote prices for quantities.

REFERENCES.

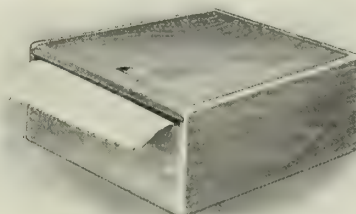
The Shirley, Denver, Colo.
Uniontown Public Schools, Uniontown, Pa.
LaFayette Hotel Co., Buffalo, N. Y.
Simon J. Murphy Co., Detroit, Mich.
Hotel Savoy, Denver, Colo.
Iroquois Hotel Co., Buffalo, N. Y.
C. O. Saylor Sanitarium, Kingston-on-Hudson, N. Y.
Slater Building, Worcester, Mass.
Hotel Wear, Hillsboro, Tex.
Golden West Hotel, San Francisco, Cal.
The Burdick, Kalamazoo, Mich.
Mansion House, Titusville, Pa.
Western Maryland College, Westminster, Md.
The Denison, Denison, Tex.
Chamberlain Military Institute, Randolph, N. Y.
H. M. Francis & Sons, Fitchburg, Mass.
Bliss Electrical School, Washington, D. C.
The Butterfield, Utica, N. Y.
Hotel Corcoran, Durham, N. C.
Wilbur House, Sayre, Pa.
Guy King, Philadelphia, Pa.
Hampton Co., Albany, N. Y.
The Ten Eyck, Albany, N. Y.
The Kenmore (Oaks Hotel Co.), Albany, N. Y.
Public Buildings Department, Worcester, Mass.
Auburn Prison, Auburn, N. Y.
Y. M. C. A., Jacksonville, Ill.
Dugan Glass Co., Indiana, Pa.
Sawyer Crystal Blue Co., Chelsea, Mass.
J. L. Brandeis & Sons, Omaha, Neb.
The Vermont Farm Machine Co., Bellows Falls, Vt.
The Howland Dry Goods Co., Bridgeport, Conn.
Seymour Mfg. Co., Seymour, Conn.
John Schoonmaker & Son, Newburgh, N. Y.
The Reeves-Luffman Co., Schenectady, N. Y.
The O. M. Edwards Co., Syracuse, N. Y.
Y. M. C. A., Clifton Forge, Va.
Central N. Y. Institution for Deaf Mutes, Rome, N. Y.
W. M. Whitney & Co., Albany, N. Y.
John G. Myers Co., Albany, N. Y.
Y. M. C. A., Hartford, Conn.
Association Men, New York, N. Y.
Y. M. C. A., New Haven, Conn.
Larkin Co., Buffalo, N. Y.



"ONLIWON" RECESS CABINET NO. 2
Capacity 1,000 sheets



"ONLIWON" BARBER'S CABINET
Capacity 1,000 sheets. Finished in nickel plate



"ONLIWON" HOSPITAL AND BEDSIDE
CABINET

IMPERIAL BRASS MANUFACTURING CO

MANUFACTURERS OF

The "Ingham" Steam and Water Shower-Bath Mixer

444 South Jefferson Street

CHICAGO, ILL.

PRODUCTS.

Sole manufacturers of the "INGHAM" SHOWER MIXER, for Shower Baths.

DEMAND FOR
SHOWER
MIXER.

The use of shower baths has greatly increased in the past few years, and they are now installed in hundreds of industrial plants, foundries and factories, in private residences, hospitals, sanitariums, schools, colleges, bathhouses, and in police and fire department stations. In hotels they are now being demanded by patrons and are being almost universally installed in the bathrooms.

This enormous demand has shown the necessity of a shower mixer which will be at all times under absolute control of the operator, requiring no adjustment and at the same time being economical and fool-proof.

This demand is met absolutely by the "Ingham" Shower Mixer.

CONSTRUC-
TION AND
OPERATION.

The "Ingham" Mixer consists of a cylindrical metal bell-shaped jacket, varying in height according to the capacity, attached to a cast-metal base-plate through which project two special valves connected to the cold-water and steam (or hot-water) pipes respectively. The cold water flowing through the left-hand valve passes through the bent tube and dashes against the center of the bottom plate whence the pressure carries it to the top of the mixing cylinder, to the outlet at the top, and thence to the shower head.

The steam or hot water passes through the right-hand valve directly to the copper coil. This coil runs almost to the top of the mixer cylinder, terminating in a straight leg that runs down through the center of the coil. As this leg is perforated with holes about one half inch apart the steam or hot water, passing through the coil then down through the perforated leg, spurts out in a spray directly into the cold water. The cold water coming up from the bottom of the cylinder is thus tempered by contact with the steam coil and the temperature is raised by the direct action of the spray coming through the perforations.

The operator has perfect control at all times by means of a lever handle and index showing the temperature desired. The valve stems are operated by a compound cam, and the first movement of the handle allows the cold water to flow; turning it further, opens the steam valve slightly, giving a warm shower; a still further movement fully opens the steam valve, giving a shower of a higher temperature. At the end of the turn the handle meets a positive stop and any reverse movement automatically shuts off the steam, thus leaving the cold the last to be shut off and preventing any possibility of receiving a scalding shower of hot water.

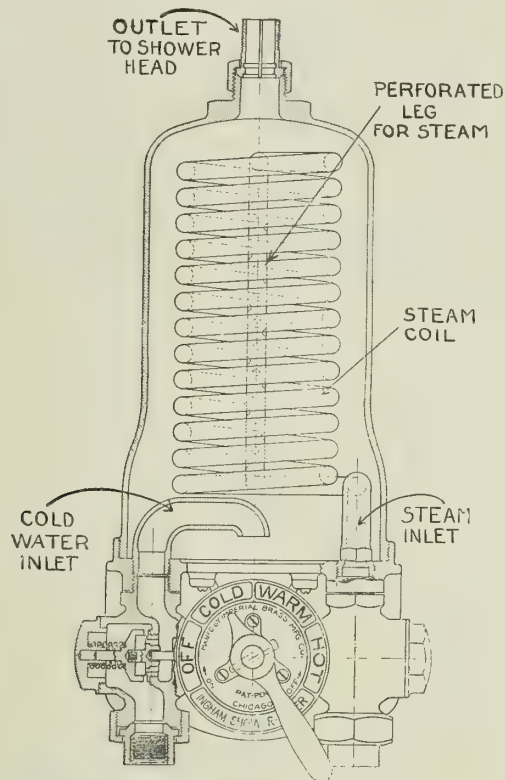
ADVANTAGES.

It is generally experienced in systems having more than one shower that there is great irregularity in the water temperature. A change in the adjustment of one may cause the water in another to suddenly change from hot to cold. Severe injury could easily result from this, and at all events such changes are very annoying. In the "Ingham" Mixer no such changes are possible.

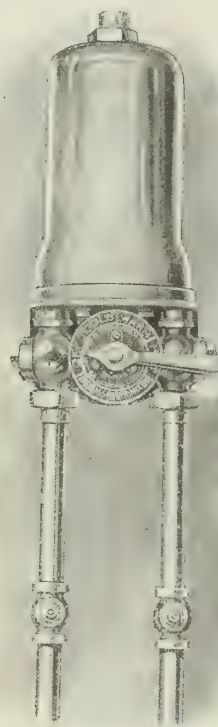
The "Ingham" Shower Mixer will give perfect results with steam and cold water or with hot water and cold water. Any temperature from cold to boiling can be maintained with no adjustment and always under control of the operator. There are no valves to pack, no drippings or traps requiring attention, it is self-cleaning, taking care of all sediment, dirt

and gravel, and is absolutely noiseless. The "Ingham" Mixer may be used to control any number of shower heads with the same ease and simplicity as one.

It assures the desired temperature of water from the very start of the flow. It is perfectly automatic, and saves thirty per cent of water and fifty per cent of steam. It absolutely prevents sudden changes of temperature, whether it is used with a single or with multiple showers.



"INGHAM" SHOWER MIXER
Sectional view showing simple mechanism



"INGHAM" SHOWER MIXER

INSTALLATION.

When the Mixer is installed the maximum temperature that will be used is first determined. In both the cold water and steam pipes, about twelve inches below the special mixer valves there are placed loose key valves whose function is to make a permanent adjustment, so that the maximum of water and steam will be admitted to the mixing chamber. The flow required for a cold shower is first determined, then the amount of steam (or hot water) to bring the cold water to the maximum temperature. It is then only necessary to attach the top of the mixer to the supply pipe leading to the shower head.

SIZES AND CAPACITIES.

The "Ingham" Shower Mixer is made in the following sizes:

- No. 1 Mixer controls one shower head
 - No. 2 Mixer controls four shower heads
 - No. 3 Mixer controls eight shower heads
 - No. 4 Mixer controls twelve shower heads
 - No. 5 Mixer controls eighteen shower heads
- Larger sizes to accommodate any number of showers can be made to order.

REFERENCES.

The "Ingham" Mixer is in use at the University of Chicago, University of Wisconsin, Parental School of Chicago, South Park play grounds of Chicago, North Central High School of Spokane, Wash., and many other prominent institutions.

It has also been installed in many private residences and will be specified for one of the large Chicago hotels to be erected in 1910.

MURPHY SPECIALTY COMPANY

MANUFACTURERS OF

Patented Plumbing Specialties

99 Second Street

MILWAUKEE, WIS.

PRODUCTS.

"SUNBURST BRAND" PLUMBING SPECIALTIES, as follows: Exclusive PATENTED DESIGNS in FLUSH VALVES for Water-Closets, Urinals, Clinic and Slop Sinks; CONCEALED-ACCESSIBLE TRAPS for Lavatories, Sinks, Urinals, Fountains, etc.; LAVATORY WASTES and NON-REMOVABLE LAVATORY PLUGS; BATH TRAPS and BATH WASTES; PEDAL COCKS for SURGICAL LAVATORIES, etc.; FLOOR DRAINS with Flushing Rim and Pedal Cock; CATCH-BASIN TRAPS and COMBINED CATCH-BASINS and TRAPS; "NO METAL" CLOSET and SEAT COMBINATIONS; "NO METAL" DRINKING FOUNTAINS, etc. We also submit Original Designs for and manufacture to order SPECIAL PLUMBING FIXTURES for Hospitals, Hotels, Apartments and Office Buildings, Prisons, Reformatories, etc.

ADVANTAGES.

Extreme simplicity of design, massive construction and extraordinary durability. Conformity with the most advanced sanitary practice in eliminating all exposed and unnecessary piping and metal parts in proximity to plumbing fixtures. Direct accessibility to all parts, thus obviating the need of unsanitary floor and wall pockets as well as pipe shafts, runways, etc., and resulting in great economy of valuable space.

GUARANTEE.

All goods bearing our trade-mark are unconditionally guaranteed.



FIG. S. 202. "MURPHY" FLUSH VALVE

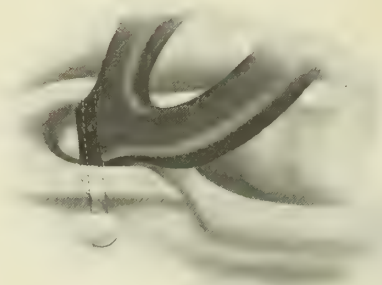


FIG. S. 205. "NO METAL" BOWL AND SEAT



FIG. S. 104. PORCELAIN SLOP SINK

DESCRIPTION OF THE FIXTURES.

Fig. S. 202—"Murphy" Flush Valve (floor pattern), with solid nickel floor plate, heavy "Avoca" pattern vitreous ware duplex siphon jet bowl, with large base, "No Metal" hinge seat, and china arm to wall, covering the flush-pipe connection. An instant's pressure of the foot on the floor-button will give any flush desired. The entire valve may be withdrawn from the casing without disturbing the floor. It may be used with any bowl and may be placed in the wall if desired.

Fig. S. 205—The "No Metal" Bowl and Seat Combination eliminates the last trace of metal from the point where it was most exposed to the action of urine. The hinge pintle passes through the rear portion of the seat and into the solid raised portion of the bowl, greatly strengthening and improving the appearance of both. We can furnish any style or type of bowl with this seat and hinge.

Fig. S. 104—Porcelain Slop Sink, with trap standard and flushing rim, "Murphy" flush valve (floor pattern), hot and cold floor cocks and nickel-plated spout. The flush valve is connected to the rim and is used to flush the sink. The floor cocks are attached to the hot and cold water pipes and control the supply to the spout. The valve and cocks may be withdrawn from their casings without disturbing the floor.

DESCRIPTION
OF THE
FIXTURES
(CONTINUED).

Figs. S. 220, S. 231, S. 242—The "Murphy" Concealed-Accessible Traps, illustrated in Figs. S. 220, S. 231 and S. 242, possess several distinct advantages. The vent pipe is not brought through the wall, but is connected to the crown of the trap in the partition, the only exposed part of it being the elbow connected to the fixture. The trap is nevertheless directly accessible for cleaning, either by removing the clean-out plug below the fixture in Fig. S. 242, or by disconnecting the elbow at the wall line in Figs. S. 220 and 231, which also gives access to waste and vent pipes in the partition.



FIG. S. 220. THE "MURPHY" CONCEALED-ACCESSIBLE SINK TRAP

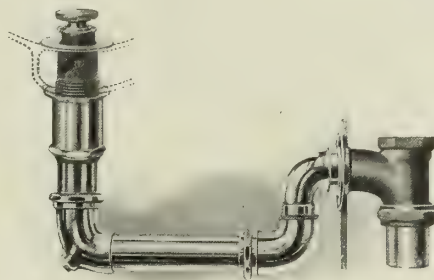


FIG. S. 231. LAVATORY TRAP WITH NON-REMOVABLE LAVATORY PLUG

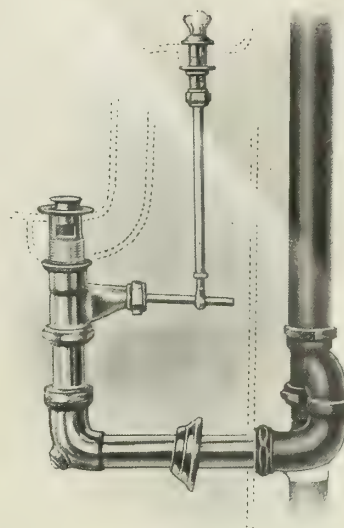


FIG. S. 242. BASIN-WASTE FIXTURE AND TRAP

Fig. S. 231—The Non-Removable Lavatory Plug, shown in connection with the trap in Fig. S. 231, is made of a single piece of brass having a knob, a ground-metal seat and a three-winged guide. It requires no chain or strainer in the waste pipe and has no mechanism in the waterway. It cannot be lost or broken. It is particularly adapted to prisons, reformatories, schools, and other places where severe use is to be provided for.

Fig. S. 242—The Basin-Waste Fixture, shown in connection with the trap in Fig. S. 242, is similar to the non-removable plug, with the addition of a lever and rod so that it may be operated from above the slab. It has an unobstructed waterway and will not accumulate hair, lint, etc.

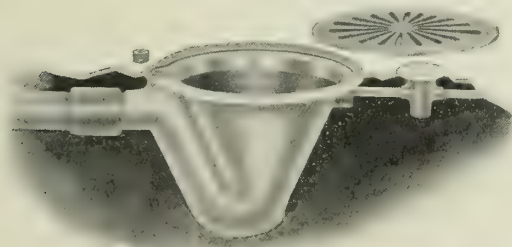


FIG. S. 152. FLOOR DRAIN WITH FLOOR COCK ATTACHED

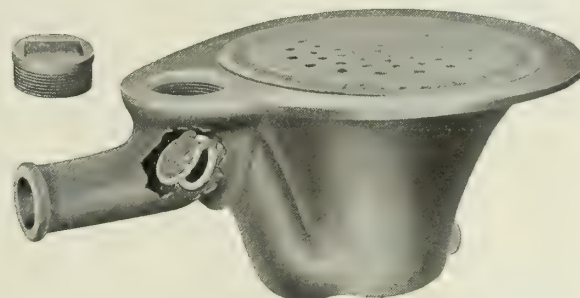


FIG. S. 276. COMBINED FLOOR DRAIN AND BACK-WATER VALVE

Fig. S. 152—Floor Drain with polished brass flange and cover, flushing rim, jet and floor cock attached. Diameter of rim 10 inches, depth 7 inches, outlet 2 inches, tapped $\frac{1}{4}$ inch. The basin and trap are cast in a single piece of metal, therefore there are no joints to leak. By the pressure of the foot on the floor-button a powerful stream of water is discharged into the trap, thoroughly scouring and flushing it. This floor drain can be furnished either with or without flushing rim and floor cock.

Fig. S. 276—Combined Floor Drain and Back-Water Valve. Diameter of flange is 16 inches, cover 12 inches, depth 10 inches, outlet 2 inches. Made either all iron, or iron body with polished brass rim and cover. Can also be furnished with floor cock and jet for flushing, same as Fig. S. 152. This fixture is used to drain floors which are subject to flooding by back-water from the sewerage system. This flooding is prevented by the brass back-water valve. By removing the threaded hand-hole plug, direct access is gained to the valve and sewer pipe for cleaning or rodding.

REFERENCES.

A few typical installations are the following:

St. Mary's Hospital, Addition, Rochester, Minn., \$300,000
Sacred Heart Sanitarium, Addition, Milwaukee, Wis., \$200,000
St. Mary's Hospital, Milwaukee, Wis., \$400,000
Young Men's Christian Association Building, Milwaukee, Wis., \$250,000
Majestic Building, Milwaukee, Wis., \$1,500,000
Caswell Building, Milwaukee, Wis., \$300,000

Cudahy Apartments, Milwaukee, Wis., \$300,000
Pfister & Vogel Leather Co., Tannery, Milwaukee, Wis., \$100,000
Public Service Building, Milwaukee, Wis., \$1,500,000
Milwaukee Auditorium, Milwaukee, Wis., \$500,000
State Normal Schools at La Crosse and Milwaukee, Wis., each, \$250,000

H. MUELLER MANUFACTURING COMPANY

Water, Gas and Plumbing Goods

FACTORY AND GENERAL OFFICES

West Cerro Gordo Street
DECATUR, ILL.

TELEPHONE, BELL 153

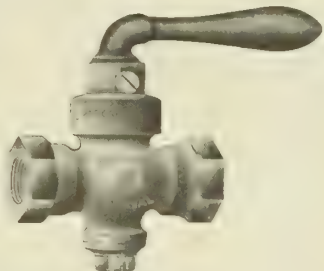
EASTERN DIVISION

254-258 Canal Street
NEW YORK, N. Y.

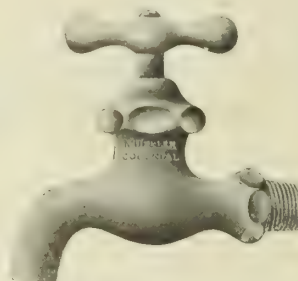
TELEPHONE, FRANKLIN 4381

PRODUCTS.

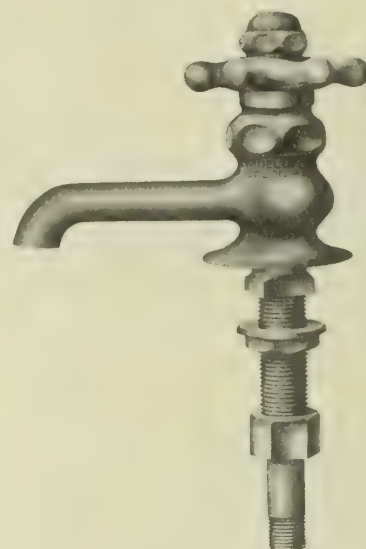
Complete line of BRASS PLUMBING GOODS, including "MUELLER" GROUND-KEY WORK, COMPRESSION WORK, SELF-CLOSING WORK, FULLER WORK and WATER-PRESSURE REGULATORS.



"MUELLER" GROUND-KEY STOP
AND WASTE COCK,
D-6514. Patented



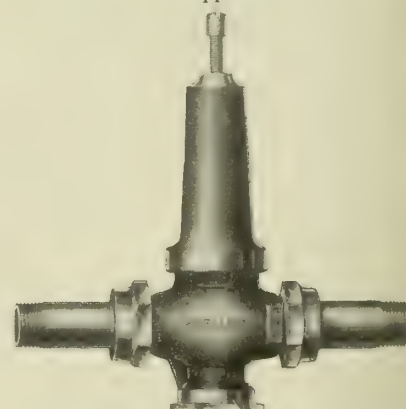
"MUELLER" COLONIAL"
COMPRESSION BIBB,
D-8893. Pat. applied for



"MUELLER" COLONIAL" SELF-
CLOSING BASIN COCK,
D-12901. Patented



"MUELLER" COLONIAL"
FULLER BASIN COCK,
D-10891
Patent applied for



"MUELLER" WATER-PRESSURE
REGULATOR, D-13001
Patented

PATTERN
ADAPTABILITY.

"Extra," "Special" and "Colonial" Patterns, adapting the line to every class of building. Cocks and Bibbs illustrated are "Special" and "Colonial" Patterns. The Stop and Waste Cock is of the "Special" Pattern, but harmonizes with the bibb and other cocks illustrated, which are of the "Colonial" Pattern. The "Colonial" Pattern is rich in design and particularly adapted to the finest buildings. The "Extra" Pattern is appropriate for use in the average and better class of buildings.

PRICES.

"Colonial" Pattern Goods cost about 10 per cent more than competitive goods, and the "Extra" Pattern costs about 10 per cent less than the "Colonial."

TEST AND
GUARANTEE.

"Mueller" goods are given a 200-pound hydraulic pressure test and are *unconditionally guaranteed*.

"MUELLER"
GROUND-KEY
WORK.

Features: Waterway pipe size. Patent cap, excluding dirt from ground surfaces. Stop lugs cast solid on body and cap and will not shear off. Wide lap of body and key.

"MUELLER"
COMPRESSION
WORK.

Features: Waterway pipe size. Combined cap and stuffing box. Incased seat washer. Lubricated packing. Tee, cross, six arm or primo handle, with or without index.

"MUELLER"
SELF-CLOSING
WORK.

Features: Waterway pipe size. Roller bearings, making easy to operate and positive in closing. One sixth turn of handle makes full open. Tee, cross, six arm or primo handle, with or without index.

"MUELLER"
FULLER
WORK.

Features: Waterway pipe size. Long stem bearings. Eccentric with wide sweep. "Mueller" new non-hammering valve, the only absolute preventive of water-hammering ever devised for fuller work.

"MUELLER"
WATER-
PRESSURE
REGULATOR.

Features: Gives control of water supply. Causes water to flow from faucets and cocks without splashing in the sink, tub or other receptacle. Protects fixtures from overstrain caused by fire pressure.

NATIONAL LEAD COMPANY

Manufacturers of Lead Pipe and Building Materials

NEW YORK

BOSTON

BUFFALO

CHICAGO

CINCINNATI

CLEVELAND

ST. LOUIS

PHILADELPHIA (John T. Lewis & Bros. Co.)

PITTSBURGH (National Lead & Oil Co.)

PRODUCTS.

PLUMBING MATERIALS, LEAD SERVICE PIPE, WASTE PIPE and TUBING; TIN TUBING, TIN-LINED LEAD PIPE and BLOCK TIN PIPE; SASH WEIGHTS; CAME LEAD and ART GLASS ORNAMENTS; TRAPS and BENDS, SHEET LEAD and PAINTING MATERIALS.

LEAD SERVICE PIPE.

Lead pipe is worth all it costs and should be specified in all plumbing. It not only is safer from the health standpoint, but is much more economical in the long run. Our lead pipe is made from best new pig lead. Following is a table of weights and sizes:

LEAD SERVICE PIPE					
Caliber	Letter	Weight per Foot and Rod	Caliber	Letter	Weight per Foot and Rod
$\frac{3}{8}$ in.	E	7 lbs. per rod	1 in.	D	2 lbs. per ft.
$\frac{1}{2}$ in.	D	10 oz. per foot	1 in.	C	2 $\frac{1}{2}$ lbs. per ft.
$\frac{5}{8}$ in.	C	12 oz. per foot	1 in.	B	3 lbs. per ft.
$\frac{3}{4}$ in.	B	1 lb. per foot	1 in.	A	4 lbs. per ft.
$\frac{7}{8}$ in.	A	1 $\frac{1}{4}$ lbs. per foot	1 in.	AA	4 $\frac{3}{4}$ lbs. per ft.
$\frac{1}{2}$ in.	AA	1 $\frac{1}{2}$ lbs. per foot	1 in.	AAA	6 lbs. per ft.
$\frac{1}{2}$ in.	AAA	1 $\frac{3}{4}$ lbs. per foot	1 in.	E	2 lbs. per ft.
$\frac{1}{2}$ in.	E	13 oz. per foot	1 in.	D	2 $\frac{1}{2}$ lbs. per ft.
$\frac{1}{2}$ in.	D	1 lb. per foot	1 in.	C	3 lbs. per ft.
$\frac{1}{2}$ in.	C	9 lbs. per rod	1 in.	B	3 $\frac{3}{4}$ lbs. per ft.
$\frac{1}{2}$ in.	B	$\frac{3}{4}$ lb. per foot	1 in.	A	4 lbs. per ft.
$\frac{1}{2}$ in.	A	1 lb. per foot	1 in.	AA	4 $\frac{3}{4}$ lbs. per ft.
$\frac{1}{2}$ in.	Special	1 $\frac{1}{4}$ lbs. per foot	1 in.	AAA	5 $\frac{3}{4}$ lbs. per ft.
$\frac{1}{2}$ in.	A	1 $\frac{1}{2}$ lbs. per foot	1 in.	E	3 lbs. per ft.
$\frac{1}{2}$ in.	AA	1 $\frac{1}{2}$ lbs. per foot	1 in.	D	3 $\frac{1}{2}$ lbs. per ft.
$\frac{1}{2}$ in.	Special	2 lbs. per foot	1 in.	C	4 lbs. per ft.
$\frac{1}{2}$ in.	AAA	2 lbs. per foot	1 in.	B	5 lbs. per ft.
$\frac{1}{2}$ in.	E	12 oz. per rod	1 in.	A	6 lbs. per ft.
$\frac{1}{2}$ in.	D	1 lb. per foot	1 in.	AA	7 lbs. per ft.
$\frac{1}{2}$ in.	C	1 $\frac{1}{2}$ lbs. per foot	1 in.	Special	8 lbs. per ft.
$\frac{1}{2}$ in.	B	2 lbs. per foot	1 in.	AAA	8 lbs. per ft.
$\frac{1}{2}$ in.	A	2 $\frac{1}{2}$ lbs. per foot	1 in.	D	4 lbs. per ft.
$\frac{1}{2}$ in.	AA	2 $\frac{1}{2}$ lbs. per foot	1 in.	C	5 lbs. per ft.
$\frac{1}{2}$ in.	AAA	2 $\frac{1}{2}$ lbs. per foot	1 in.	B	6 lbs. per ft.
$\frac{1}{2}$ in.	E	1 lb. per foot	1 in.	Special	6 $\frac{1}{2}$ lbs. per ft.
$\frac{1}{2}$ in.	Special	1 $\frac{1}{4}$ lbs. per foot	1 in.	A	7 lbs. per ft.
$\frac{1}{2}$ in.	A	1 $\frac{1}{4}$ lbs. per foot	1 in.	AA	8 lbs. per ft.
$\frac{1}{2}$ in.	AA	1 $\frac{1}{4}$ lbs. per foot	1 in.	AAA	10 lbs. per ft.
$\frac{1}{2}$ in.	AAA	2 lbs. per foot	1 in.	D	4 $\frac{3}{4}$ lbs. per ft.
$\frac{1}{2}$ in.	E	2 lbs. per foot	1 in.	C	6 lbs. per ft.
$\frac{1}{2}$ in.	Special	2 $\frac{1}{4}$ lbs. per foot	1 in.	B	7 lbs. per ft.
$\frac{1}{2}$ in.	B	3 lbs. per foot	1 in.	A	8 lbs. per ft.
$\frac{1}{2}$ in.	A	3 $\frac{1}{2}$ lbs. per foot	1 in.	AA	9 lbs. per ft.
$\frac{1}{2}$ in.	AA	4 $\frac{1}{4}$ lbs. per foot	1 in.	AAA	11 $\frac{1}{4}$ lbs. per ft.
$\frac{1}{2}$ in.	AAA	4 $\frac{1}{4}$ lbs. per foot	1 in.	E	11 $\frac{1}{4}$ lbs. per ft.
$\frac{1}{2}$ in.	E	1 $\frac{1}{2}$ lbs. per foot	1 in.	D	11 $\frac{1}{4}$ lbs. per ft.

Inch	$\frac{3}{8}$ Thick	$\frac{1}{2}$ Thick	$\frac{3}{4}$ Thick	$\frac{1}{2}$ Thick
	Lbs.	Lbs.	Lbs.	Lbs.
2 $\frac{1}{2}$	17	14	11	8
3	20	16	12	9
3 $\frac{1}{2}$	22	18	15	9 $\frac{1}{2}$
4	25	21	16	12 $\frac{1}{2}$
4 $\frac{1}{2}$	—	—	18	14
5	31	—	20	—
6	37	—	24 $\frac{1}{2}$	—

LEAD WASTE PIPE

1 $\frac{1}{2}$ in.	2	and 3 lbs. per foot	4 in.	5, 6 and 8 lbs. per foot
2	3	4	4 $\frac{1}{2}$ in.	6 and 8 lbs.
3	3 $\frac{1}{2}$	5	5	8, 10 and 12 lbs.
3 $\frac{1}{2}$	4 lbs. per foot.		6	12 lbs.

LEAD TUBING

$\frac{1}{8}$ inch	$\frac{1}{8}$ inch	$\frac{1}{8}$ inch
42 feet to lb.	6 $\frac{1}{2}$ feet to lb.	1 $\frac{3}{4}$ oz. to foot
$\frac{3}{8}$ inch		$\frac{1}{4}$ inch
3 oz. to foot		4, 5, and 8 oz. to foot

TIN TUBING

$\frac{1}{8}$ inch	$\frac{1}{8}$ inch	$\frac{3}{8}$ inch
63 feet to lb.	10 feet to lb.	2 $\frac{3}{4}$ oz. to foot

TIN-LINED LEAD PIPE

In ordering, use Lead Pipe Table for caliber and strength.

BLOCK TIN PIPE

$\frac{1}{4}$ in.	3, 4, 5 and 8 oz. per foot	$\frac{3}{4}$ in.	8, 9 and 10 oz. per foot
$\frac{1}{2}$ in.	4	$\frac{1}{2}$ in.	10, 12
$\frac{3}{8}$ in.	4, 4 $\frac{1}{2}$, 5, 5 $\frac{1}{2}$ and 6 $\frac{1}{2}$ oz. per foot	1 in.	9, 14, 15
	6, 8, 10 and 12	1 $\frac{1}{4}$ in.	1 $\frac{1}{2}$ lbs.
$\frac{1}{2}$ in.		1 $\frac{1}{2}$ in.	3, 4, 2
$\frac{3}{4}$ in.	4 $\frac{1}{2}$, 5, 6, 8, & 10	2 $\frac{1}{2}$ in.	1, 2 $\frac{1}{2}$

THE NATIONAL BRASS AND COPPER TUBE COMPANY

MANUFACTURERS OF

Brass and Copper Seamless-Drawn Tubing, Brass and Copper Pipe

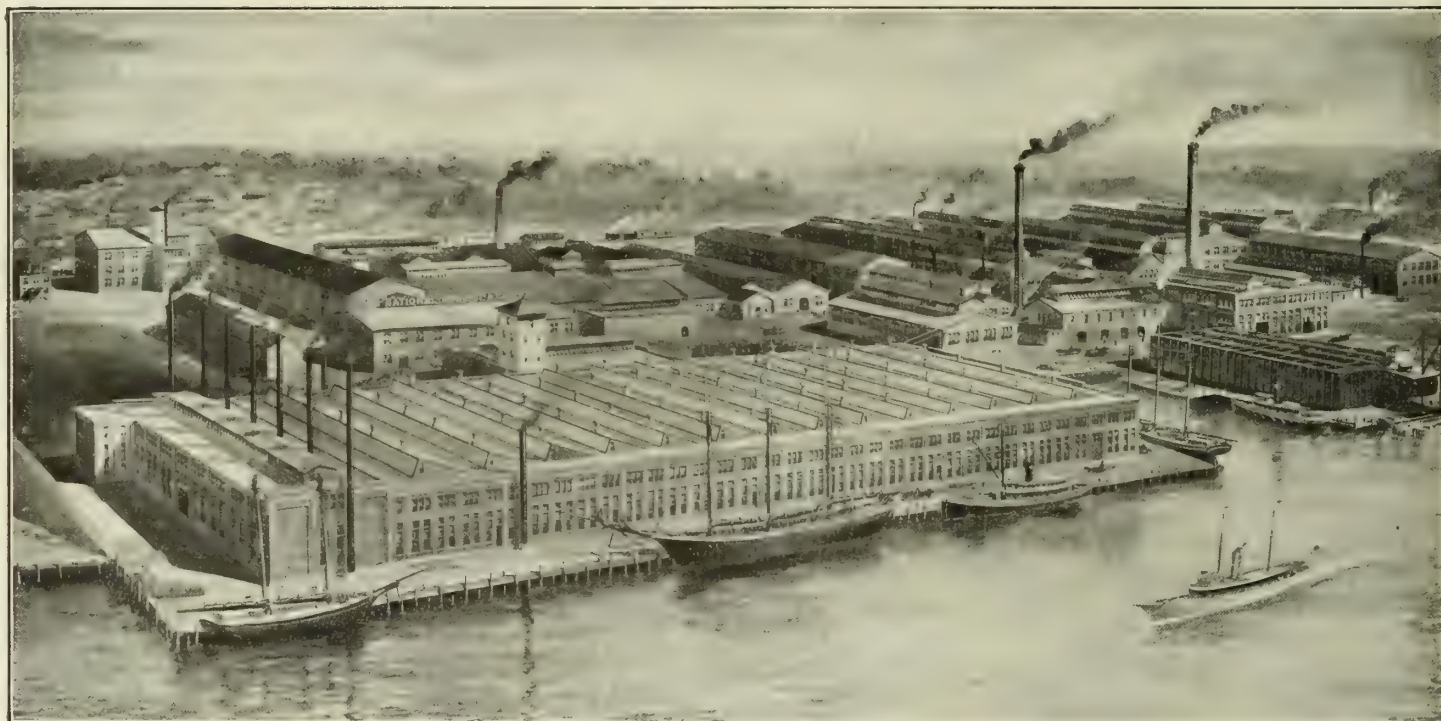
41 Park Row

NEW YORK, N. Y.

BRANCHES

BOSTON, MASS., Delta Building
CHICAGO, ILL., The Rookery

PHILADELPHIA, PA., Perry Building
SAN FRANCISCO, CAL., 152 Second Street
LONDON, E. C., ENG., Oxford Court, Cannon Street



WORKS AT HASTINGS-ON-HUDSON, N. Y.

PRODUCTS.

SEAMLESS-DRAWN BRASS and COPPER TUBING, SEAMLESS-DRAWN BRASS and COPPER PIPE, SEAMLESS-DRAWN TUBES for PNEUMATIC SERVICE, SEAMLESS-DRAWN VOICE TUBING, SEAMLESS-DRAWN TUBING for PUMPS.

Brass and Copper Pipes are made to correspond with iron pipes and to fit iron pipe fittings.

"Extra heavy iron pipe size" is supplied in standard sizes.

Brass Plumbing Tubes are made in standard sizes.

Seamless Brass and Copper Tubes are made in all sizes.

PRICES.

The prices of these goods are subject to constant change. However, we issue price-lists which we will be pleased to send on application.

TESTS TO
DETERMINE
BURSTING
PRESSURE.

The Massachusetts Institute of Technology undertook a series of tests for the purpose of standardizing the specifications for seamless drawn brass and copper tubing. These tests were made on ten different pieces of $\frac{3}{4}$ " iron pipe size tubing.

The pressure was obtained by forcing a plunger fitted with a cup-shaped leather washer into the tube by means of an ordinary Olsen testing machine; the tube was filled with water and sealed at the lower end with a similar cup-shaped washer. The expansion of the tube when under pressure was prevented, except for a length of about 5", by a close-fitting sleeve. By this means the plunger could be kept tight, and a pressure sufficient to burst the tube in the unsupported portion could be obtained.

The friction of the washer in the tube up to a pressure of 6,000 pounds per square inch was obtained by connecting a pressure gauge with the tube and comparing the pressure in pounds per square inch figured from the load on the plunger with the pressure by gauge. The gauge was accurately calibrated and shows that the friction averaged about 4 per cent up to the limit of the gauge pressure.

In making corrections for the piston friction it is assumed that the percentage of error remains the same up to the maximum pressure obtained. In the calculation of all the values of internal pressure given below this allowance for friction is made.

The quantities denoted as "hoop tension at yield point" and "hoop tension at breaking" are obtained by considering the tube as a thin hollow cylinder of the original dimensions before the pressure was applied, that is:

$$\frac{\text{Pressure in lbs. per square inch} \times \text{radius of tube in inches}}{\text{Thickness of tube in inches}}$$

This gives unit values for comparison, but does not, of course, give actual intensity of tensile stress at the yield point and at breaking. The measurements for average diameter and thickness are given to the nearest one-thousandth of an inch, three and four measurements being taken near the end subjected to pressure.

All pressures and stresses are given to the nearest one hundred pounds per square inch, although it is possible that after making all the corrections the results may be in error by as much as 5 per cent. After breaking, the average diameter of each tube close to the fracture was measured; the percentage increase over the original diameter gives a means of comparing the ductility of the different specimens.

From the foregoing tests the following figures were taken as fair specifications for the manufacture of brass tubing for plumbers' uses, based on $\frac{3}{4}$ " iron pipe or plumbers' size:

PROPERTIES.

Tension—Average readings of outside diameter at 6 sections: Average thickness, .116; average yield point (pounds), 6,500; maximum load (pounds), 17,400; elongation in 8", 4.30"; average outside diameter at fracture, .740; average thickness at fracture, .0725"; yield point (pounds per square inch), 19,100; maximum load (pounds per square inch), 51,100; elongation in 8" (per cent), 53.6.

Bursting—Pressure at yield point (pounds), 5,500; hoop tension at yield point (pounds per square inch), 19,200; load on machine at break (pounds), 6,420; pressure at breaking (pounds per square inch), 11,800; hoop tension at breaking (pounds per square inch), 40,800; increase in diameter (per cent), 19.2.

RULE FOR
ESTIMATING.

For estimating safe limit of bursting pressure for Brass and Copper Tubes, in pounds per square inch, adopt the following rule:

First, Ascertain the tensile strength of the metal in the tube, which will vary according to the quality and temper; 40,000 lbs. per square inch for brass and 30,000 lbs. per square inch for copper are considered safe estimates, but are not guaranteed.

Second, Multiply the tensile strength by the thickness of tube wall in inches, or decimal parts of an inch.

Third, Divide by the radius (one half of the diameter) expressed in inches, and the result shows the pressure in pounds per square inch.

THE OHIO BRASS AND IRON MFG. CO.

High-Grade Brass Goods and Specialties for Plumbing

8201-8301 Franklin Avenue, N. W.

CLEVELAND, OHIO

TELEPHONES: RIDGE 384

CUYAHOGA CENTRAL 1583

PRODUCTS.

Manufacturers of "RADCLIFFE'S POSITIVE" ANTI-SIPHON TRAPS, "OHIO NEVER-LEAK" BIBBS, BASIN and BATH COCKS, "OHIO LOW-DOWN" BASIN COCKS, and "OHIO" PATENT GROUND-KEY WORK.

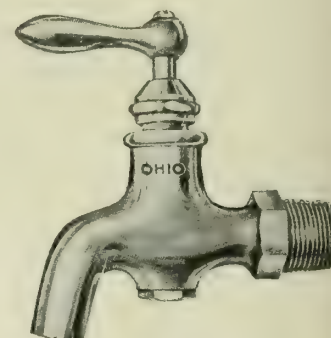
"RADCLIFFE'S POSITIVE" ANTI-SIPHON TRAPS.

"Radcliffe's Positive" Anti-Siphon Traps are the only traps made that meet the requirements of a positive self-scouring action, freedom from secret partitions, and ability to resist siphonage under all conditions. Their use is allowed in every plumbing ordinance. Made of brass for lavatory, of brass or galvanized iron for bath, and of brass or lead with brass outlets for sink.

By reason of the scouring action, these traps will carry off everything that can pass through plug or strainer, including matches, coffee-grounds, etc. Other anti-siphon traps have hidden partitions through which trap seal can leak into waste pipe, and sewer air leak into room in case of defect, without the knowledge of the occupants. "Radcliffe's Positive" has none. This is the result of years of experience in producing a trap with the minimum of anti-siphon construction, the maximum of scouring action and freedom from secret partitions and easy access for cleaning. For illustrations, see next page.

"OHIO NEVER-LEAK" BIBBS, BASIN AND BATH COCKS.

"Ohio Never-Leak" Bibbs, Basin and Bath Cocks (No. 425) overcome all the disadvantages of both Compression and Fuller Work and embody all the best features of each, having a Fuller movement for operating convenience and a special Compression seat for durability. This is an inverted seat which is actually washed clean every time it is used. No grit or other foreign substance can lodge, causing leaks when closing, as the seating is upward in the flow of water. They positively never hammer and never leak. There are many styles not shown here.



No. 425
"OHIO NEVER-LEAK"
BIBB

"OHIO LOW-DOWN" BASIN COCKS.

"Ohio Low-Down" Basin Cocks (No. 401) are constructed on the same principle as the "Ohio Never-Leak" goods, except on account of its being so low down the regular washer seat is used, closing against the pressure.



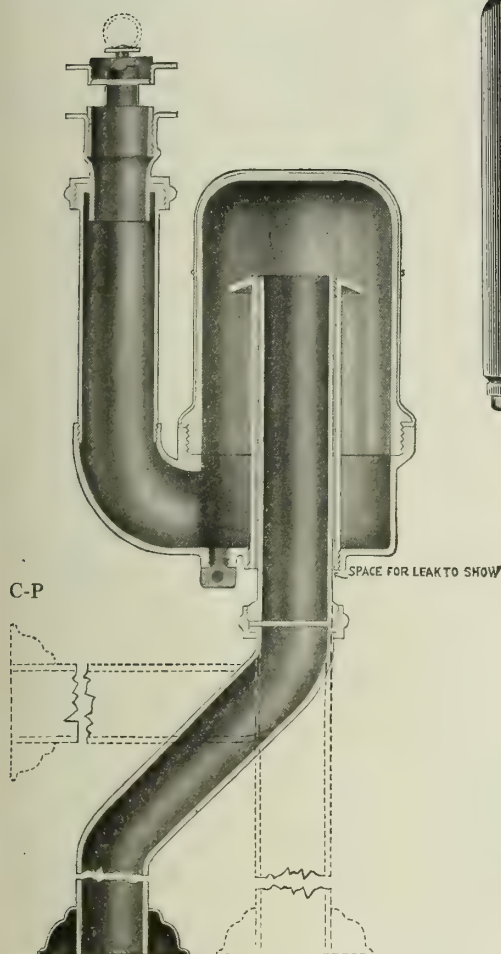
No. 401
"OHIO LOW-DOWN"
BASIN COCK

"OHIO" PATENT GROUND-KEY WORK.

"Ohio" Patent Ground-Key Work contains more red metal than any other line and is made for strength. Every one is tested to stand over 200 pounds hydraulic pressure. They give full waterway, never leak, and never stick.

GUARANTEE, ETC.

All "Ohio" goods are absolutely guaranteed. Correspondence for particulars is earnestly solicited.



"RADCLIFFE'S POSITIVE" ANTI-SIPHON TRAP

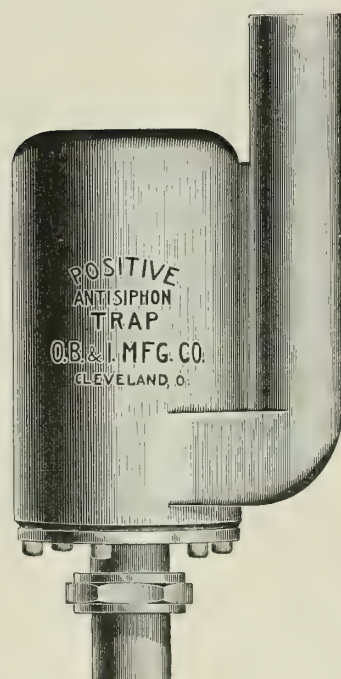
The above sectional view of the Positive Trap shows space between tube and stand-pipe, this space making it impossible for seal to leak into sewer without detection.

WITH METAL DOME

- 1½ Fig. 100A Brass N.-P.-S offset
- 1½ Fig. 100A Brass N.-P.-S offset
- 1½ Fig. 100C Brass N.-P.-S or P Straight
- 1½ Fig. 100C Brass N.-P.-S or P Straight

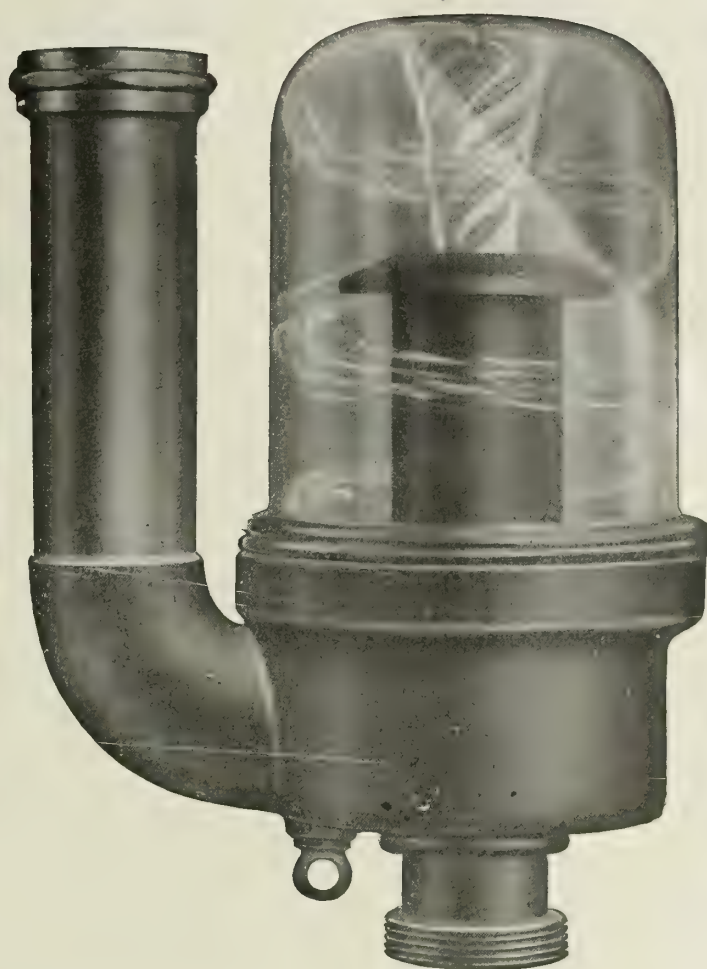
"RADCLIFFE'S POSITIVE" BATH TRAP.

The inlet of Bath Trap being tapped for 1½" I. P. the above specially made 45-degree Solder Nipple shown at inlet is furnished with trap, which enables the inlet to be taken either vertically or made for horizontal run. By slacking the nut at top of stand-pipe the outlet tube can be swung to any point within its radius and there securely locked, thus giving a wide range of adjustment for roughing-in. The cover has inner flange extending into the seal water, thus at all times insuring a gas-tight joint where cover joins body. Easily cleaned and non-siphonable. When cover is removed entire interior of trap is exposed. Furnished with N. P. Floor Plate. Distance from top of trap cover to center of outlet, 5½ inches. No. 103, all brass. No. 103½, galvanized iron body with brass trimmings.



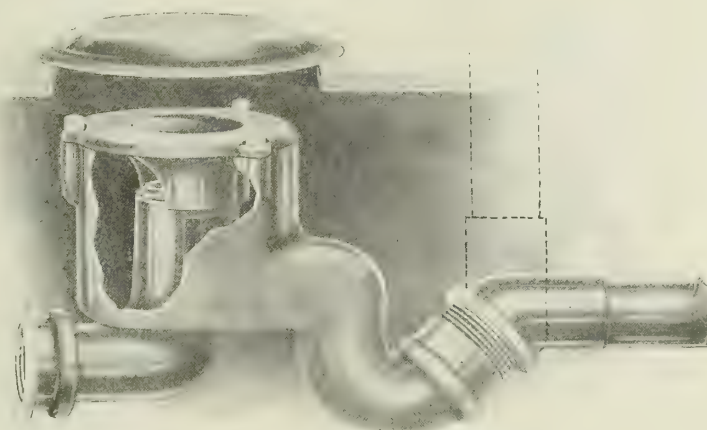
No. H 101½

Made in Lead for use under sinks where a cheaper than brass trap is wanted. All concealed parts, outlet and discharge tubes, are made of rough brass 1½ or 1½ S or P



Centripetal and centrifugal action produced through waste inlet entering body of trap at a tangent

"RADCLIFFE'S POSITIVE" ANTI-SIPHON TRAP



"RADCLIFFE'S POSITIVE" BATH TRAP

THE PERFECT BIBB AND FAUCET CO.

Highest Grade Basin Cocks, Faucets, etc.

UPPER SANDUSKY, OHIO

PRODUCTS.

"PERFECT" PATENTED BRASS SPECIALTIES including, "PERFECT" COMPRESSION DOUBLE BATHTUB FAUCET; "PERFECT" LOW-DOWN BASIN COCK; "PERFECT" FLANGE SINK BIBB; "PERFECT" FAUCET; "PERFECT" SILL COCK; "PERFECT" STOP and WASTE COCK.

QUALITY.

We manufacture only one grade of work—the best that can be made; we use Red Brass throughout, making strong, non-porous castings; all our work is carefully machined, neatly finished, and thoroughly inspected.

DESIGN.

All our designs are new and symmetrical, with solid, one-piece handles and with ball nuts and edges neatly rounded, making a sanitary, easily cleaned fitting.

ADVANTAGES.

Our "Perfect" Cocks and Faucets are made on an entirely different principle from any other compression cock or faucet made, and are fully covered by patents. The accompanying sectional cut fully shows the working of the "Perfect" Faucet. The movement of the plunger is a straight lift, absolutely free from friction or wear on seat or gasket and consequently free from leakage. One screw in bottom of stem fastens gasket, plunger and stem together. Stem packing is held firmly in position in a concave nut by a brass washer, making it absolutely watertight at all times.

FINISH.

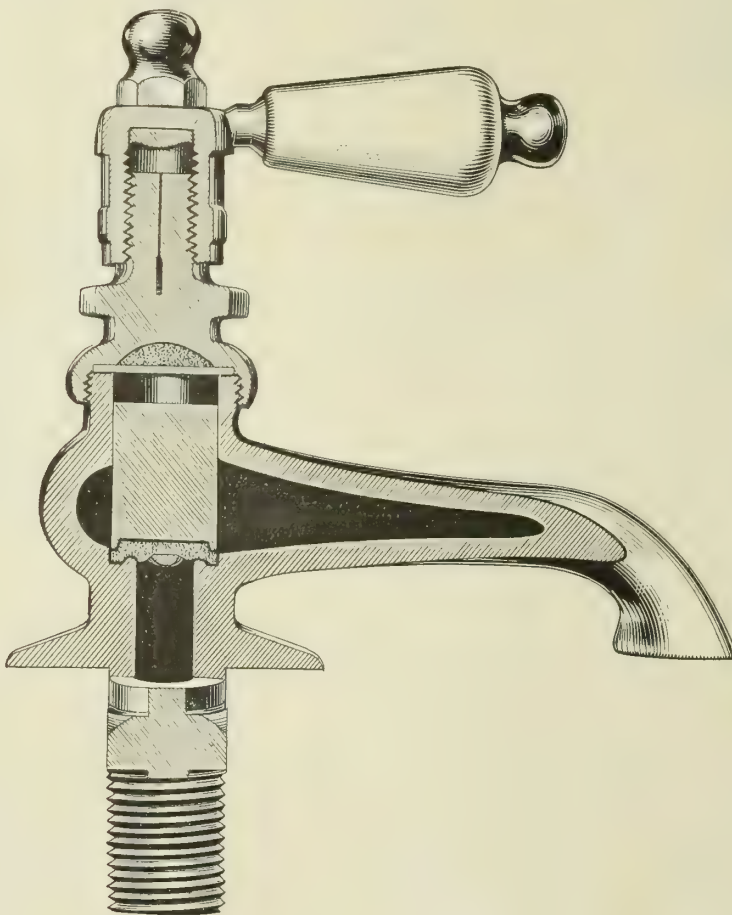
All "Perfect" fittings are heavily copper-plated and triple nickel-plated.

SAMPLES.

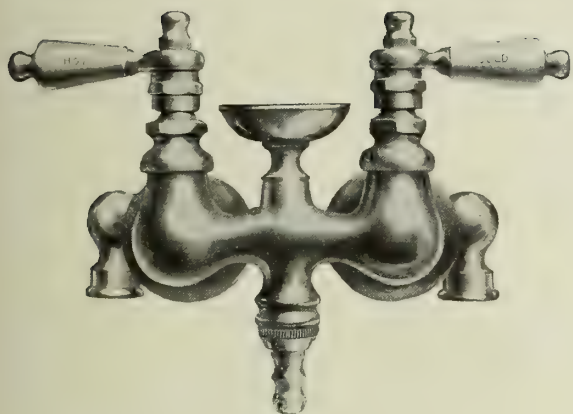
Samples will be promptly furnished on approval.

SERVICES.

Detail information regarding our products will be cheerfully furnished and samples will be sent to responsible parties, on approval.



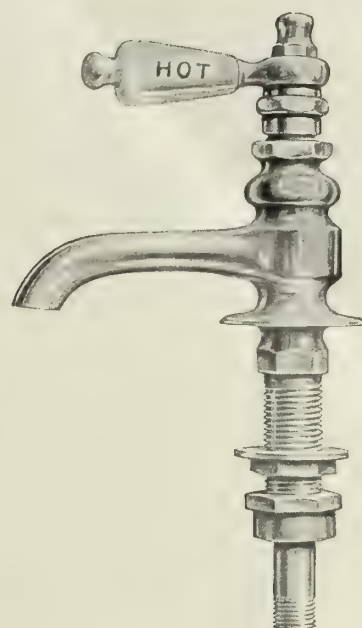
THE "PERFECT" FAUCET
Sectional View



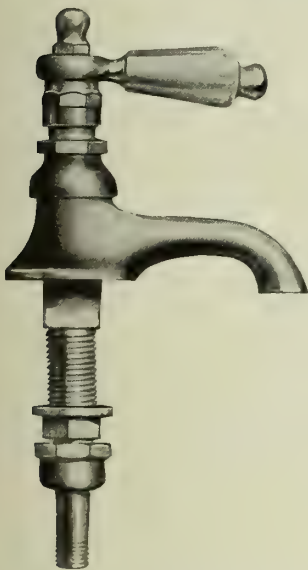
"PERFECT" COMPRESSION DOUBLE BATH-TUB FAUCET, NO. 20



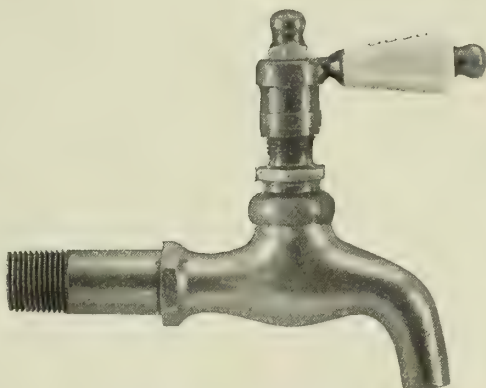
"PERFECT" LOW-DOWN BASIN COCK NO. 3



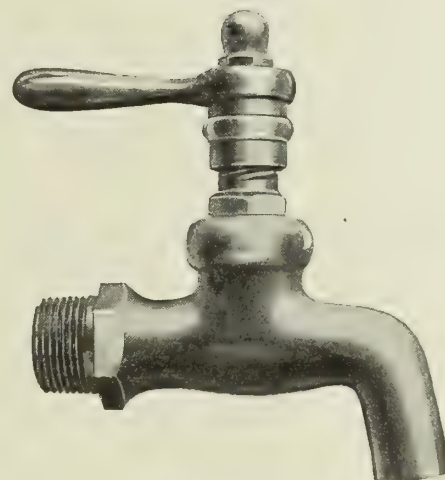
"PERFECT" LOW-DOWN BASIN COCK NO. 2



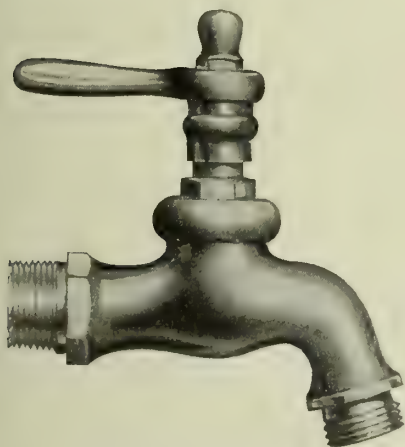
"PERFECT" LOW-DOWN BASIN COCK NO. 1



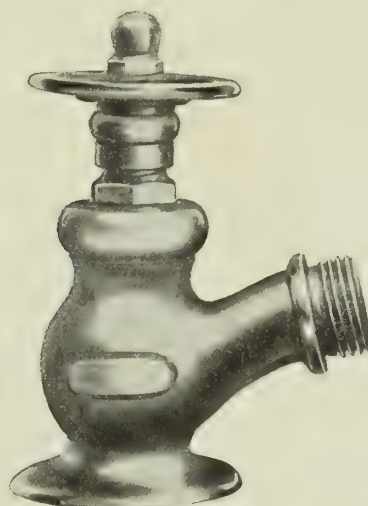
"PERFECT" SINK FLANGE BIBB
Sizes: $\frac{1}{2}$ inch and $\frac{3}{4}$ inch. Flange with set screw



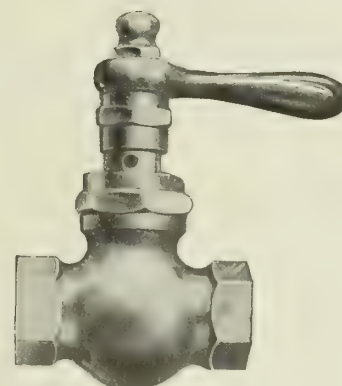
"PERFECT" BIBB
Metal or porcelain handle, plain or nickel finish. Sizes $\frac{1}{2}$, $\frac{3}{8}$, $\frac{3}{4}$, and 1 inch



"PERFECT" HOSE BIBB
Metal or porcelain handle, plain or nickel finish. Sizes $\frac{1}{2}$, $\frac{3}{8}$, $\frac{3}{4}$, and 1 inch



"PERFECT" SILL COCK
Plain or nickel finish. Sizes $\frac{1}{2}$, $\frac{3}{4}$, and 1 inch



"PERFECT" STOP AND WASTE
Rough or finished. Sizes $\frac{1}{2}$, $\frac{3}{8}$, $\frac{3}{4}$, and 1 inch

E. STEBBINS MANUFACTURING COMPANY

Plumbers' Brass Goods

Brightwood Station

SPRINGFIELD, MASS.

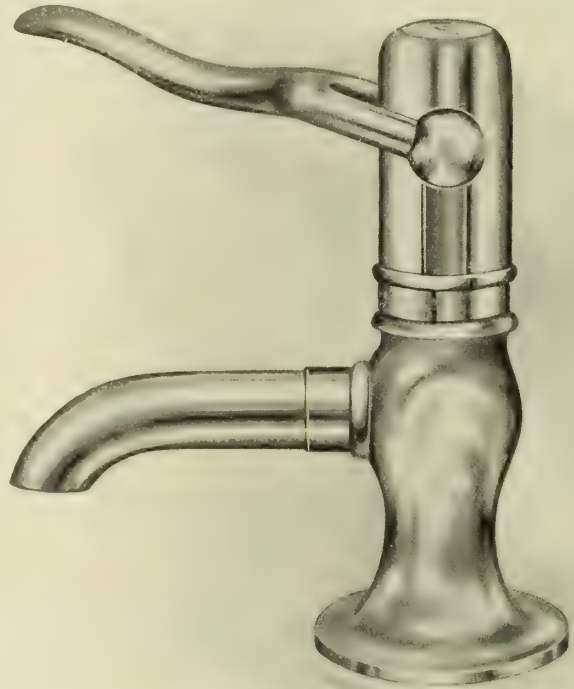
TELEPHONE CONNECTION

PRODUCTS.

We are manufacturers of PLUMBERS' BRASS GOODS, including full lines of COMPRESSION FULLER and GROUND-KEY COCKS, and sole makers of "BROUGHTON" SELF-CLOSING WORK, "SODERLUND" NON-SCALDING SHOWER VALVES, and "CREST" FLUSH VALVES.

"BROUGHTON" IMPROVED BASIN COCKS.

The illustration shows the general appearance of our improved "Broughton" Self-Closing Basin-Cock as installed. The action is secured by means of an eccentric-bar running between the extremities of the handle where fastened to the basin-cock. The handle, in being raised or lowered, turns the eccentric, thus raising or lowering the seat, which is held shut by a heavy spring of phosphor-bronze wire. The working parts are protected by the cap from contact with dirt or from any harm.



IMPROVED "BROUGHTON" SELF-CLOSING BASIN-COCK

MATERIAL.

The "Broughton" work is made regularly of high-grade composition metal, and furnished either in finished brass or nickel-plated. It can also be made of our own silver metal. This composition has the same appearance as nickel-plated, with the advantage that it can never wear off, as it is the same clear through.

ADVANTAGES.

The simple construction, durability, and elegant appearance of these Basin-Cocks make them very desirable for use in hotels, schools, and all public buildings where these qualities are so essential. Our best demonstration lies in the fact that these goods are being installed in the finest buildings throughout the country.

SPECIFICATIONS.

For self-closing work, specify "Broughton" pattern. For other plumbers' brass goods specify those made by the E. STEBBINS MANUFACTURING COMPANY. Our goods are sold by us to jobbers in plumbing supplies, and can be secured from any reputable jobbing house.

PRICES.

The price of these Basin-Cocks, while somewhat greater than some of inferior make, is as low as is consistent with the high grade of material, workmanship and design.

REFERENCES.

"Broughton" Basin-Cocks are installed in the following places: Manhattan Hotel, New Public Library, Public Schools, New York, N. Y.; United States Hotel, Boston, Mass.; Royal Bank of Canada, Toronto, Canada, and many others.

"SODERLUND" ANTI-SCALDING SHOWER VALVES.

The mechanism of this valve is such that while the user may get all *cold water* if desired, hot water can not be had without mixing with cold, which feature eliminates any possible danger of scalding.

Valve operates with *one handle*, thus saving time. It shuts off at either end.

Upon removing side nuts the washers may be quickly changed without disturbing connections.

Can be fitted for either floor, ceiling or wall connections.

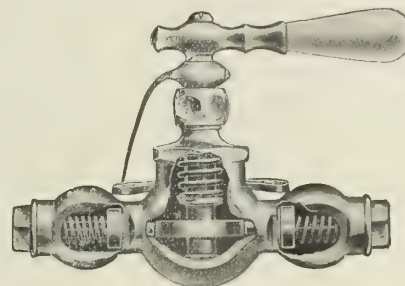
The material and workmanship are excellent. They are made of the finest composition metal and carefully tested under heavy pressure.

This valve is the best on the market and has been proved by years of hard use in many public buildings all over the United States and Canada.

Specify "Soderlund" Anti-Scalding Shower Valve made by E. STEBBINS MANUFACTURING COMPANY. In specifying be sure to state which valve is to be installed. We recommend the Nos. 16, 18, and 25 for public buildings as they will stand the wear better than smaller and lighter patterns. They are twice as large and heavy as the other styles but the same in design. Also be sure to state whether wall, ceiling, or floor connections are wanted, and what size threads.



NO. 25. "SODERLUND" ANTI-SCALDING SHOWER VALVE
With wall connection



SECTIONAL VIEW "SODERLUND" ANTI-SCALDING SHOWER VALVE

SPECIFICATIONS.

PRICES.

No. 16, 5½" Centers.	With Douche Valve and Shut Off to Shower Head	Each, \$21.00
No. 17, 4" Centers.	With Douche Valve and Shut Off to Shower Head	Each, 12.50
No. 18, 5½" Centers.	With Douche Valve and Shut Off to Shower Head	Each, 15.00
No. 19, 4" Centers.	With Douche Valve and Shut Off to Shower Head	Each, 7.50
No. 25, 5½" Centers.	4 way for Combination Shower and Needle Bath	Each, 16.50

Subject to trade discounts.

"ESCO" COMPRESSION BIBBS.

For over sixty years we have been in the business of making nothing but Plumbers' Brass Goods and have always specialized in Compression Bibbs. Although our line of "Esco" Bibbs comprises all grades, we show only the two of highest grade which are best adapted for the finest work.

"STEBBINS SPECIAL"—This style is made on the old reliable loose-valve type which originally made us famous as Bibb makers, and is that for which we have so long been known. Material is the highest grade red metal, with stuffing box. Very heavy and finely finished. The best Bibb money can buy.

"SPRINGFIELD"—Extra Heavy, red metal, furnished with fancy handle and raised cap with internal stuffing box. Seat washer countersunk to prevent spreading. Excepting our "Stebbins Special," the finest that can be had.



"SPRINGFIELD"



"STEBBINS SPECIAL"

SPECIFICATION.

Specify as follows: "Stebbins Special Esco," or "Springfield Esco" Bibbs, made by the E. STEBBINS MANUFACTURING COMPANY of Springfield, Mass.

TURNBULL-SMITH CO.

Pressure Closing Faucets
SYRACUSE, N. Y.

PRODUCTS.

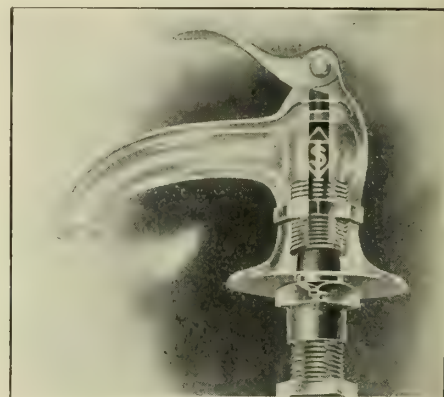
Manufacturers of "T-S" FAUCETS.

DESCRIPTION.

All "T-S" Faucets are of the Improved Fuller Type, having a packless bonnet and no packing around handle spindle.

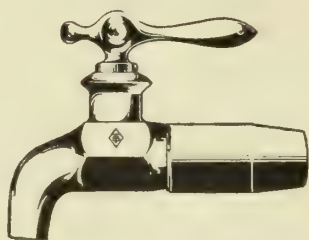
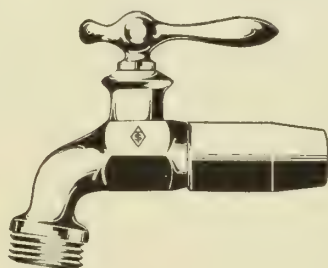
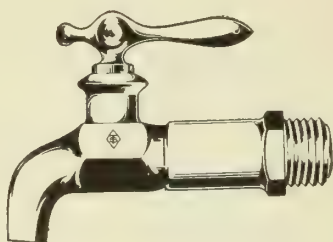
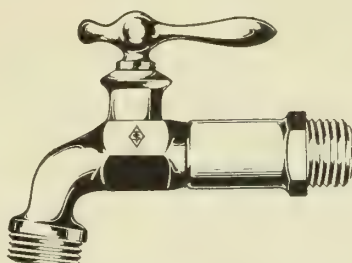
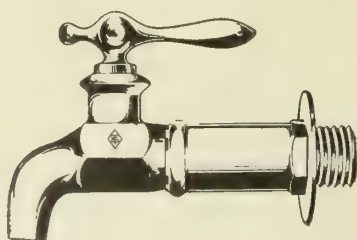
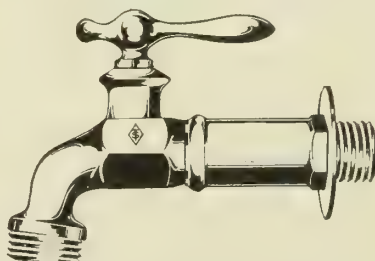
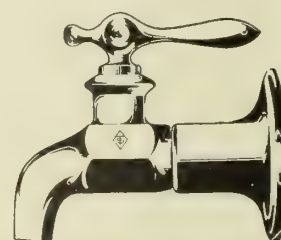
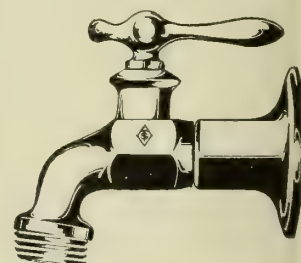
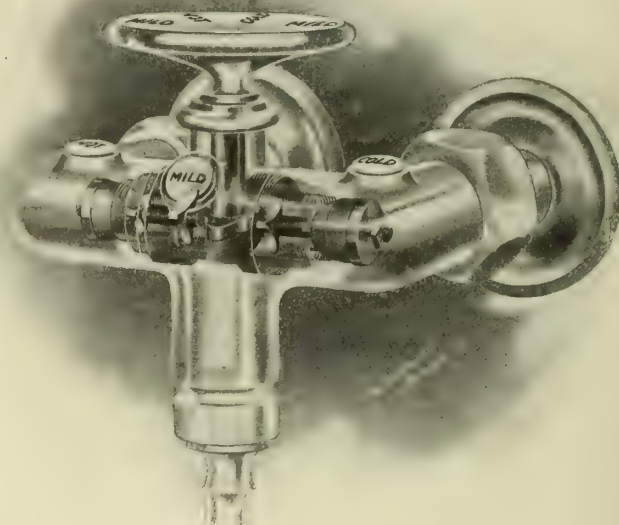
The operating mechanism opens against the pressure and closes with it, is perfectly automatic in action; and handle and spindle, body and bonnet, are each cast in one piece. No screws or washers or packing at the handle are required.

"T-S" Faucets are hammerless, and are guaranteed to be entirely satisfactory.



BASIN COCK

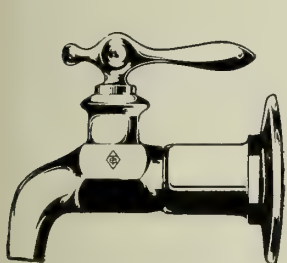
Self-Closing, Low-Down:
Price per dozen, P. B., \$54.00; N. P., \$60.00
Self-Closing, Continuous-Flow:
Price per dozen, P. B., \$54.00; N. P., \$60.00

TYPE A. PLAIN BIBB
FOR LEAD PIPETYPE B. PLAIN BIBB,
HOSE ENDTYPE C. PLAIN BIBB FOR
IRON PIPE; WITH
SHOULDERTYPE D. PLAIN BIBB, HOSE
END; FOR IRON PIPE;
WITH SHOULDERTYPE E. SOLID FLANGED
BIBB FOR IRON PIPE. MALETYPE F. SOLID FLANGED
BIBB, HOSE END; FOR
IRON PIPE. MALETYPE G. SOLID
FLANGED BIBB FOR
IRON PIPE. FEMALETYPE H. SOLID FLANGED
BIBB, HOSE END; FOR
IRON PIPE. FEMALE

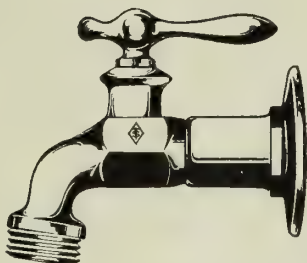
MIXING BATH COCK

With coupling and sprinkler connection. Jewel Cup Handle; Inlaid porcelain indicator and porcelain buttons

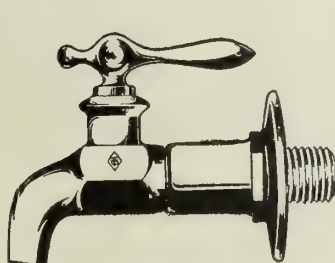
Polished bronze, each	\$12.00
Nickel-plated, each	15.00
Special finishes, each	20.00



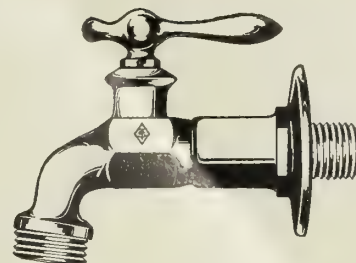
TYPE I. SOLID FLANGED BIBB. HEXAGON IN FRONT OF FLANGE; FOR IRON PIPE. FEMALE



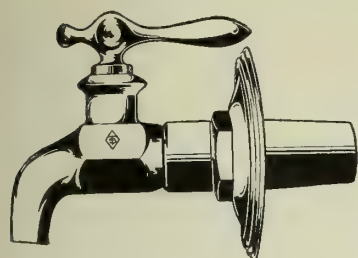
TYPE J. SOLID FLANGED BIBB. HEXAGON IN FRONT OF FLANGE; HOSE END; FOR IRON PIPE. FEMALE



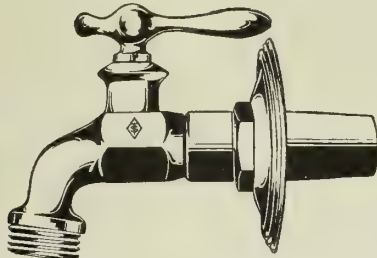
TYPE K. SOLID FLANGED BIBB. HEXAGON IN FRONT OF FLANGE; FOR IRON PIPE. MALE



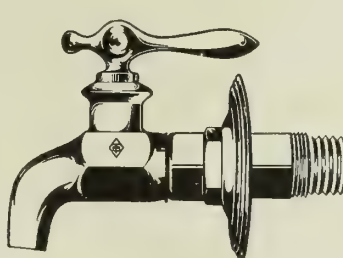
TYPE L. SOLID FLANGED BIBB. HEXAGON IN FRONT OF FLANGE; FOR IRON PIPE. MALE



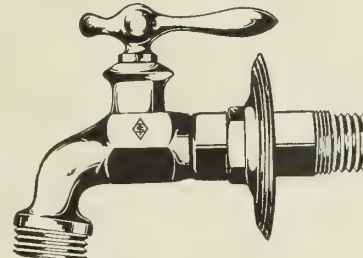
TYPE M. LOOSE ADJUSTABLE FLANGE FOR LEAD PIPE



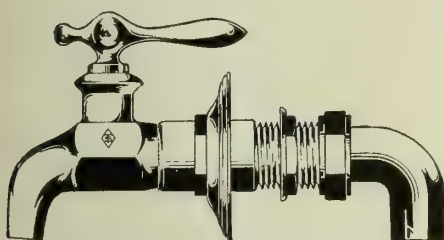
TYPE N. LOOSE ADJUSTABLE FLANGE, HOSE END; FOR LEAD PIPE



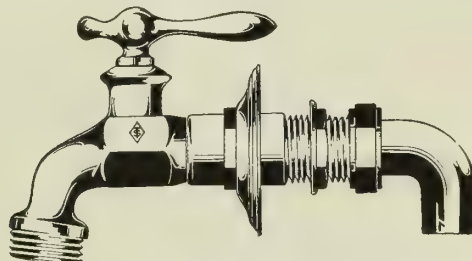
TYPE O. LOOSE ADJUSTABLE FLANGE FOR IRON PIPE. MALE



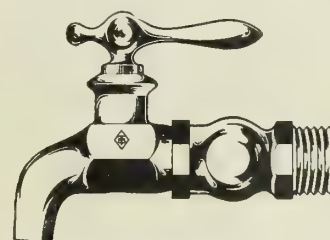
TYPE P. LOOSE ADJUSTABLE FLANGE, HOSE END; FOR IRON PIPE. MALE



TYPE R. FLANGE NUT AND BENT COUPLING, PLAIN END



TYPE S. FLANGE NUT AND BENT COUPLING, HOSE END



TYPE CC. PLAIN BIBB FOR IRON PIPE
Type CC similar to C, and DD similar to D

PRICE-LIST PER DOZEN FOR "T-S" FAUCETS.

Type	1/2 inch	3/8 inch	3/4 inch	1 inch	Finish	Type	1/2 inch	3/8 inch	3/4 inch	1 inch	Finish
A	\$21.00	\$24.00	\$30.00	\$48.00	P. B.	K	\$30.00	\$34.00	\$41.00	\$61.00	P. B.
B	25.00	28.00	36.00	58.00	N. P.	L	36.00	40.00	49.00	71.00	N. P.
C	24.00	28.00	34.00	52.00	P. B.	M	33.00	38.00	45.00	65.00	P. B.
D	28.00	32.00	40.00	62.00	N. P.	N	39.00	44.00	53.00	75.00	N. P.
E	21.00	24.00	30.00	48.00	P. B.	O	29.00	33.00	40.00	60.00	P. B.
F	25.00	28.00	36.00	58.00	N. P.	P	35.00	39.00	48.00	70.00	N. P.
G	24.00	28.00	34.00	52.00	P. B.	R	32.00	37.00	44.00	64.00	P. B.
H	28.00	32.00	40.00	62.00	N. P.	S	38.00	43.00	52.00	74.00	N. P.
I	30.00	34.00	41.00	61.00	P. B.	CC	31.00	35.00	42.00	62.00	P. B.
J	36.00	40.00	49.00	71.00	N. P.	DD	37.00	41.00	50.00	72.00	N. P.
K	33.00	38.00	45.00	65.00	P. B.						
L	39.00	44.00	53.00	75.00	N. P.						
M	28.00	32.00	39.00	59.00	P. B.						
N	34.00	38.00	47.00	69.00	N. P.						
O	31.00	36.00	43.00	63.00	P. B.						
P	37.00	42.00	51.00	73.00	N. P.						
R	28.00	32.00	39.00	59.00	P. B.						
S	33.00	38.00	47.00	69.00	N. P.						
CC	34.00	38.00	47.00	69.00	P. B.						
DD	31.00	36.00	43.00	63.00	N. P.						

P. B. in the table refers to Polished Bronze and N. P. to Nickel-Plated finish. Wash Tray Bibbs are made in types A, C, E, G, I, K, M, O and R.

TERMS. List Prices are subject to discount, and are f. o. b. Syracuse, N. Y.

SPECIFICATIONS. Architects should specify all Faucets, Basin and Bath Cocks in the types, sizes and finishes described above, as follows:

"To be supplied with hot and cold water through
"All to be of the "T-S" pattern and manufactured by the TURNBULL-SMITH CO., of Syracuse, N. Y."

WATERTITE DRAIN COMPANY

168 Duane Street
NEW YORK, N. Y.

TELEPHONE, 2473 WORTH

PRODUCTS.

Manufacturers of and dealers in FRESH-AIR INLET BOXES, YARD and AREA CESSPOOL DRAINS, with "ANTICLOG" DIRT TRAP, IRON MANHOLE COVERS and FRAMES, and "DAMP-TRAX" to relieve the waterproof sections of floors of any accumulated dampness; SCUPPERS; METAL POSTS, WATERING-TROUGHS, CESSPOOL PLATES, REFRIGERATOR WASTES and TRAPS, METAL CASTINGS, IRON or STEEL POST CAPS, GALVANIZED IRON, ORNAMENTAL CAST and WROUGHT METAL WORK, IRON or STEEL COLUMNS, METAL RAILINGS, DOOR, WINDOW, TREE and WHEEL GUARDS, and PIPE SLEEVES; also a full line of STABLE FITTINGS, as described elsewhere in this Catalogue, for which see our name in General Index.

"ANTICLOG" FLOOR BOX OR GUTTER DRAIN.

Approved by the Departments of Buildings of all principal cities.

Supplied with lead flashings for waterproof floors.

No water remains in the dirt trap to freeze or become stagnant.

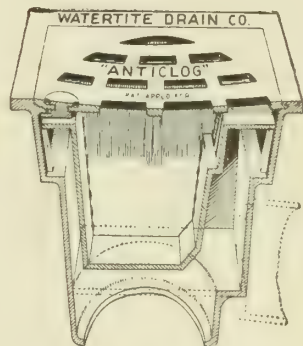
It traps all dirt and rubbish, thus preventing the choking up of hidden or underground pipes.

It is quickly cleaned by lifting the dirt trap and emptying it out.

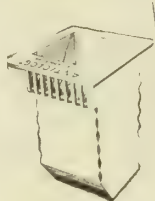
ADVANTAGES.

Can be set in floor and connected at any time thereafter by the plumber, obviating the necessity of patching new floors, as is done where other drains are used.

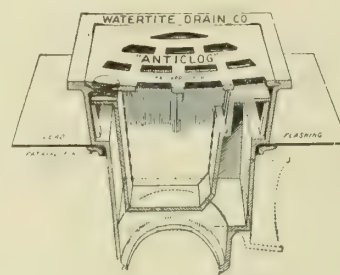
All tests may be made with our drains connected.



"ANTICLOG" CESSPOOL BOX NO. 99
For yard and area

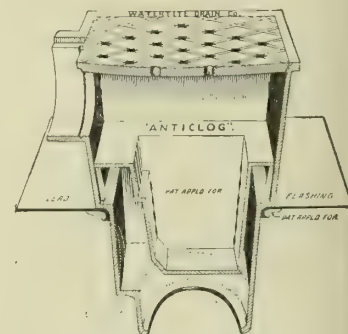


REMOVABLE DIRT TRAP



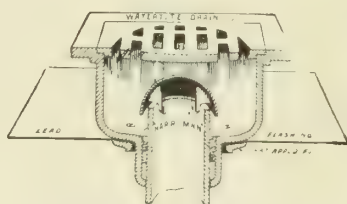
"ANTICLOG" CESSPOOL BOX NO. 101

With lead flashing for waterproofed floors. With tops A, C, D, P, or R



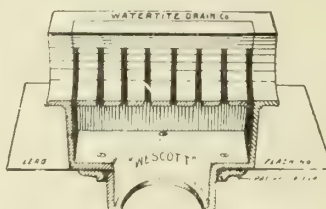
"ANTICLOG" CESSPOOL BOX NO. 103

With tops G, H, J, K, L, or M



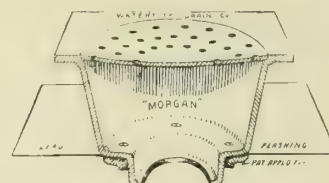
"HARRIMAN" BELL TRAP NO. 112

For wood or cement floors. Will take tops A, D, K, or M



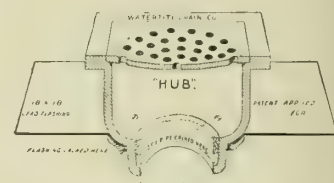
"WESCOTT" CESSPOOL BOX NO. 113

For wood, stone, cement, or cast-iron gutters. Will take tops G, H, J, or L



"MORGAN" CESSPOOL BOX NO. 116

For wood, stone, or cement floors. Will take tops S or T



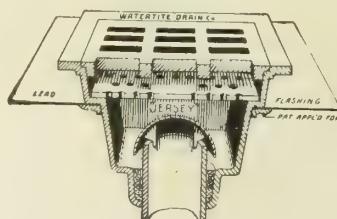
"HUB" CESSPOOL BOX NO. 117

For wood, stone, or cement floors and gutters. Will take tops A, D, K, or M



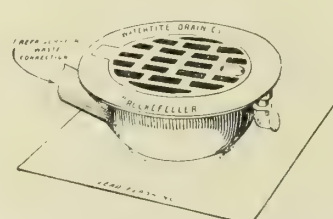
"GILBERT" GUTTER OUTLET NO. 119

For wood or cement floors. Will take tops M or O



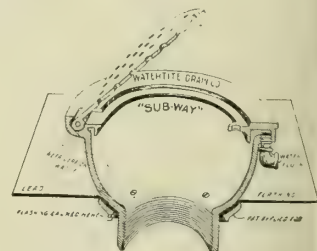
"JERSEY" BELL TRAP NO. 121

For carriage or wagon wash floor. Will take tops P or R



"ROCKEFELLER" CESSPOOL BOX NO. 123

With flushing rim and refrigerator waste connection

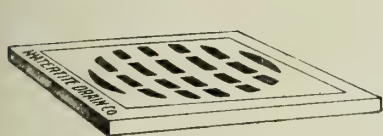


"SUBWAY" CESSPOOL BOX NO. 124

With flushing rim

NOTE.

The above boxes are furnished with either side or bottom outlets as ordered.



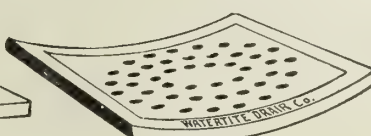
TOP A

For Cesspool Boxes Nos. 101, 112, and 117



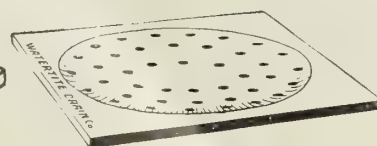
TOP D

For Cesspool Boxes Nos. 101, 112, and 117



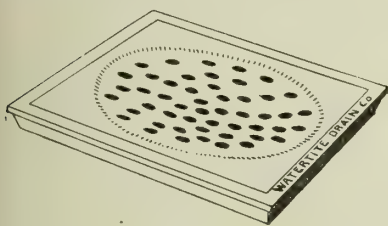
TOP M

For Cesspool Boxes Nos. 103, 112, 117, and 119



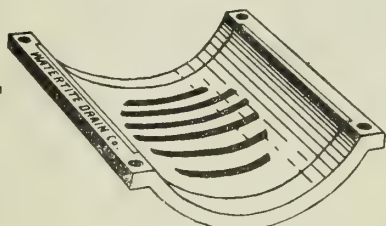
TOP S

For Cesspool Box No. 116



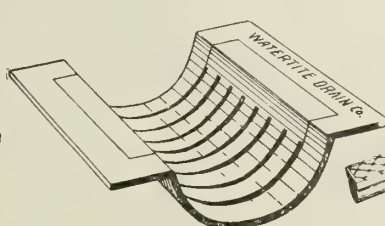
TOP O

For Cesspool Box No. 119



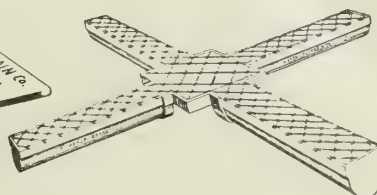
TOP K

For Cesspool Boxes Nos. 103, 112, and 117



TOP L

For Cesspool Boxes Nos. 103 and 113



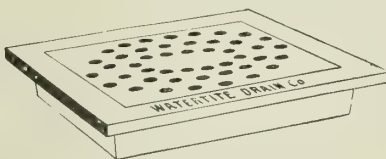
TOP J

For Cesspool Boxes Nos. 103 and 113



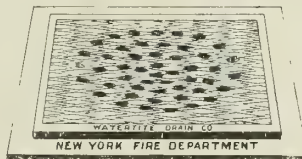
TOP P

For Cesspool Boxes Nos. 101 and 121



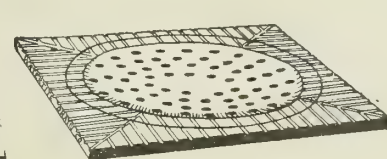
TOP R

For Cesspool Boxes Nos. 101 and 121



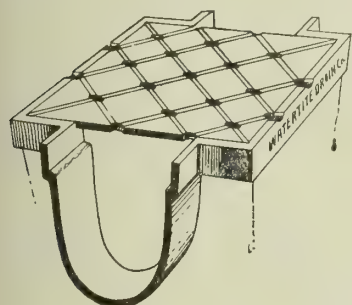
TOP C

For Cesspool Box No. 101



TOP T

For Cesspool Box No. 116

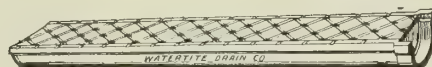


TOP H

For Cesspool Boxes Nos. 113 and 103

TOP G

Same as Top H with one-inch flange all around, for wood floors



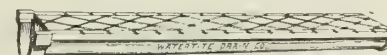
GUTTER NO. 108 H

6 inches wide, for cement floors



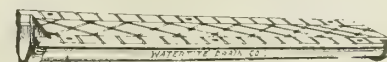
GUTTER NO. 108 G

7 inches wide, for wood floors



GUTTER NO. 107 H

4½ inches wide, for cement floors



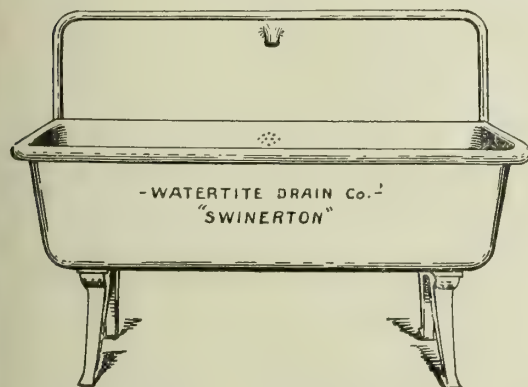
GUTTER NO. 107 G

5½ inches wide, for wood floors

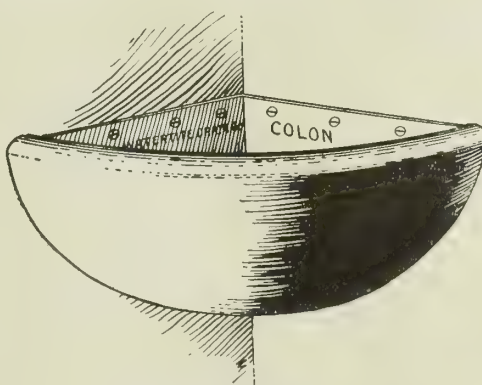
NOTE—Any of the above tops can be furnished in brass or bronze.

CAST-IRON
GRADED
GUTTERS.

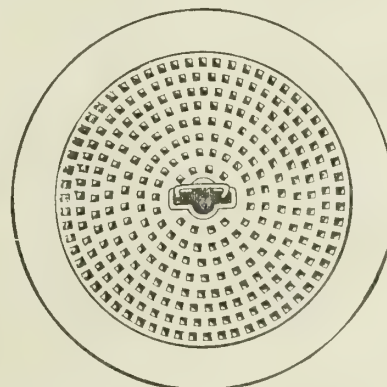
The bottom of these gutters is graded to the outlet box with a fall of $\frac{1}{8}$ inch to the foot. They are fitted to drain any length up to 35 feet. Gutters No. 107 are supplied with removable cast-iron covers 3½ inches wide; No. 108, 5½ inches wide. These gutters are fitted to Cesspool Boxes Nos. 103 and 113, with tops G or H.



"SWINERTON" WATERING-TROUGH



"COLON" CORNER MANGER



VAULT FRAME AND COVER

SPECIAL
CASTINGS.

We are prepared to furnish all kinds of Special Castings for building contractors.

PITTSBURGH GAGE & SUPPLY CO.

Specialists in Oil, Steam, and Water Equipments

30th Street and Liberty Avenue

PITTSBURGH, PA.

AGENCIES

ATLANTA, GA., ATLANTA MILL SUPPLY Co., 17 South Forsyth Street
BALTIMORE, MD., AUMEN MACHINERY & SUPPLY Co., 324 N. Holiday Street
BAY CITY, MICH., ALBERT PIPE & SUPPLY Co.
BIRMINGHAM, ALA., FRANCIS-SHEPARD Co., 418 Woodward Building
BIRMINGHAM, ALA., YOUNG & VANN SUPPLY Co., 1811 First Avenue
BOSTON, MASS., WALTER G. RUGGLES Co., 54 High Street
BUFFALO, N. Y., THE DANIEL BURGMASER Co., 85 Delaware Avenue
CANTON, OHIO, CANTON ENGINEERING & ELECTRIC Co., 411 N. Market Street
CHARLESTON, S. C., THE CAMERON & BARKLEY Co., 190 Meeting St.
CHARLESTON, W. VA., GEORGE MORROW, 905 Kanawha Street
CHICAGO, ILL., McMASTER-CARR SUPPLY Co., 174 Lake Street
CINCINNATI, OHIO, THE WIRTHLIN-SCALLAN Co., 331 West Third Street
DALLAS, TEX., BEN F. WOLFE Co., 175 Main Street
DENVER, COLO., COLORADO MACHINERY & SUPPLY Co., 1650 Wazee St.
DETROIT, MICH., FREDERICK H. MASON, 612 Moffat Building
DULUTH, MINN., MARSHALL-WELLS HARDWARE Co.
HUNTINGTON, W. VA., HUNTINGTON SUPPLY & EQUIPMENT Co., Frederick Building
INDIANAPOLIS, IND., I. C. DE HAVEN, State Life Building

KANSAS CITY, MO., GREAT WESTERN MANUFACTURING Co., 1221 Union Avenue
LOS ANGELES, CAL., SMITH-BOOTH-USHER Co., 212 S. Los Angeles
MEMPHIS, TENN., W. R. PEETE Co., 134 S. Second Street
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NEW ORLEANS, LA., WHITNEY SUPPLY Co., 108 N. Peters Street
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PHILADELPHIA, PA., ALBERT SCHADE Co., 56 N. Second Street
PHILADELPHIA, PA., VANDYCK-CHURCHILL Co., 917 Arch Street
PORTLAND, ORE., WESTERN SUPPLY Co., 73 Front Street
READING, PA., BROWN ENGINEERING Co., 123 N. Third Street
ROCHESTER, N. Y., HAVERSTICK & Co., 66-70 Exchange Street
ROCHESTER, N. Y., BEERS ENGINEERING & EQUIPMENT Co., Granite Building
SAN FRANCISCO, CAL., HENSHAW, BUCKLEY & Co., 19-21 Tremont St.
SAGINAW, MICH., UNITED SUPPLY Co.
SEATTLE, WASH., MILL & MINE SUPPLY Co., 305 First Avenue
SEATTLE, WASH., HALLIDIE MACHINERY Co., 317 Second Avenue
ST. LOUIS, MO., THE THOMAS Co., Third National Bank Building
ST. MARY'S, OHIO, THE JASPERSEN SUPPLY Co.
WHEELING, W. VA., STEVENSON & Co., 813 Schmulbach Building
WILKESBARRE, PA., W. M. OPLINGER, 228 Stanton Street

PRODUCTS.

We manufacture "WHITE STAR" OIL FILTERS and CONTINUOUS AUTOMATIC OILING SYSTEMS; "WHITE STAR" LUBRICATING BRASS SPECIALTIES, to wit: OIL CUP BASES, OIL PUMPS, OIL TANKS, OIL SEPARATING TANKS, OIL RECOVERY DEVICES for emulsified or thickened oils.

"PITTSBURGH" SEPARATORS for Steam and Oil; "PITTSBURGH" ROTATING GAGE COCKS; "PITTSBURGH" SAFETY WATER COLUMNS; "PITTSBURGH" PRESSURE and RECORDING GAGES for Steam, Water and Vacuum; "PITTSBURGH" AUTOMATIC WATER GAGES; "PITTSBURGH" CHAIN-LEVER WATER GAGES; "PITTSBURGH" VACUUM EXHAUST HEADS; "PITTSBURGH" BRASS and IRON BODY-GATE VALVES; "PITTSBURGH" WATER ALARMS, High and Low for BOILERS.

"CLEAN-SEAT" BRASS GLOBE, ANGLE and BLOW-OFF VALVES for Steam and Water; "CLEAN-SEAT" AIR VALVES.

AIR, ALTITUDE, and AMMONIA GAGES; HIGH-PRESSURE STEAM PIPING; PIPE BENDING and CUTTING to dimensions, drawings and specifications; FLANGED CAST-IRON FITTINGS for Steam and Water; STEAM POWER EQUIPMENTS complete in all parts.

Also, "PITTSBURGH" SCREW-OPERATED BALL COCKS and "PITTSBURGH" SELF-CLOSING BIBBS and FAUCETS, for which see following page.

OILING SYSTEMS.

We have specialized the entire field of lubrication. The experience gained from over four thousand installations of "White Star" Systems has made our methods the most advanced and efficient. Our continuous oiling and filtering systems are in use in most of the important power-plants of the country. By their means the oil is recovered and returned, purified of dirt and water, to the bearings with its original viscosity and with but slight loss in quantity.

GUARANTEE.

We guarantee a minimum saving of fifty per cent in oil over hand lubrication. The saving is usually eighty per cent.

CO-OPERATION. CATALOGUE.

We offer the advice of our experts on the most economical installations. Complete plans and specifications for Oiling Systems furnished. An illustrated catalogue of 1878 pages will be sent to all users of "SWEET'S" upon application.

PITTSBURGH GAGE & SUPPLY CO.

Specialists in Water, Steam, and Oil Equipments

30th Street and Liberty Avenue

PITTSBURGH, PA.

PRODUCTS.

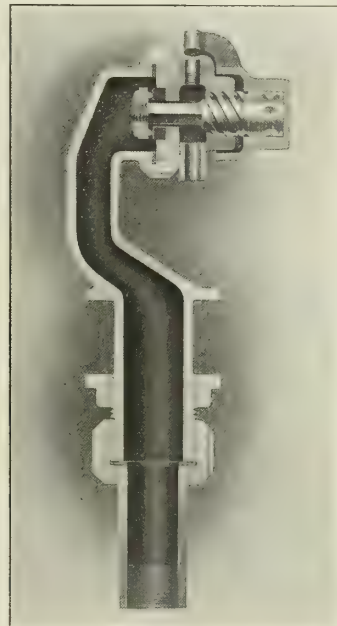
"PITTSBURGH" SCREW-OPERATED BALL COCKS; "PITTSBURGH" SELF-CLOSING BASIN; URINAL and PANTRY COCKS, and "PITTSBURGH" SELF-CLOSING BIBBS; also, OIL, STEAM, and other POWER EQUIPMENT SPECIALTIES, for which see preceding page.

"PITTSBURGH" SCREW- OPERATED BALL COCK— ITS CON- STRUCTION.

Opening and closing are accomplished by means of a screw on valve stem of a peculiar angle which develops greatest possible power with application of minimum force, at the same time being self-closing. By this means of operation the water pressure does the closing and, therefore, rising water in tank has only to overcome the weight of the float. The power of this screw to transmit force sufficient to open is proven by the fact that the weight of the lightest float will open the valve against the water pressure, even though same is raised to a point beyond that in practical use.

ADVANTAGES.

Closing with instead of against the water pressure insures a tight seat at all times, as the tendency is always to close rather than open. The use of the screw as a means of operation gives it a positive action in opening and closing. Owing to the slight friction and the positive action, all possibility of hammering, whistling or singing is eliminated, the result being an absolutely noiseless and positive ball cock. Being positive in action and so constructed as to prevent leaky joints, it eliminates noise of running or dripping water and, at the same time, proves an economy in use of water. The ball cock is the vital part of the closet equipment, and is the portion that when improperly constructed gives endless trouble and annoyance. As it is the only portion of the closet equipment under pressure, it of necessity must have a positive and at the same time silent mechanism for opening and closing off the water supply. In view of the above, great care and attention should be given that the water-closet tank be equipped in the most efficient manner.



SECTION OF "PITTSBURGH"
SCREW-OPERATED BALL COCK

COST.

The flush tank equipped with "Pittsburgh" Screw-Operated Ball Cock should not cost any more than when equipped with the ordinary ball cock.

HOW TO SPECIFY.

"All water-closet flush tanks are to be equipped with 'Pittsburgh' Screw-Operated Ball Cocks."

CATALOGUES AND IN- FORMATION.

We are always pleased to furnish full and complete information covering our products, and to this end have issued a series of bulletins covering each of our specialties in a most thorough manner.

THE LAVIGNE MANUFACTURING CO.

MANUFACTURERS OF

Mechanical Oil Pumps, Valves and Brass Goods

DETROIT, MICH.

OFFICE AND FACTORY
COMMONWEALTH AVENUE AND RAILROAD

PRODUCTS.

THE "LAVIGNE" PACKLESS RADIATOR VALVE, GRADUATED PACKLESS RADIATOR VALVE, QUICK-OPENING HOT-WATER RADIATOR VALVE, VACUUM THERMO VALVE.

THE "LAVIGNE" PACKLESS RADIATOR VALVE.

The "Lavigne" Packless Radiator Valve is an absolute necessity to the economic working of any system of vacuum or vapor heating. When valves having stems packed with stuffing boxes are used, the leakage around the valve stems practically offsets the work of the pump and the installation becomes a low-pressure heating system. The use of the "Lavigne" Packless Valve removes the last weak link in most of the vacuum heating systems and insures the permanent maintenance of the vacuum conditions.

In the ordinary low-pressure steam heating and in hot-water heating, the packless feature is appreciated, as, by absolutely preventing leakage around the stems, it removes all danger of injury to floors, rugs, or ceilings. The quick-opening feature of this valve is another popular advantage, as it can be fully opened or fully closed and locked by less than one half turn.

The "Lavigne" Packless Valve will stand abuse that would destroy any other packless valve and most of the old-fashioned type. The valve is not injured or interfered with by workmen, servants, or children standing on the valve handle, or by side thrusts. Such treatment will bend the stems of ordinary valves and will destroy the efficiency of any other packless valve. The "Lavigne" Packless Valve is also of normal dimensions and has a handsome and shapely appearance.

DESCRIPTION.

By reference to the sectional view, it will be seen that the stem is of the non-rising type and is provided with a flange a short distance above the cam thread. Between this flange and the inwardly extending flange of the bonnet is placed a specially prepared composition washer. Another similar washer is placed immediately above the inwardly extending flange of the bonnet, and upon this second composition washer rests a gland-shaped follower plate extending from the handle. A shoulder is formed on the inside of this follower plate and this shoulder supports a spring which bears upward against a nut screwed to the top of the stem. A double service is performed by this spring; it bears downward on the upper composition washer, and at the same time pulls upward against the lower composition washer, thus holding both of them tightly against the inwardly extended flange of the bonnet and taking up automatically any wear that may occur in either. This insures an absolutely tight joint against water, steam, or air.

On the lower end of the stem is cut a thread-shaped cam 45 degrees in pitch. The lower end of this cam has 10 degrees incline. This cam engages with a cage which has similar angles to receive same. The cage is held from rotating by a set of trunnions which slide upward and downward in the tubular guides extending downward from the bonnet, so that the cage can not oscillate from the action of the steam. To this cage the disc holder is attached in a swivel-joint manner. One quarter turn of the stem will fully raise or lower the

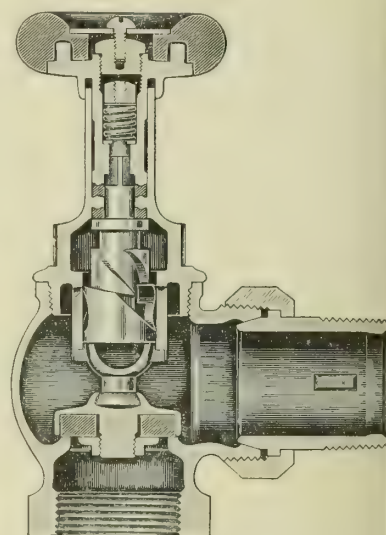


FIG. 1. SECTIONAL VIEW
"LAVIGNE" QUICK-OPENING
PACKLESS RADIATOR VALVE

cage and an additional one eighth turn will lock the disc closed. The bonnet is carried clear up to the under side of the follower plate, which prevents the possibility of injury or interference with the stem.

STYLES.

These Packless Valves are made in the angle, and right-hand and left-hand corner styles. We also furnish them with lock shields when desired. When lock-shield valves are ordered our custom is to send one key only for each size of valves ordered unless additional keys are specified. An extra charge of 25 cents each is made for keys. When wanted for hot-water heating, a hole for circulation will be drilled through the disc.

Our Graduated Packless Valve is similar in construction to the regular styles except that it has a special lever handle and an indicator plate properly graduated. The graduated arc is divided into eight sections, so that as the lever moves from section to section, it shows whether $\frac{1}{8}$, $\frac{1}{4}$, $\frac{3}{8}$, $\frac{1}{2}$, $\frac{5}{8}$, $\frac{3}{4}$, $\frac{7}{8}$, or the full area of the valve is in service.

One frequent cause of trouble with the ordinary hot-water valve has been the tendency of the disc or shell to stick to the body after remaining in the one position during the summer months.

It will be noticed (Fig. 3) that the bell-shaped body is equipped with a cone-shaped disc which is opened or closed by a one half turn of the handle. When the stem is turned to the right the cone-shaped disc is revolved and at the same time drawn upward, thus closing the valve with a very tight joint. When the stem is turned to the left, the first portion of the movement releases the disc by forcing it downward. This gives an extremely easy action and no matter how tightly the valve may be closed it can be opened by a very slight effort. Furthermore, it removes the danger of breaking any of the parts in operating the valve. It can always be repacked under pressure, as the only water that can possibly escape around the stem, even if no packing were used, would be the negligible amount that could pass around the clearance of the fine threads on the stem. On account of its shape we are enabled to place more metal in those parts subjected to the greatest strains in service than is possible in ordinary valves of the same weight.

This is an improved type of Return Valve for Vacuum Heating. The inlet to the main chamber of the valve is only from below. As soon as steam or hot water enters this main chamber, the carbon post expands, closing the inlet; as the condensed water becomes cool the carbon post contracts, allowing it to escape. The valve thus acts automatically and insures the distribution of practically all the heat that comes to it by the radiator to which it is attached. This valve is made in five sizes to suit the varying units of radiation.

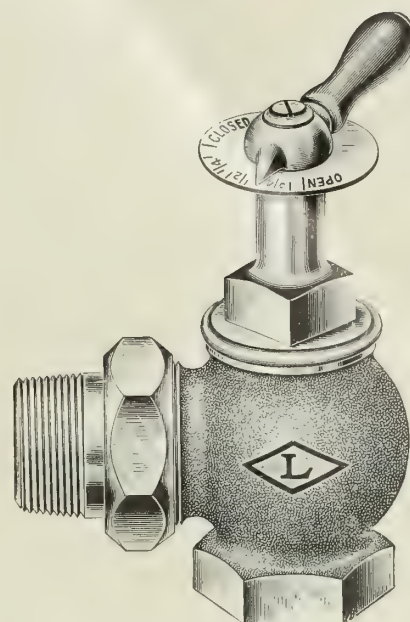


FIG. 2. "LAVIGNE" GRADUATED PACKLESS VALVE WITH JENKINS DISC

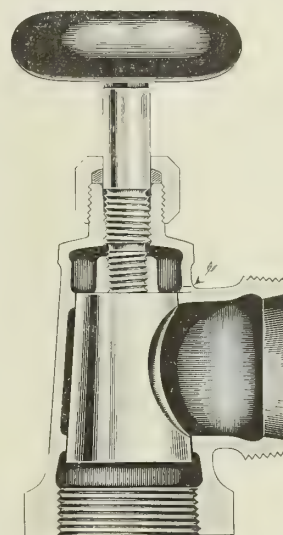


FIG. 3. "LAVIGNE" QUICK-OPENING HOT-WATER RADIATOR VALVE



FIG. 4. SECTIONAL VIEW "LAVIGNE" VACUUM THERMO VALVE

THE
"LAVIGNE"
GRADUATED
PACKLESS
VALVE.

THE
"LAVIGNE"
QUICK-
OPENING
HOT-WATER
RADIATOR
VALVE.

"LAVIGNE"
VACUUM
THERMO
VALVE.

McCORD MANUFACTURING CO.

Manufacturers of The "McKim" Gasket

2587-2637 East Grand Boulevard

DETROIT, MICH.

LONG DISTANCE TELEPHONE CONNECTION

PACIFIC COAST AGENTS

SAN FRANCISCO, CAL., THE MAYDWELL CO., 268 Market Street

BRANCH OFFICES

NEW YORK, N. Y., Hudson Terminal, 50 Church Street

CHICAGO, ILL., Old Colony Building

PITTSBURG, PA., 1904 Union Bank Building

PRODUCT.

The "McKIM" GASKET.

For our other Products, see our pages in General Index.

DESCRIPTION.

In the "McKim" Gasket we have by a proper combination of soft, ductile metals and a variety of elastic packings produced a gasket capable of resisting heat, pressure, and chemical action of any circulation at a minimum tension of bolts and unions.

ADVANTAGES.

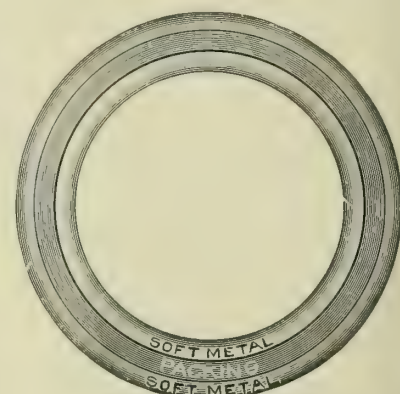
The "McKim" Gasket combines all the attributes of a perfect packing, and forms a natural expansion joint that will not spread, is impossible to blow out, can be used again and again, and is a factor of safety. It is as good as an insurance policy. Our double copper jacket type is used for superheat and extreme pressure and is giving wonderful results.

UTILITY.

These Gaskets are manufactured for lip and flange unions, flange fittings, locomotive connections, gasoline engines, automobile motors, hand-hole plates, steam traps, cylinder heads, and water-tube boilers. They are made in any size or shape, for any and all services.

CO-OPERATIVE SERVICE.

We solicit inquiries and handle orders for shipment to all parts of the world, and are prepared to furnish these gaskets in any size or shape.



"McKIM" GASKET

PRICE-LISTS.

STANDARD MALLEABLE LIP UNIONS

Size of Pipe, Inches	Inside Diam. Gasket, Inches	Outside Diam. Gasket, Inches	Price per 100
1/4	9/16	7/8	\$1.00
3/8	1 1/16	1 1/8	1.20
1/2	1 1/8	1 3/8	1.50
3/4	1 5/8	1 7/8	2.25
1	1 7/8	2 1/8	2.75
1 1/4	2 1/8	2 5/8	3.00
1 1/2	2 3/8	3 1/8	3.50
2	2 7/8	3 5/8	3.75
2 1/2	3 1/8	4 1/8	4.50
3	3 5/8	4 7/8	6.00

STANDARD FLANGE UNIONS

Size of Pipe, Inches	Inside Diam. Gasket, Inches	Outside Diam. Gasket, Inches	Price, each
1	1 1/2	2 3/16	\$.03
1 1/4	1 3/4	2 1/2	.03 1/2
1 1/2	2	2 3/4	.08
2	2 1/2	3 1/4	.10
2 1/2	3	3 13/16	.12
3	3 5/8	4 1/2	.14
3 1/2	4 1/8	5	.18
4	4 11/16	5 3/4	.22
4 1/2	5 1/8	6 1/8	.25
5	5 11/16	6 3/4	.32
6	6 3/4	8	.39
7	7 13/16	9 1/2	.54
8	8 3/4	10 1/4	.62
9	10	12	.74
10	11	13	.90
12	13	14 3/8	1.10

STANDARD FLANGE FITTINGS

Size of Pipe, Inches	Inside Diam. Gasket, Inches	Outside Diam. Gasket, Inches	Price, each
2	3	4	\$.12
2 1/2	3 3/4	4 3/4	.16
3	4 1/4	5 1/4	.20
3 1/2	5 1/8	6 1/4	.25
4	5 3/8	6 3/8	.34
4 1/2	5 7/8	6 7/8	.38
5	6 1/8	7 1/8	.47
6	7	8 1/8	.55
7	8 1/8	9 7/8	.68
8	9	10 7/8	.75
9	10 3/8	12 3/8	.90
10	11 1/8	13 1/4	1.00
12	13 3/4	16	1.25
14	15 3/8	17 3/8	1.60
15	16 1/2	18 7/8	1.90
16	17 5/8	20 3/8	2.15
18	18 3/4	21 1/2	2.50
20	20 3/4	23 3/4	3.00

Discounts given to the trade.

Above are a few of standard sizes only.

CATALOGUES.

Catalogue and samples furnished upon request.

SPECIFICATIONS.

Specify: "The 'McKim' Gasket to be furnished by the McCORD MANUFACTURING Co., Detroit, Mich."

REFERENCES.

The "McKim" Gasket which is well known to the trade is used on all the leading railroads and by motor manufacturers throughout the country, as well as by the following:

Babcock & Wilcox Co.; Crane Company; Commonwealth Edison Co., Chicago, Ill.; N. Y. C. & H. R. R. Co. (Hudson River Power House); Public Service Corporation of New Jersey; Boston Edison Co., etc.

McCORD MANUFACTURING CO.

MANUFACTURERS OF

The "McCord" Force-Feed Lubricator

2587-2637 East Grand Boulevard

DETROIT, MICH.

LONG DISTANCE
TELEPHONE CONNECTION

PACIFIC COAST AGENTS

SAN FRANCISCO, CAL., THE MAYDWELL Co., 268 Market Street

BRANCH OFFICES

NEW YORK, N. Y., Hudson Terminal, 50 Church Street

CHICAGO, ILL., Old Colony Building

PITTSBURG, PA., Union Bank Building

PRODUCTS.

THE "McCORD" FORCE-FEED LUBRICATORS.

For our other Products, see our pages in General Index.

DESCRIPTION.

The "McCord" Lubricator, Class B, is operated by a ratchet lever, as shown in cut, which actuates an eccentric, bearing on a yoke (see cross-section) that transmits a vertical motion to the pump plungers. A separate pump is employed for each feed, and each one is easily regulated, whether in operation or not, independently of the other, and is capable of pumping against any degree of pressure or vacuum. It is positive and entirely automatic in that it starts, stops, and changes speed with the engine. Each pump consists of two plungers, the primary one drawing the oil from the reservoir and delivering it to the sight feed, from whence it is drawn by the secondary plunger and delivered to bearing.

ADVANTAGES.

Force-feed lubrication is generally recognized by all authorities as a very important and necessary factor in the efficient and economical operation of the modern engine, whether stationary or marine, and this feature is given as serious consideration by engineers as any other part of their equipment.

While the feeding of oil with enough force to overcome the pressure developed in steam chests, cylinders, etc., is the main result to be obtained, such a device is worse than useless unless it can be quickly and easily adjusted to conform to the varied requirements of the engine, and unless a positive and simple sight feed which is in constant operation is provided.

We offer in this device the result of years of experience in Force-feed lubrication. "McCord" Lubricators are today in use on thousands of automobiles, motor boats, steamships, locomotives, traction and stationary engines, increasing in every instance their efficiency and reducing their cost of operation.

TERRITORY AND CO- OPERATION.

We solicit inquiries and handle orders for shipment to all parts of the world, and are prepared to furnish these lubricators in any capacity and with any number of feeds.

Catalogue and other information will be gladly furnished to architects and builders.

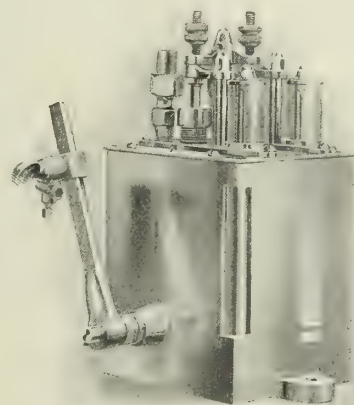
SPECIFICA- TION.

Specify: "McCord Class B Force-Feed Lubricator to be furnished by the McCORD MANUFACTURING Co., Detroit, Mich."

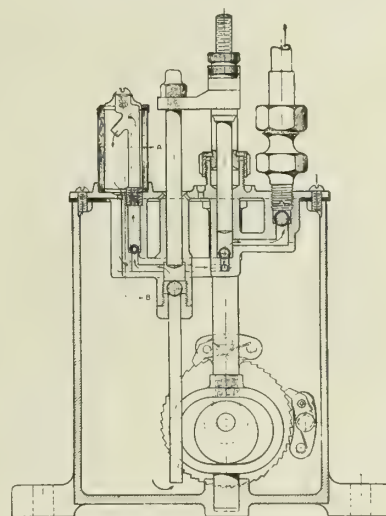
REFERENCES.

The "McCord" Class B Force-Feed Lubricator is now being used as standard equipment by the following:

Laidlaw-Dunn-Gordon Co.; Fred. M. Prescott Steam Pump Co.; Deane Steam Pump Co.; Power & Mining Machinery Co.; American Diesel Engine Co.; Geo. F. Blake Mfg. Co.; Fitchburg Steam Engine Co.; Ingersoll-Rand Co.



"McCORD" CLASS B LUBRICATOR
NO. 2



CROSS-SECTION OF "McCORD"
CLASS B LUBRICATOR, NO. 2

PRICE-LIST, "McCORD" LUBRICATOR, CLASS B

RATCHET OR ROTARY DRIVE—NICKEL-PLATED

No.	Oil Capacity	No. of Feeds	Price
1	1 quart	1	\$18.75
2	1 quart	2	22.50
3	$\frac{1}{2}$ gallon	1	22.00
4	$\frac{1}{2}$ gallon	2	25.75
5	$\frac{1}{2}$ gallon	3	29.50
6	1 gallon	1	25.00
7	1 gallon	2	28.75
8	1 gallon	3	32.00
9	1 gallon	4	35.00

Discounts given to the trade

NATIONAL STEAM SPECIALTY CO.

Air Valves and Gauges

MAIN OFFICE AND FACTORY

230-232 East Washington Street

CHICAGO, ILL.

TELEPHONE, MAIN 2614

BRANCH OFFICES

NEW YORK, N. Y., SURPLESS, DUNN & Co., 74 Murray Street

ST. LOUIS, MO., T. K. PETERS Co., Chemical Building

SAN FRANCISCO, CAL., AMBY J. BUCKLEY, Monadnock Building

PRODUCTS.

We manufacture a complete line of high-grade AUTOMATIC AIR VALVES for use on steam radiators, and a full line of GAUGES of all kinds and all sizes, including STEAM, VACUUM, AMMONIA, HYDRAULIC, ALTITUDE, COMBINATION WATER PRESSURE and ILLUMINATED DIAL GAUGES; also, MARBLE GAUGE BOARDS and MARINE CLOCKS.

AUTOMATIC
AIR VALVES.

Our "National" No. 9 Drain Valve, a high-grade dependable air valve, has heavy base and composition, large shell and float and enclosed composition. It has the lock-shield feature and can be adjusted only by persons having key. Our drain attachment will positively drain all condensation in air valve back into the radiator, as the draining is done by capillary attraction. "National" No. 9 Vacuum Drain Valve (Fig. 2) is identically the same as the No. 9 with the addition of the vacuum feature, which is a positive check against any air being drawn back into the radiator after it is once expelled.

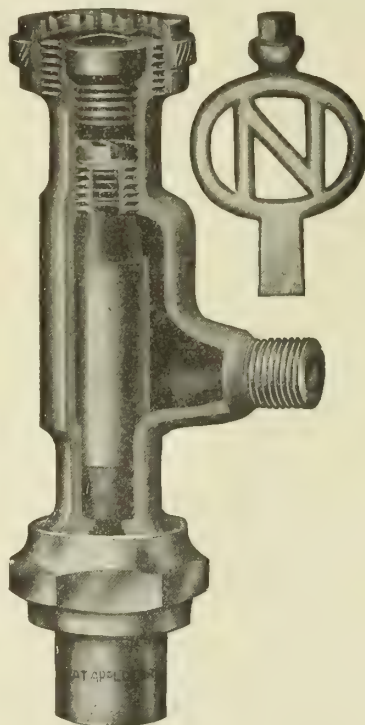


FIG. 1. "NATIONAL PAUL"
VALVE

FIVE-YEAR
GUARANTEE.

These valves are guaranteed for five years and our guarantee is stamped on every valve.

“NATIONAL
PAUL”
VALVE.

The "National Paul" Valve (Fig. 1) for use on Paul systems, air-line and drip systems, has the following salient features: (1) Encased Composition—Carbon can not buckle, and will always seat properly. (2) Top Adjustment—No need of disturbing connection when making adjustment. (3)



FIG. 2. "NATIONAL" NO. 9 VACUUM DRAIN VALVE

Special Key Feature—Valve is fool-proof. (4) Lead Packed Cap—Valve is absolutely tight, and all possibility of leakage or loss of vacuum is done away with. (5) Compensating Spring Cap—Carbon can not get crushed or overadjusted.

SPECIFICATION.

Specify—"Each radiator to have a 'National Paul' Valve attached."

The "National Paul" Valve is now in use on over 5,000 buildings in the United States and Canada.

"NATIONAL" THERMOSTATIC VALVE.

In the "National" Improved Automatic Expansion Steam Trap or Thermostatic Valve, patented January, 1908 (Fig. 3), the composition is encased in a brass tubing, which compels it to seat properly at all times, and will not permit carbon to get out of shape. The adjustment is not made by means of a screw, but carbon is held in place by spring friction. This does away with the possibility of cutting the seat by overscrewing, as is the case with other thermostatic traps.

The expansion member is of the most sensitive composition and will respond readily to a difference of a few degrees of temperature. The trap is self-adjusting, thereby always securing the full capacity of the expansion. Can be used in connection with a vacuum system, on radiator heater coils, dry-kilns, etc., also on drips from risers, and at the end of long runs of heating mains. Will work at any pressure from atmospheric to 75 pounds, with or without vacuum pump.

SIZES AND PRICES.

Made in three sizes: $\frac{1}{2}$ inch, $\frac{3}{4}$ inch, and 1 inch.

$\frac{1}{2}$ -inch will take care of 250 feet of radiation. List, \$5.00.

$\frac{3}{4}$ -inch will take care of 500 feet of radiation. List, \$7.50.

1-inch will take care of 750 feet of radiation. List, \$10.00.

Traps for high-pressure work are made with screw attachment and spring locknut so stem can be taken out and replaced without change of adjustment. Special price quoted on these.

SAMPLES AND PRICES.

Samples of any of our valves will be cheerfully submitted to any architect writing for same. Prices furnished on request.

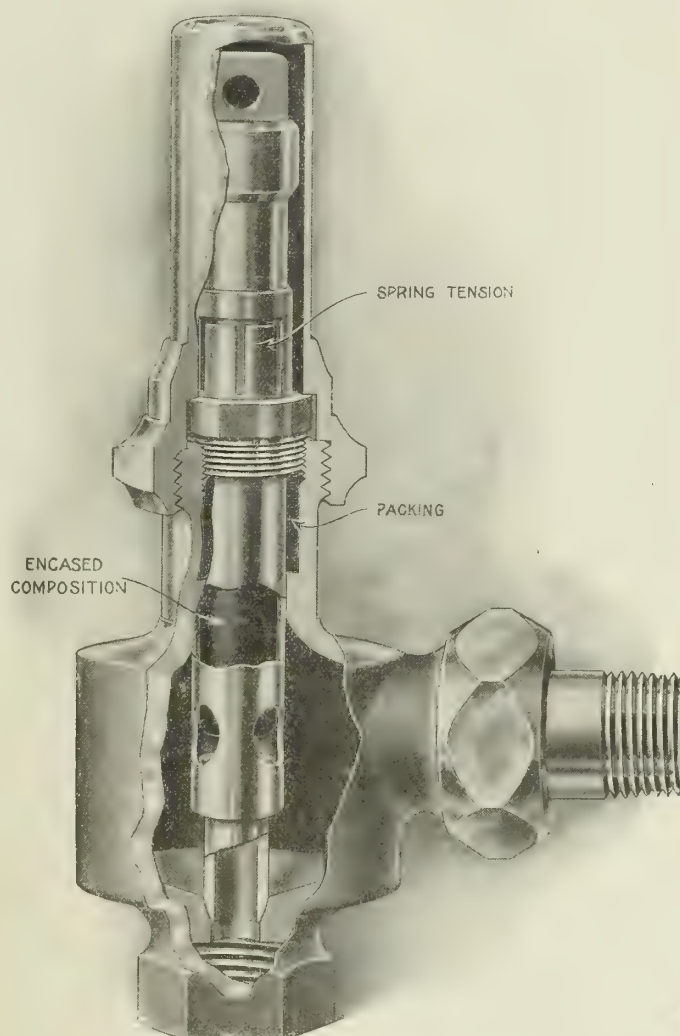


FIG. 3. "NATIONAL" THERMOSTATIC VALVE

Patented January, 1908

THE OHIO BLOWER COMPANY

Exhaust-Heads, Steam and Oil Separators

324-332 Prospect Avenue, N. W.

CLEVELAND, OHIO

AGENTS IN ALL PRINCIPAL CITIES

PRODUCTS.

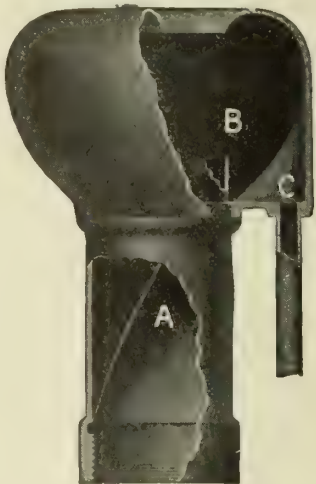
Manufacturers of "SWARTWOUT" CAST-IRON EXHAUST-HEADS; CENTRIFUGAL STEAM and OIL SEPARATORS; STEAM SPECIALTIES.

"SWARTWOUT" CAST-IRON EXHAUST-HEAD.

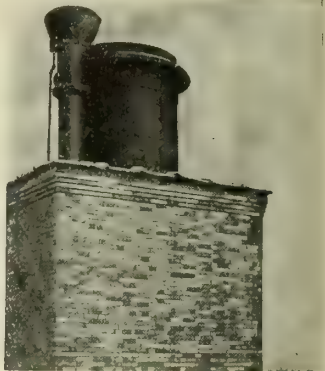
The "Swartwout" Cast-Iron Exhaust-Head is the simplest practical embodiment of the "helico-centrifugal principle" that is applied in all THE OHIO BLOWER COMPANY'S steam specialties. The long pitch of the helix (A) avoids interference with the direct-flow action. As the whirling steam emerges from the helix tube into the expanding portion of the head the water particles which have already been thrown to the outer surface of the tube are flung far outward. The water collects in the annular chamber formed by the extension of the tube at B and is removed through the drip-pipe C.

Although the principle of operation readily places this head in a class by itself, its cast-iron construction presents another feature of equal importance in establishing its superiority. It is designed to last a lifetime, and it will. It is light and ornamental, not a blot on the landscape. It will absolutely prevent the water and oil in exhaust steam from escaping into the air and damaging surrounding property.

The "Swartwout" Exhaust-head is made in two or more pieces according to size. This is an important feature in facilitating the erection of large sizes.



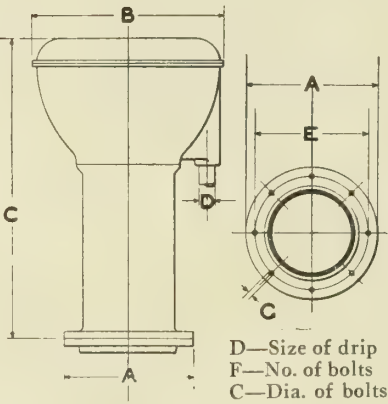
Small Size



Large Size

"SWARTWOUT" CAST-IRON EXHAUST-HEAD

SIZES AND PRICES



"SWARTWOUT" CAST-IRON EXHAUST-HEAD

Size of Exhaust-Pipe, Inches	PRINCIPAL DIMENSIONS IN INCHES							Net Weigh., Pounds	Price
	BODY				FLANGE				
	A	B	C	D	E	F	G		
1 and 1½	.....	7¼	10⅝	3¼	.....	.....	.....	11	\$20.00
2 and 2½	.....	8½	13⅞	1	.....	.....	.....	20	25.00
3 and 3½	.....	10	15¼	1	.....	.....	.....	28	30.00
4 add 4½	.....	11	17⅙	1	.....	.....	.....	35	40.00
5	.....	13	20⅙	1¼	.....	.....	.....	56	50.00
6	11	15	20⅜	1¼	9½	8	⅝	84	60.00
7	12½	17¼	25⅝	1½	10¼	8	⅝	136	75.50
8	13½	19	27½	1½	11¼	8	⅝	165	90.00
10	16	23	35¼	2	14¼	12	¾	265	125.00
12	19	28½	42	2½	17	12	¾	350	150.00
14	21	30¼	47¼	2½	18¼	12	⅞	472	200.00
16	23½	34¼	49⅜	3	21¼	16	⅞	720	250.00
18	25	37⅞	54⅜	3	22¾	16	1	900	300.00
20	27½	41½	59½	3½	25	20	1	1200	360.00
22	29	45½	68½	3½	27¼	20	1⅝	1550	450.00
24	32	50	77	4	29½	20	1⅞	1950	600.00
26	34¼	54	85¼	4	31¾	24	1⅞	2400	700.00
28	36½	58	94¼	4	34	28	1¼	3000	800.00
30	38¾	62	112	4½	36	28	1¼	3650	900.00
36	45¼	74¼	129¼	6	42¾	32	1¼	5500	1,200.00

Sizes 5-inch and smaller are tapped with standard steam-pipe threads. Larger sizes are equipped with standard flanges conforming in dimension to the joint standard adopted by the A. S. M. E. and the Master Steam and Hot Water Fitters' Association. Companion flanges furnished on sizes 6-inch to 16-inch, without extra charge. Bolt holes of flanges are drilled to straddle center-line of drip outlet on sizes 14-inch and larger.

CENTRIFUGAL
STEAM AND
OIL
SEPARATORS.

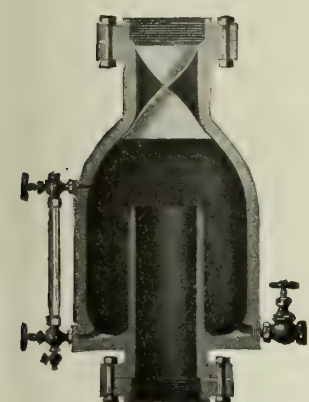
It is a token of engineering progress that the Steam and the Oil Separator are to-day recognized as necessary elements in the completed steam plant, but it is likewise recognized that all the advantages of good separation may be more than offset by loss of pressure. In the impact type such loss is inevitable; in apparatus designed upon the "helico-centrifugal principal" it is avoided. The absolute simplicity of the type insures separation without loss of pressure.

These separators are manufactured in a variety of designs which makes it easy to install them without additional bends in the steam piping. In all types the chambers are exceedingly large; shaking or vibration of pipes, due to sudden closing of steam-valves, is thereby avoided. There is an entire absence of baffle-plates or other obstructions to the flow of steam. There is absolutely "nothing simpler." Separation is positive. Oil Separators similar in design and method of operation range in sizes from 1½ inches up.

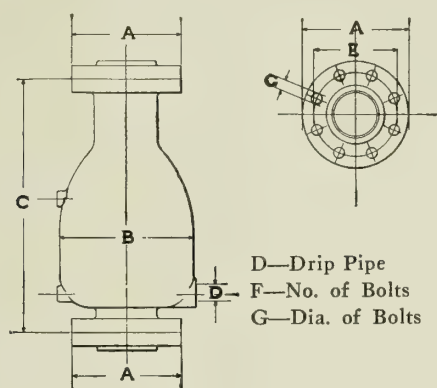
Steam Separators of the receiver type are also built in large sizes.

CATALOGUE.

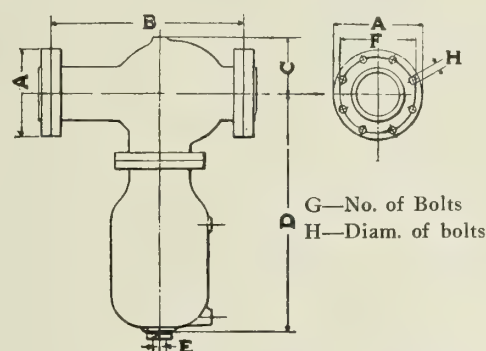
Our complete catalogue describes everything and gives dimensions of details.



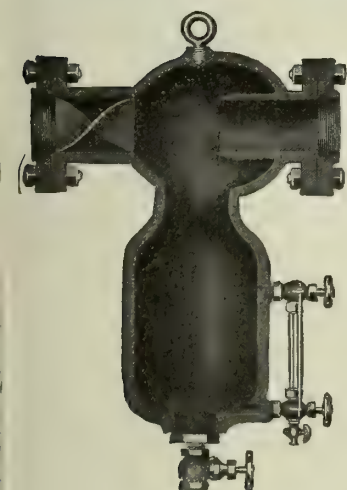
"SWARTWOUT"
VERTICAL STEAM
SEPARATOR



VERTICAL STEAM SEPARATOR



HORIZONTAL STEAM SEPARATOR



"SWARTWOUT"
HORIZONTAL STEAM
SEPARATOR

Size of Pipe, Inches	PRINCIPAL DIMENSIONS IN INCHES							Net Weight, Pounds	PRINCIPAL DIMENSIONS IN INCHES								Net Weight, Pounds
	BODY				FLANGE				BODY					FLANGE			
	A	B	C	D	E	F	G		A	B	C	D	E	F	G	H	
1½	5	7	13	½	3⅞	4	½	45	5	12¼	3¾	15¼	½	3⅞	4	½	62
2	6	8	14⅝	½	4¾	4	⅝	60	6	13½	4⅝	17	½	4¾	4	⅝	77
2½	7	9	16¾	¾	5½	4	⅝	85	7	14¾	4½	18¾	¾	5½	4	⅝	120
3	7½	9¾	19	¾	6	4	⅝	125	7½	16¾	5	20¼	¾	6	4	⅝	160
3½	8½	11	21	1	7	4	⅝	150	8½	18	5⅝	20¾	1	7	4	⅝	185
4	9	12	22⅝	1	7½	4	¾	190	9	20	5⅞	23½	1	7½	4	¾	225
4½	9¼	13	25⅝	1¼	7¾	8	¾	250	9¼	22	6¾	24¾	1¼	7¾	8	¾	285
5	10	14	27⅝	1¼	8½	8	¾	275	10	23½	7	25½	1¼	8½	8	¾	320
6	11	15¼	29¼	1¼	9½	8	¾	400	11	27	8	33½	1¼	9½	8	¾	510
7	12½	17	34½	1¼	10¾	8	¾	500	12½	30½	8⅞	36	1¼	10¾	8	¾	630
8	13½	19½	37	1½	11¾	8	¾	785	13½	34	10	39	1½	11¾	8	¾	830
9	15	21½	40½	1½	13¼	12	¾	1,100	15	35¾	11	42½	1½	13¼	12	¾	1,070
10	16	23½	44½	1½	14¼	12	⅞	1,400	16	37½	11¾	43¾	1½	14¼	12	⅞	1,230
12	19	27	49½	2	17	12	⅞	1,750	19	38¾	13½	44¼	2	17	12	⅞	1,500

Each separator is equipped with companion flanges and bolts, water-gauge drip-valve and nipple. Horizontal Separators in sizes 5-inch and smaller are cast complete in one piece; 6-inch and larger are cast with head or top and drip separate.

THE WM. POWELL CO.

Steam Engineering Specialties

2521 Spring Grove Avenue

CINCINNATI, OHIO

BRANCH OFFICES

BOSTON, MASS., THE WM. POWELL CO., 239-245 Causeway Street

NEW YORK, N. Y., THE WM. POWELL CO., 254 Canal Street

PHILADELPHIA, PA., THE WM. POWELL CO., 18 Arch Street

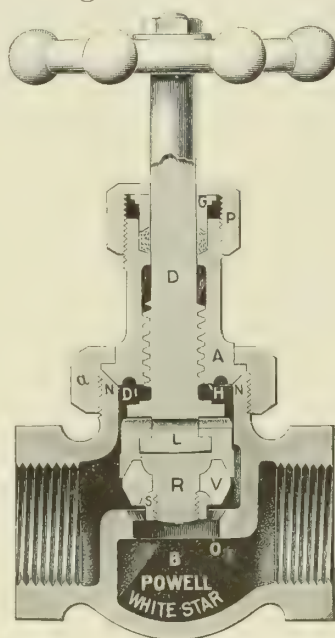
PRODUCTS.

Manufacturers of STEAM ENGINEERING SPECIALTIES, including "WHITE STAR" GLOBE, ANGLE, CHECK and GATE VALVES, Brass and Iron; ENGINE and BOILER TRIMMINGS; VALVES for HOT-WATER and STEAM HEATING; HYDRAULIC VALVES; LUBRICATORS for STEAM, AIR or GAS ENGINES; OIL CUPS, OILING DEVICES and GREASE CUPS for STEAM, GAS, AIR or ELECTRIC MACHINERY.

"WHITE STAR" VALVES.

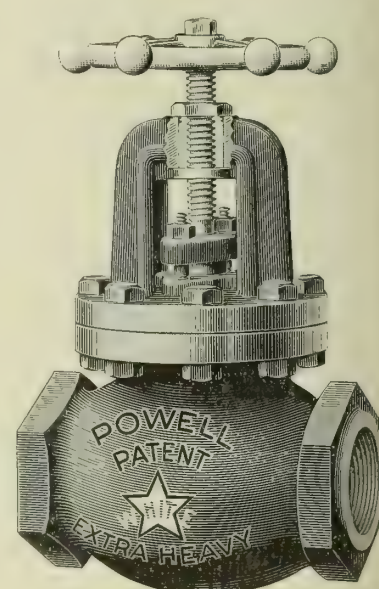
As constituting an important class of our dependable Engineering Specialties we offer the "White Star" brand of Globe, Angle, Check and Gate Valves, the valves with white disks, white wheels and a white (clean) record, with the conviction borne of actual use, that there is nothing in the valve line of equal merit.

- Wheel lock nut
- P—Deep stuffing box nut can be repacked under pressure with valve closed or wide open
- a—Hexagon union swivel nut
- D' and H—Faces on stem and bonnet make steam-tight joint permitting of repacking stem with pressure on and valve wide open
- R—Removable disc carrier—protects the upper face of disc while lower one is in use
- S—Disc lock nut, easy to remove
- B—Body shell—note uniform thickness of metal with seat extra thick



BRASS "WHITE STAR" GLOBE VALVE

- Firm grip hand wheel—painted white
- G—Drive gland follower, in
- P—Stuffing box, roomy for packing
- D—Stem with full acme thread
- A—Valve bonnet, cone faced
- N—Patent beveled ground face
- L—Hole through stem and corresponding groove in carrier R to insert pin for regrinding
- V—Reversible, regrindable white Powelium bronze disc
- O—Face of beveled seat—note slope, no chance for grit to catch



IRON-BODY "WHITE STAR" GLOBE VALVE

DIMENSIONS AND MEASUREMENTS OF "WHITE STAR" IRON-BODY VALVES, EXTRA HEAVY

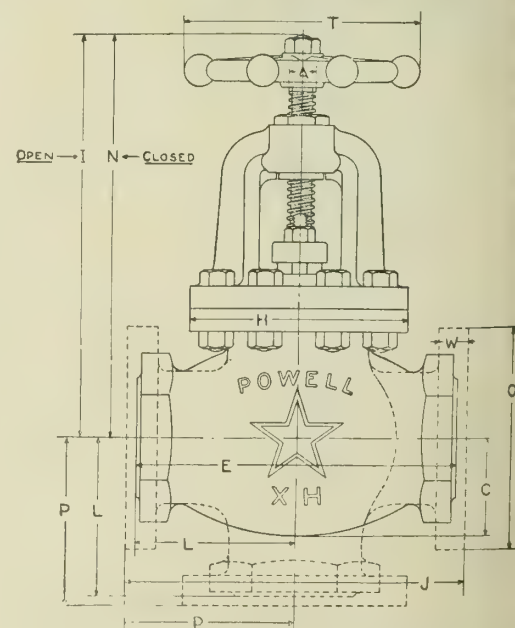
Page 98, Catalogue

All measurements are in inches

SIZE OF VALVE, Inches.....		2	2½	3	3½	4	4½	5	6	7	8
J	Face to Face, Flange Ends.....	9¾	11½	12½	13½	14	15	15¾	17½	19½	21¾
P	Center to Face, Flange Ends.....	4¾	5¾	6¼	6¾	7	7½	7¾	8¾	9½	10½
O	Diameter of Flanges.....	6½	7½	8¼	9	10	10½	11	12½	14	15
W	Thickness of Flanges.....	¾	1	1¼	1½	1¾	1¾	1¾	1¾	1¾	1¾
E	Face to Face, Screw Ends.....	8¼	10¼	11¾	12¾	13	14	15	16½	18¼	20
L	Center to Face, Screw Ends.....	4½	5½	5¾	6¾	6½	7	7½	8¼	9½	10
C	Center to Bottom of Body.....	2¾	3½	3¾	4	4½	4¾	5¼	5½	7	7¾
I	Center to Top of Stem When Open...	12¾	14½	15¾	17½	18¾	20½	21¾	23¼	25¼	29¾
N	Center to Top of Stem When Closed.....	11¾	13¾	14¼	15½	17½	18¾	19¾	21¾	22¾	26¾
A	Diameter of Stem.....	1½	1	1	1¼	1½	1¾	1¾	1¾	1¾	2
T	Diameter of Hand Wheel.....	7¼	7¾	8½	9½	10½	11½	12½	14	16	18
H	Diameter of Body and Yoke Flanges.....	6½	7½	7¾	8¾	9¾	10¼	10¾	12	14½	15¾

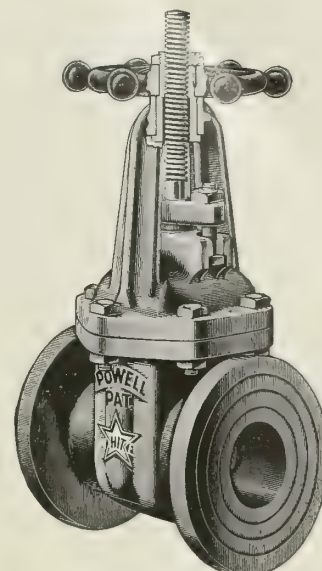
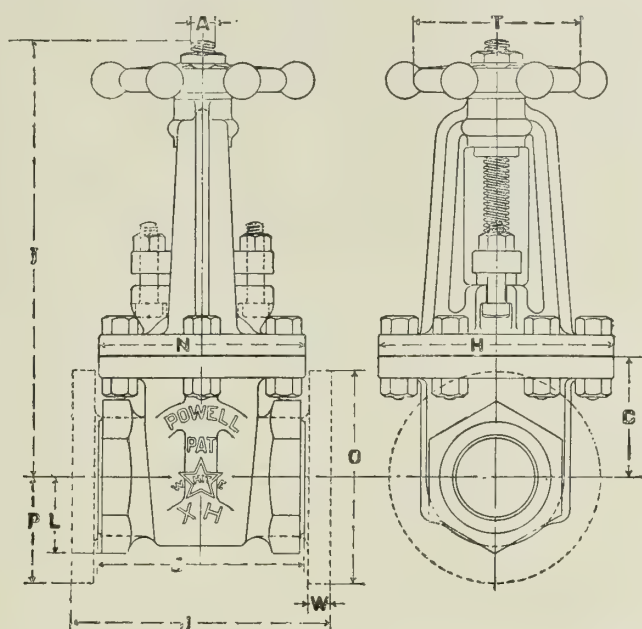
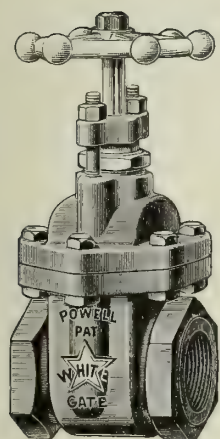
"WHITE STAR" VALVES.

"White Star" Globe Valves are made of brass or iron body, each kind of two grades, regular and extra heavy, the regular grade having a working pressure of 150 pounds. The construction of this



DIMENSION DIAGRAM FOR GLOBE, ANGLE AND CROSS VALVES

valve is shown in the preceding illustrations and the salient features described in connection therewith.



Dimension Diagram (Side View) Dimension Diagram (End View)

IRON-BODY "WHITE STAR" GATE VALVE WITH PLAIN TOP
Non-Rising Spindle

IRON-BODY "WHITE STAR" GATE VALVE WITH YOKE TOP
Rising Spindle

DIMENSIONS AND MEASUREMENTS, OUTSIDE SCREW STEM AND YOKE. EXTRA HEAVY GRADE. CATALOGUE FOLIO 138-2
All dimensions are in inches

SIZE OF VALVE, Inches....		2	2½	3	3½	4	4½	5	6	7	8	9	10
J P O W E L L C O I R O N B O D Y V A L V E S	Face to Face, Flange Ends.....	9	9½	10¼	11¼	12	12¾	13¾	14¾	15½	16¼	16¾	17¾
	Center to Bottom of Flange.....	3¼	3¾	4½	4½	5	5¼	5½	6¼	7	7½	8	8¾
	Diameter of Flanges.....	6½	7½	8¼	9	10	10½	11	12½	14	15	16	17½
	Thickness of Flanges.....	¾	1	1½	1½	1¾	1¾	2	2½	3	3½	4	4½
	Face to Face, Screw Ends.....	5¼	6¼	6½	7½	7¾	8¾	9¾	10¾	11¾	12¾	13¾	14¾
	Center to Bottom of Screw End Body	2¼	2½	2¾	3¼	3½	4	4½	5¼	5¾	6¼	6¾	7½
	Center to Top of Valve Body.....	3¼	3½	4	4½	5	5½	6	6½	7¼	8¼	9¼	10¼
	Center to Top of Stem When Open	13¾	15¼	17¼	22	24¼	26	28	31¾	34¾	40	44¼	47¾
	Center to Top of Stem When Closed	11¼	12¼	14¾	18	26¼	30¼	33½	37¾	38¼	48¼	53¼	58¼
	Width of Body and Cap Flanges....	5¼	6¼	6¾	7¾	7¾	8¾	8¾	9¾	10¾	11¾	12¾	13¾
	Diameter of Stem.....	5¾	6¾	7	7½	8	8½	9	10	11	12	13	14
	Diameter of Hand Wheel.....	5¾	6¾	7	7½	8	8½	9	10	11	12	13	14
	Length of Body and Cap Flanges....	6¾	7¾	8¼	9¼	9¼	10¼	11¼	12¼	13¼	14¼	15¼	16¼

Dimension lines of the bodies are alike in both styles of Gate Valves.

"WHITE
STAR"
GATE VALVES.

"White Star" Gate Valves are made all Brass, or with Iron Body. Both have "White Star" Metal Discs. Are made in two styles—Plain Top, with non-rising spindle, and Yoke Top, with rising spindle. There are two grades of each style for working pressures up to 150 and 250 pounds respectively. The disc and seat rings are of our special Powelium white bronze, a hard, close-grained metal, white like silver, which practical use has proved to be peculiarly applicable for steam purposes.

All Powell Gate Valves have double discs with ball and socket adjustable backs. Do not confound them with the single solid wedge type.

CATALOGUE.

Let us send you our complete Catalogue No. 9. A postal request will bring it to you.

SPECIFICA-
TIONS.

To insure the employment of dependable valves, specify as follows:

"All Globe, Angle, Check and Gate Valves as shown on detail shall be furnished and connected, and all to be of the 'White Star' brand of valves as manufactured by THE WM. POWELL CO., Cincinnati, Ohio."

DISTRIBUTION.

Distributed through Jobbing Supply Houses all over the country.

THE SIMS COMPANY

MANUFACTURERS OF

Steam Users' Supplies

ERIE, PA.

CABLE ADDRESS, "SIMSCO"
TELEGRAPH CODE, "LIEBER"

ESTABLISHED 1886

PRODUCTS.

"SIMS" HOT WATER GENERATORS, CONVERTORS, CLOSED FEED WATER HEATERS, OPEN FEED WATER HEATERS, STEAM SEPARATORS, OIL SEPARATORS, EXHAUST HEADS, etc.

METHOD OF DESIGN.

All our Steam Appliances are designed on scientific principles, manufactured from the best of material and by skilled workmen.

CO-OPERATIVE SERVICE.

We illustrate a few of our Generators, but we are prepared to give expert advice and make up such constructions as are best adapted for hot-water service of every kind. State quantity of water required per minute from degrees Fahr. to degrees Fahr., the pressure and amount of steam available, whether it is to be an Instantaneous or Circulating Generator (see Plan, "McKinley"), and we will furnish all the necessary data, dimensions, prices, etc., for such an outfit, equipped with a reliable thermostat, if required, and guarantee results.

BULLETIN.

Write for our Bulletin, "G. 2" for particulars.

REFERENCES.

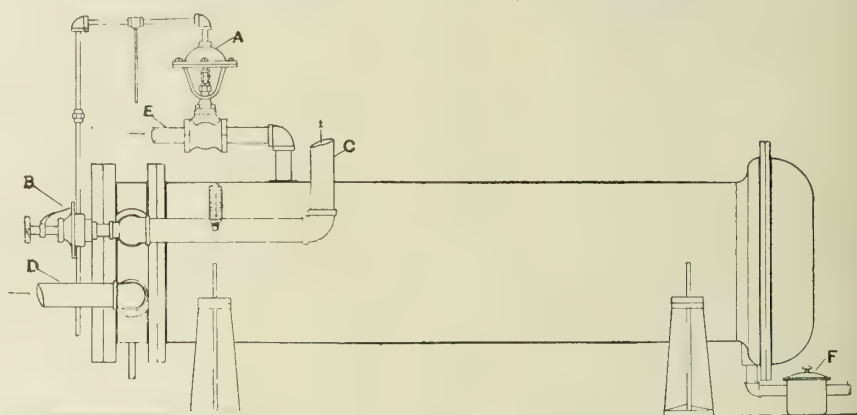
These are in successful operation in all parts of the country.

The following letter from the Peters-Eichler Heating Co., 1503 Chestnut Street, St. Louis, Mo., is one of many testimonials:

Replying to your inquiry as to our experience with the "Sims" Hot Water Generator, beg to advise that we have installed a large number of these generators and have never heard of a complaint as to their efficiency for hot-water purposes. In fact, we consider them far superior to any device for this purpose that is now on the market.

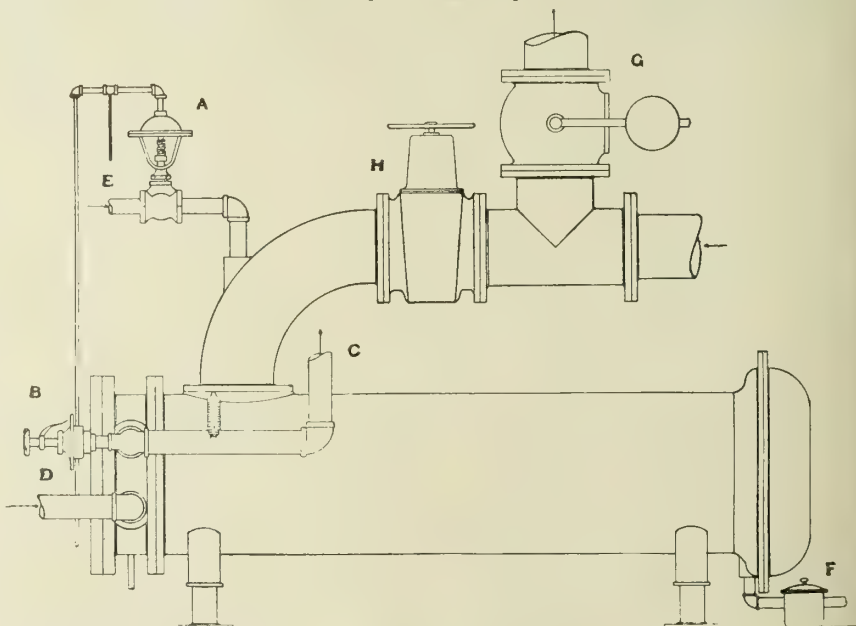
They are very simple, take up a small amount of room, and are far superior for supplying hot water than the old style of tank and coil. We use them on all our work, where hot water is wanted.

Yours very truly,
PETERS-EICHLER HEATING CO.



Plan, "McKinley"

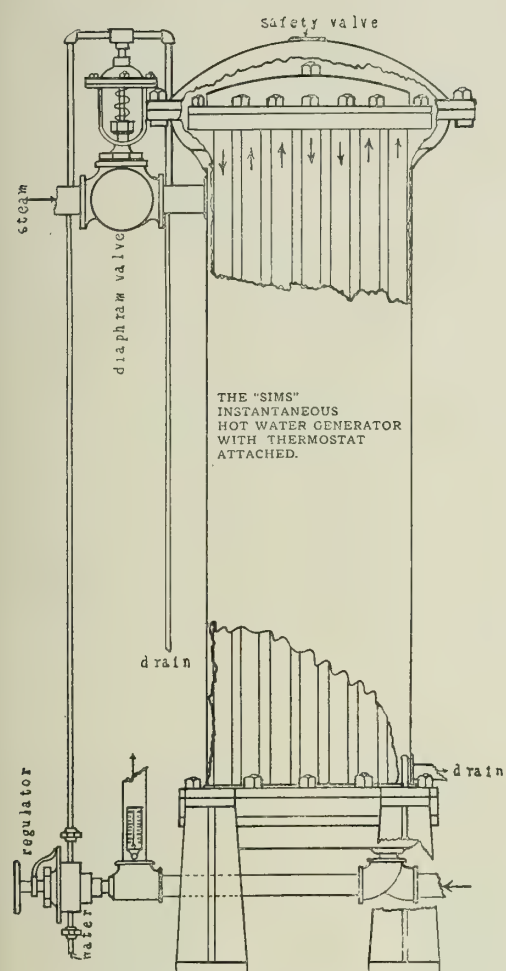
A—Diaphragm Valve B—Temperature Regulator
C—Hot Water Line D—Cold Water Line
E—Live Steam Pipe F—Steam Trap



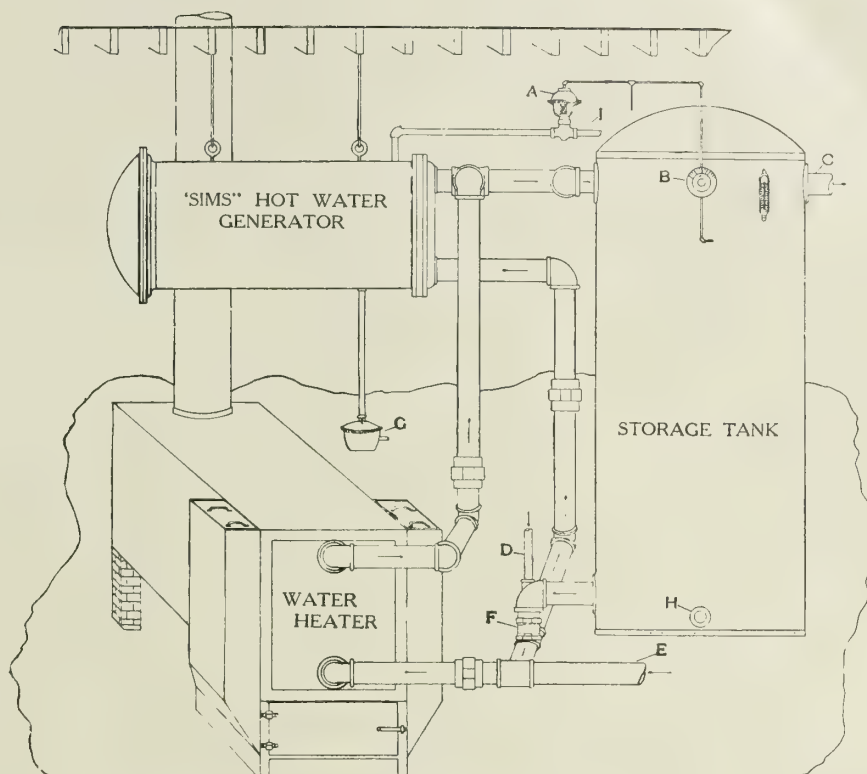
Plan, "Grant"

A—Diaphragm Valve B—Temperature Regulator C—Hot Water Line
D—Cold Water Line E—Live Steam Pipe F—Steam Trap
G—Back Pressure Valve H—Shut off Valve

"SIMS" HOT WATER GENERATORS



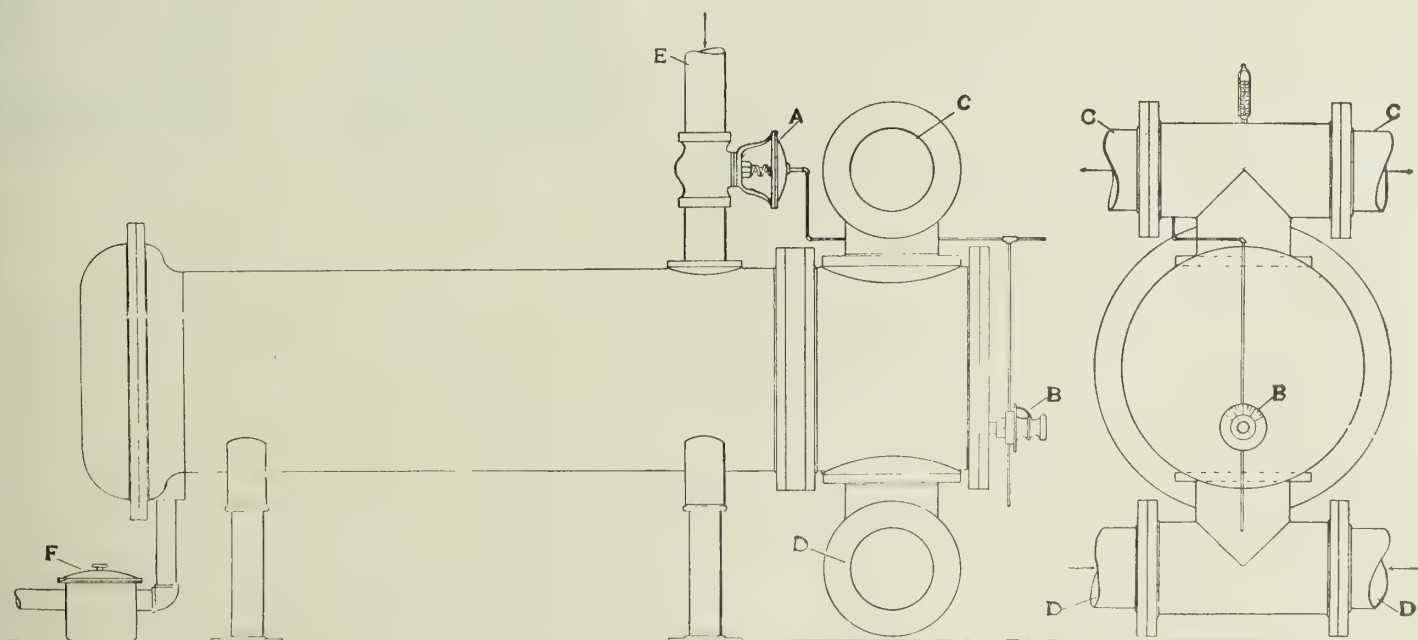
Plan, "Monroe," with Thermostat



Plan, "Lincoln"

A—Diaphragm Valve B—Temperature Regulator C—Water Outlet
 D—Returns from hot water system E—Water Supply F—Vertical Check Valve
 G—Steam Trap H—Drain Pipe I—Live Steam Pipe

"SIMS" HOT WATER GENERATORS



Plan, "Washington"

A—Diaphragm Valve B—Temperature Regulator
 C—To Radiators D—From Radiators
 E—Live Steam Pipe F—Steam Trap

"SIMS" CONVERTOR

WALCH & WYETH

MANUFACTURERS OF

The "Erwood" Straightway Swing-Gate Valves

87 Lake Street
CHICAGO, ILL.

BRANCH OFFICES

INTERCONTINENTAL ENGINEERING CO., 126 Liberty
Street, New York, N. Y.ST. LOUIS STEAM SPECIALTY CO., Security Building,
St. Louis, Mo.

PRODUCTS.

The "ERWOOD" STRAIGHTWAY SWING-GATE VALVE; "ERWOOD" BACK-PRESSURE VALVE; "ERWOOD" ATMOSPHERIC RELIEF-VALVE; "ERWOOD" SAFETY-GATE VALVE; "ERWOOD" NON-RETURN VALVE; "ERWOOD" AUTOMATIC NON-RETURN CUT-OUT VALVE; "ERWOOD" SELF-CLEANING FOOT-VALVE; "ERWOOD" COMBINED CHECK and GATE VALVE.

"ERWOOD"
STRAIGHT-
WAY SWING-
GATE VALVE.

The "Erwood" Valve (Figs. 1 and 2) is an embodiment of the features of a gate and check valve in one, and capable of performing not only the functions of either, but offering a wide degree of adaptability possessed by no other single valve. The action of the swing-gate is controlled by the tension of the spring, which is regulated according to the pressure desired. We recommend its use for the following purposes:

- (1) As a back-pressure valve to the atmosphere.
- (2) As an atmospheric relief on condensing engines to the atmosphere.
- (3) As a safety-gate on exhausts of engines close to the cylinders, instead of a common gate valve.
- (4) As a safety-gate on exhaust lines of pumps, steam hammers, steam elevators, air compressors, etc.
- (5) As a non-return valve between cylinder and condenser.
- (6) As a non-return valve between open heaters and engines.
- (7) As an automatic non-return cut-out between boiler and header.
- (8) As a safety-gate on air-lines of air compressors.
- (9) As a self-cleaning foot-valve on suction of pump.
- (10) As a combined check and gate on discharge of pump.

ADAPTATIONS.

Adaptations of the "Erwood" Valve are shown in Figs. 3, 4, 5, 6, 7 and 8.

Fig. 3 illustrates a cross non-condensing unit in which A and B are "Erwood" Automatic Gates permitting either engine to be disconnected if required or started with these gates shut. C is an Automatic Gate also to the atmosphere, thrown in for heating purposes only. A and B should be set slightly above atmosphere. C should be set above resistance to heating main D or branch exhaust leading to other mains. No possible danger to either engine or apparatus from overpressure with this arrangement.

Fig. 4 illustrates the "Erwood" Swing Gate on pump duty. A is an "Erwood" doing back-pressure service; B is an "Erwood" used as a combined check and gate. With this valve, the valve chamber can be primed by opening the gate, admitting water directly from the riser or feed line. C is an "Erwood" Valve (preferably weighted) used as a self-cleaning foot-valve. With this valve the pump can be drained by operating the hand-wheel only, as in a common gate. These three valves are kept closed and are operated by the action of valve D, which is a common globe valve for throttle service.

Fig. 5 illustrates the use of the "Erwood" Valve in compound condensing service, permitting either cylinder to be operated singly or cross-condensing or non-condensing. A is an "Erwood" Shut-Out from receiver and closing against the high-pressure cylinder. B is an "Erwood" Automatic Relief from receiver closing against the atmosphere. C is an "Erwood" Automatic Relief also closing against the atmosphere between the low-pressure cylinder and condenser. D is an "Erwood" Swing-Gate shutting against the condenser. In this instance B and C should be fitted with a gauge trimming and the valve flooded as in the "Erwood" claims.

ATMOSPHERIC
RELIEF ON
TURBINE
ENGINE.

The "Erwood" Valve as an Atmospheric Relief on a Turbine Engine is as perfect in its action as a "Pop Valve" on a steam boiler. Operation when needed must be assured, and as positive in its action as any mechanical device can possibly be. Many valves for this service have failed at the critical time, and the consequent wreck has been as disastrous as

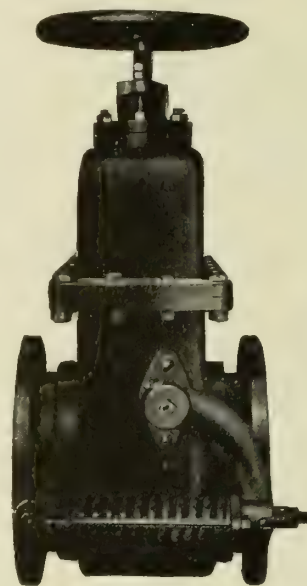


FIG. 1. THE "ERWOOD"
STRAIGHTWAY SWING-
GATE VALVE

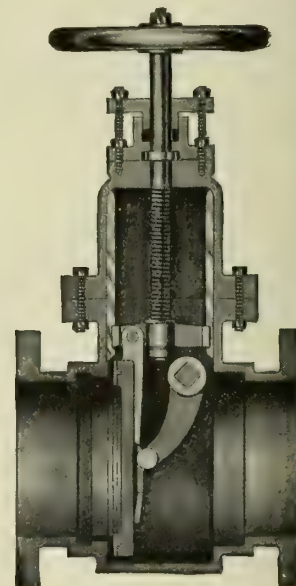


FIG. 2. SECTIONAL
VIEW OF FIG. 1

though no device had been employed. The "Erwood" Valves can not stick, jam, corrode, or fail to open when required.

They are guaranteed tight in any position, even when run dry, or unsealed by water. The effect of usage tends to make the valves tighter.

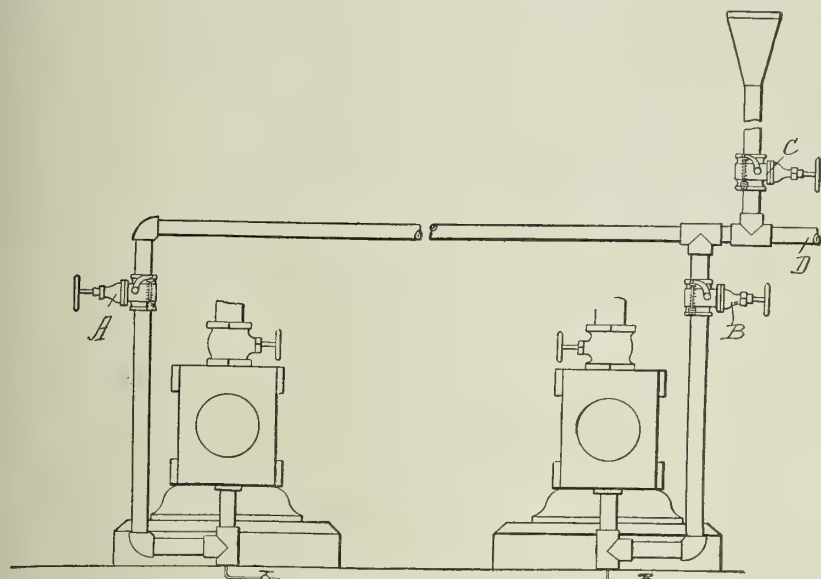


FIG. 3. ADAPTATION OF "ERWOOD" VALVE ON CROSS NON-CONDENSING UNIT

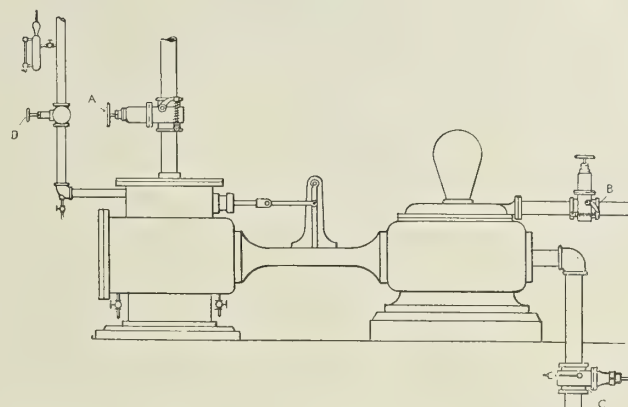


FIG. 4. ADAPTATION OF "ERWOOD" VALVE FOR PUMP SERVICE

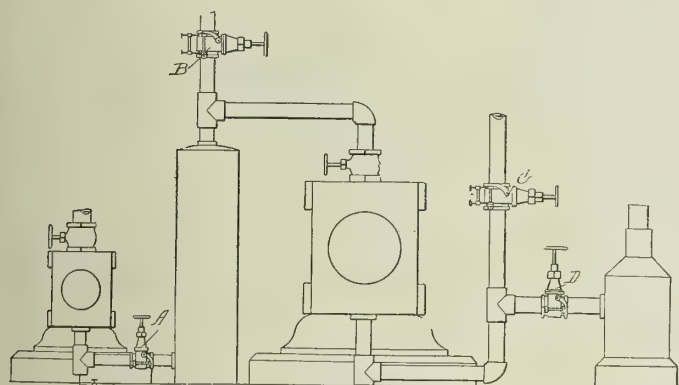


FIG. 5. ADAPTATION OF "ERWOOD" VALVE ON COMPOUND CONDENSING UNIT

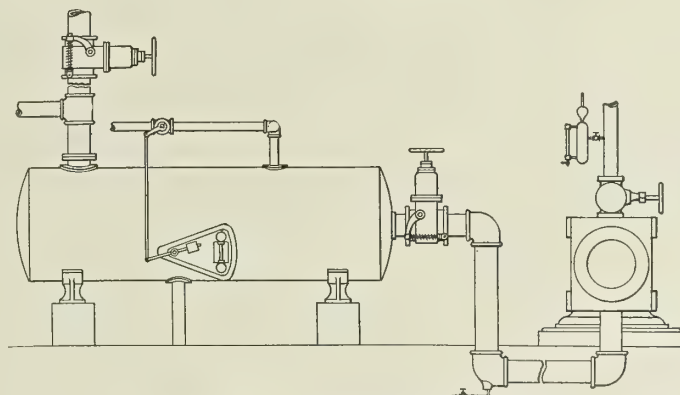


FIG. 6. "ERWOOD" VALVE, SHOWING SAFETY NON-RETURN ON CONDENSER AND HEATER CONNECTIONS

This to be kept closed at all times, thus eliminating danger of a flooded heater or condenser

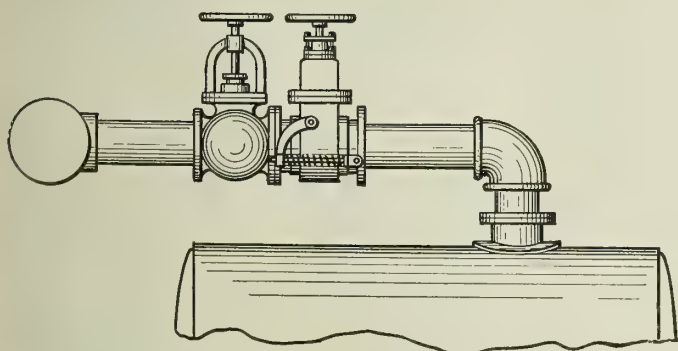


FIG. 7. "ERWOOD" VALVE AS AUTOMATIC NON-RETURN CUT-OUT

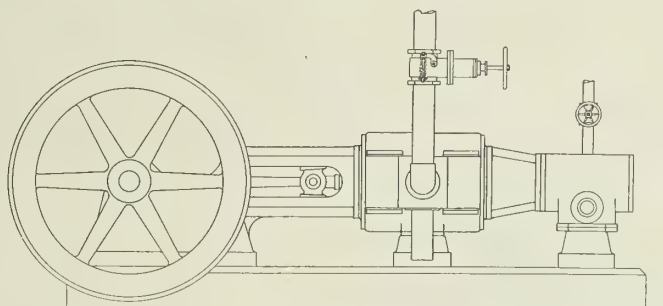


FIG. 8. "ERWOOD" VALVE AS SAFETY RELIEF ON AIR-LINES OF AIR COMPRESSORS

SIZES AND PRICES.

"ERWOOD" VALVE, SCREWED

Size, inches.	4	Price, each	\$40.00
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"ERWOOD" VALVE, FLANGED

Size, inches.	5	6	7	8	10	12	14	16	18	20	24
Price, each.	\$55.00	\$75.00	\$100.00	\$130.00	\$200.00	\$250.00	\$345.00	\$465.00	\$600.00	\$750.00	\$1,050.00

THE D. T. WILLIAMS VALVE COMPANY

OFFICE AND WORKS

904-910 Broadway

CINCINNATI, OHIO

PRODUCTS.

BRASS and IRON VALVES; STEAM and GAUGE COCKS, and BOILER FITTINGS of all kinds; OIL and GREASE CUPS; LUBRICATORS; STEAM-TRAPS and SEPARATORS.

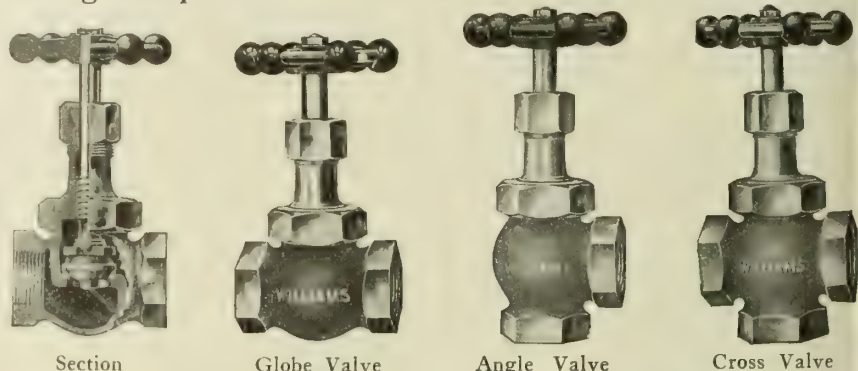
ADVANTAGES OF

"WILLIAMS" GOODS.

"WILLIAMS" BRASS REGRINDING VALVES.

"Williams" Products are made of the very best grades of the several metals used—our bronze being a superior and very hard bronze composition, the same as that specified by the United States Navy Department. Valves have long, full-depth threads and all parts are carefully machined and finished.

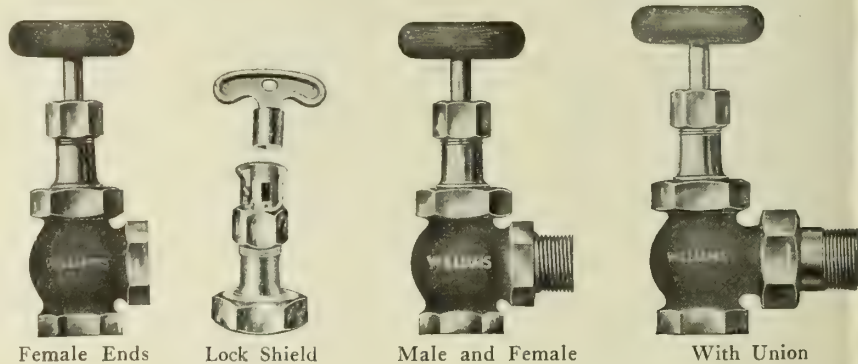
The "Williams" Regrinding Valve has been designed to meet the demand for a high-grade valve for high working pressures. The rubber, leather, or copper discs used in the ordinary valve deteriorate under high temperature and the valve can only be kept tight by constant renewal of the discs and other incidental parts. In our valves any wear on the disc or seat is easily compensated by regrinding, an operation that is easily accomplished at no extra expense and without removing the valve from the pipe; our valves are guaranteed to stand a working pressure of 200 pounds, and can be re-packed under full pressure.



"WILLIAMS" BRASS REGRINDING VALVES

"WILLIAMS" REGRINDING RADIATOR VALVES.

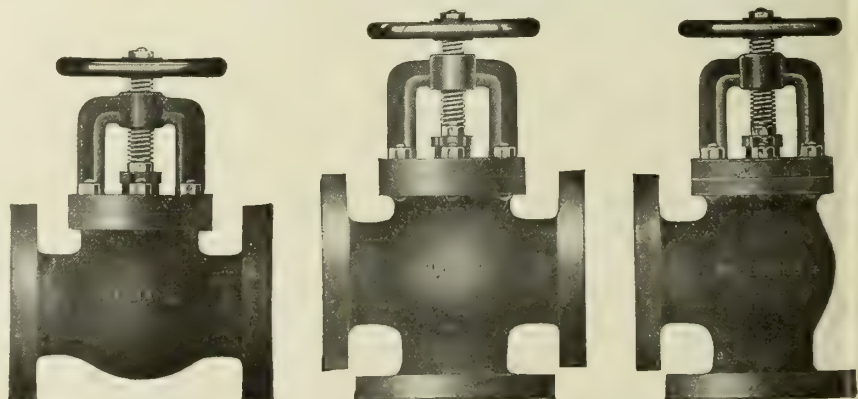
These are similar in construction to our regular regrinding valve. They can be reground without disconnecting, and are easily repacked under pressure by having valve wide open.



"WILLIAMS" REGRINDING RADIATOR VALVES

"WILLIAMS" GLOBE, ANGLE AND CROSS VALVES.

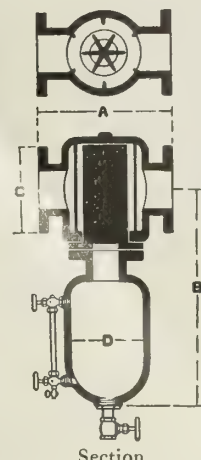
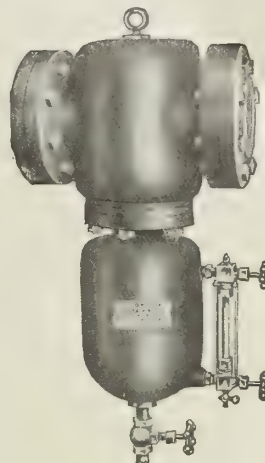
Our brass-mounted iron valves are made of the highest grade of hard, close-grained cast-iron, and are tested and guaranteed for a working pressure of 125 pounds. These valves are regrinding, and can be repacked under pressure. They are made in Medium, Heavy, and Extra Heavy weights, tested respectively to 125, 175, and 250 pounds pressure, and can be furnished with tongued and grooved flanges, male and female body flanges, or companion flanges.



"WILLIAMS" IRON VALVES WITH OUTSIDE SCREW AND YOKE

"WILLIAMS
COOKSON"
HORIZONTAL
SEPARATORS
FOR EXHAUST
STEAM.

The principle and construction of this separator are radically different from other makes. On entering the separator the steam is divided equally, passing on either side of the star baffle-plate. Going through the separator, the steam is given a zigzag movement, first engaging the baffle and then the ribs on the shell, the water or oil passing down the bottom of the head where it drains through openings into the bowl or well at the bottom. This water can not again be picked up by the steam current. The separator can be taken apart without disconnecting it from the piping. Tested and guaranteed to 200 pounds. Also made in Vertical Style for separating Live Steam.



"WILLIAMS COOKSON" HORIZONTAL
SEPARATOR

PRICES (SUB-
JECT TO
DISCOUNT).

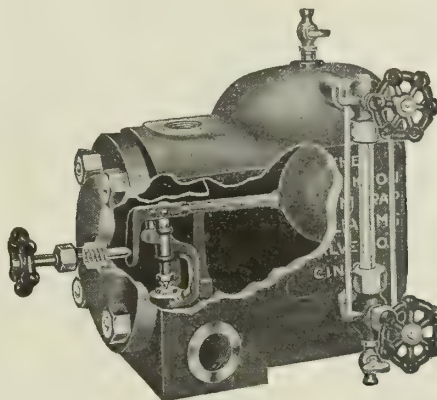
"WILLIAMS COOKSON" HORIZONTAL SEPARATORS (See Sectional View)

Size.....	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10
A.....	8	9	10	11	12	13	15½	17	18¾	20¾	22	25	28
B.....	14	15	17	19	20	21½	24	27½	30½	35	35½	38	42
C.....	6	6½	7½	8½	9	10	10½	11	12½	14	15	16	17½
D.....	6	6	6	7½	8	9	10½	11	12½	14	14	15	15
Drip.....	1½	1½	1½	¾	¾	¾	1	1	1	1½	1½	1½	1½
Each.....	\$24 00	\$28 00	\$34 00	\$40 00	\$48 00	\$56 00	\$66 00	\$76 00	\$90 00	\$110 00	\$124 00	\$150 00	\$170 00

All list prices are subject to discount.

"WILLIAMS
COOKSON"
STEAM-TRAPS.

The "Williams Cookson" High-pressure Steam-Trap is designed for a working pressure of 200 pounds; the low-pressure trap is adaptable to pressures up to 30 pounds. The body and cover of trap are of hard, close-grained cast-iron, working parts and trimmings of best steam metal. There are no stuffing-boxes and a minimum of working parts, and leakage of steam is absolutely eliminated.



Valve Mechanism

"WILLIAMS COOKSON" HIGH-PRESSURE STEAM-TRAP

For pressure up to 200 pounds

OPERATION OF
"WILLIAMS
COOKSON"
STEAM-TRAPS.

The condensation enters the receiving-chamber at the top of the trap. As the water-level rises the float operates the valve with absolute precision, and the water is discharged as fast as it fills the trap. The trap can be blown off while in use, and the mechanism is easily accessible without disturbing the pipe connection.

ORDERS.

In ordering traps, always state the pressure for which they are to be used, otherwise "high-pressure" will be sent.

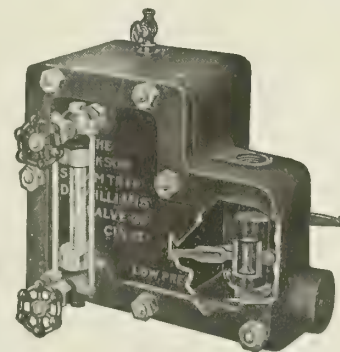
PRICES (SUB-
JECT TO
DISCOUNT).

"WILLIAMS COOKSON" HIGH-PRESSURE STEAM-TRAP

Number of Trap.....	1	2	3	4	5	6
Gross weight..... pounds	35	60	75	100	110	170
Size of Connections..... inches	1½	¾	1	1¼	1½	2
Capacity in pounds of water per minute.....	4	6	10	16	25	40
Square feet of heating surface will drain.....	600	1000	1600	3000	4500	6000
Lineal feet of inch-pipe will drain.....	1800	2750	4500	8000	12,000	18,000
Each.....	\$25 00	\$22 50	\$28 00	\$35 00	\$50 00	\$70 00

"WILLIAMS COOKSON" LOW-PRESSURE STEAM-TRAP

Number of Trap.....	1	2	3	4	5	6
Gross weight..... pounds	40	50	60	65	75	95
Size of Connections..... inches	1½	¾	1	1¼	1½	2
Capacity gallons per hour 3 lbs. pressure.....	600	950	1500	26 00	31 00	3700
Each.....	\$20 50	\$22 50	\$28 00	\$35 00	\$50 00	\$70 00



"WILLIAMS COOKSON"
LOW-PRESSURE
STEAM-TRAP

For pressure up to 30 pounds

DISTRIBUTION.

Our goods are carried in stock by dealers in all of the principal cities. Complete catalogue on request.

THE SCHOTT SPECIALTY CO.

Manufacturers of Steam Specialties

315 Dearborn Street
CHICAGO, ILL.

LONG DISTANCE TELEPHONE, HARRISON 3967

PRODUCTS.

We manufacture the "AUTO-VAC" AUTOMATIC VACUUM AIR-VALVE, and "DURAM" SPECIAL HEATING TRAP.

"AUTO-VAC" AUTOMATIC VACUUM AIR-VALVE.

The installation of this valve is all that is required to complete a perfect system of vacuum steam heating, having all of the desirable regulation of a water system, with the low first-cost of a steam system, giving greater flexibility, and with a saving in fuel of from 7 to 25 per cent over the ordinary gravity steam system.

This valve is particularly adapted to old single-pipe or two-pipe systems that are sluggish in their circulation, or to remote radiators that will not stay hot. Such trouble may be entirely overcome, and at small expense, by the installation of an "Auto-Vac" Automatic Vacuum Air-Valve and the thorough packing of the radiator valves, etc.

The list price is \$3.00, with a liberal discount to the trade. The valve is absolutely guaranteed.

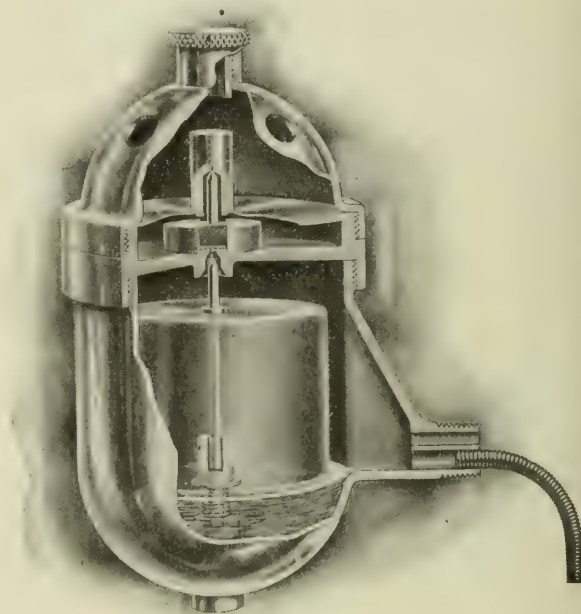


FIG. 1. "AUTO-VAC" AUTOMATIC VACUUM AIR-VALVE

"DURAM" SPECIAL HEATING TRAP.

The "Duram" Special Heating Trap, shown in Fig. 2, is designed particularly to meet the requirements of Central Station Heating Plants and low-pressure steam users in general, where a demand has been created for the discharge of large quantities of water under extremely low pressures.

ADVANTAGES.

The "Duram" Special Heating Trap is automatically vented, can not stick or air-bind, has extremely large valve area equal to inlet or outlet, and will discharge immense amounts of condensation by virtually no steam pressure whatever, yet it operates perfectly on all pressures up to 15 pounds. It is a balanced-valve trap without a lever and has the largest capacity of any trap made.

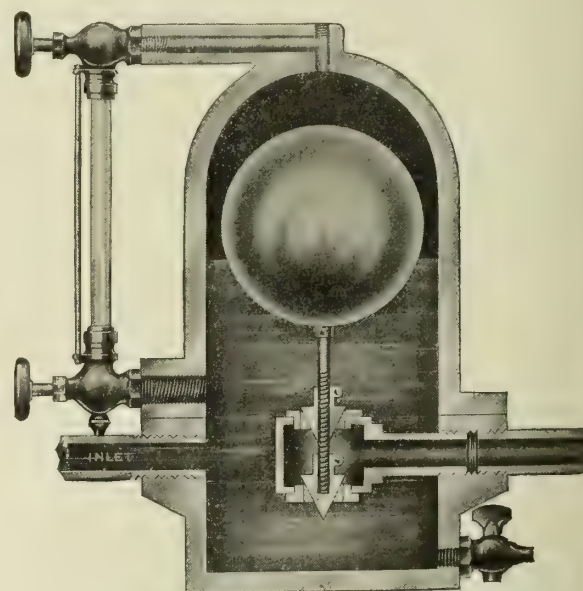


FIG. 2. "DURAM" SPECIAL HEATING TRAP

PRICE, SIZE, AND CAPACITY.

The price of each size trap, with capacity, is given in the accompanying table:

Size, inlet and outlet	$\frac{3}{4}$ inch	1 inch	1 $\frac{1}{4}$ inches	1 $\frac{1}{2}$ inches	2 inches
Pounds discharge per hour	2,500	4,000	6,000	8,000	16,000
Square feet radiation	1,500	2,500	4,000	6,000	12,000
List price, complete	\$25.00	\$28.00	\$35.00	\$45.00	\$60.00

Low pressure from 0 to 15 pounds. Liberal discount will be given to the trade.

ARMSTRONG CORK COMPANY

Insulation Department

PITTSBURGH, PA.

DISTRIBUTERS

THE PHILIP CAREY CO., Lockland, Cincinnati, Ohio
NONPAREIL CORK WORKS, Fulton Bldg., 50 Church St., New York, N. Y.
JOHN R. LIVEZEY, 1933 Market St., Philadelphia, Pa.

FACTORY
CAMDEN, N. J.

PRODUCTS.

NONPAREIL CORK PIPE COVERING ("Nonpareil Cork," Trade-Mark) for Brine, Ammonia, Ice-Water, Beer and Cold-Water lines.

Also NONPAREIL CORKBOARD as described elsewhere in this Catalogue, for which see our name in General Index.

NONPAREIL CORK PIPE COVERING.

It consists of pure granulated cork, compressed in moulds and baked at a high temperature in such fashion as to enhance the inherent insulating properties of the raw material. The sections of covering, 36" in length, and the fitting covers as well, are coated with a mineral rubber compound, which affords a durable finish and lends additional protection against moisture and all other deteriorating influences.

SERVICE DETAILS.

Nonpareil Cork Pipe Covering is manufactured in four thicknesses to meet different service conditions:

(1) Heavy or Brine Covering, from 2" to 3" thick, is designed for brine and ammonia gas lines, and generally where the refrigerant has a temperature below 32° Fahr.

(2) Medium or Ice-Water Covering, approximately 1½" thick, is intended for use on refrigerated drinking water, liquid ammonia, and beer lines, and generally where temperatures of from 32° to 45° Fahr. are carried.

(3) Light or Cold-Water Covering, approximately 1" thick, is for use on cold-water piping to prevent sweating.

(4) Special Thick Brine Covering from 3" to 4" in thickness, is manufactured to meet a demand for extra heavy covering for brine lines, where, owing to the temperature of the refrigerant, the service conditions are particularly severe.

ADVANTAGES.

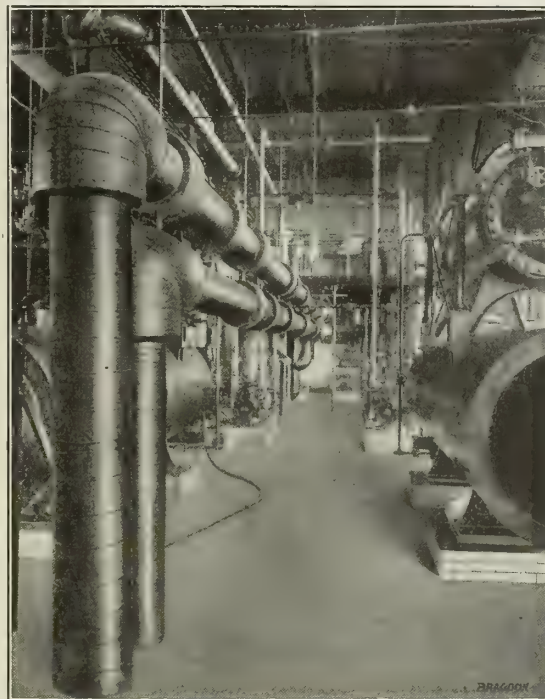
(1) Lowest heat conductivity, insured by the millions of sealed air-cells of the natural cork. (2) Free from capillary attraction, non-absorbent of moisture, and hence proof against all progressive deterioration. (3) Light, clean, and neat in appearance. (4) Easily applied.

SPECIFICA- TIONS.

Brine and Ammonia Lines—All Brine and Ammonia lines shall be covered with Nonpareil Cork Brine Covering, approximately 2½" thick, applied with waterproof cement on all joints, and wired in place, using not less than six wires to a section. All screwed fittings up to and including 6" and all flanged fittings up to and including 3" shall be covered with moulded cork jackets, applied in a similar manner. All larger fittings, screwed or flanged, shall be covered with Nonpareil Cork lagging beveled to the proper radius, applied with asphaltic paint on the contact surfaces and wired in place. All spaces between covers and fittings shall be filled with Brine Putty. All covering, after being applied, shall be given one coat of asphaltic paint and finished as directed. There shall be not less than 12" between parallel lines and at least 8" between pipes and adjacent surfaces. All lines shall be supported by hangers on the outside of the covering, which shall be protected by a ⅜" sheet-iron shield extending 4" on either side.

Ice-Water or Beer Lines—The specification above may be employed for ice-water or beer lines by altering it so as to stipulate "Nonpareil Cork Ice-Water Covering approximately 1½" thick."

Cold Water Lines—The same specification may be used for cold-water lines by altering it so as to stipulate "Nonpareil Cork Cold-Water Covering approximately 1" thick."



8-INCH BRINE LINES COVERED WITH
NONPAREIL CORK

Pittsburgh Terminal Warehouses

KEASBEY & MATTISON COMPANY

MANUFACTURERS OF

Magnesia Steam-Pipe and Boiler Coverings and Asbestos Textiles

GENERAL OFFICES AND LABORATORIES

AMBLER, PA.

BRANCH OFFICES

LONDON, ENG., 218-219 Caxton House, Westminster
 NEW YORK, N. Y., 100 John Street
 BOSTON, MASS., Corner Congress and Purchase Streets
 CHICAGO, ILL., 208-210 Lake Street
 NEW ORLEANS, LA., 214 South Peters Street
 CLEVELAND, OHIO, 1390 West 9th Street
 CINCINNATI, OHIO, 528 Main Street
 ST. PAUL, MINN., 107 East Fourth Street
 WASHINGTON, D. C., 1111 14th Street, N. W.

ST. LOUIS, MO., 215-217 Chestnut Street
 OMAHA, NEBR., 1113 Harney Street
 PITTSBURG, PA., 209 Third Avenue
 MINNEAPOLIS, MINN., 307-309 South 6th Street
 ATLANTA, GA., 505 Chandler Building
 MILWAUKEE, WIS., 350 East Water Street
 PHILADELPHIA, PA., 18 South 7th Street
 PHILADELPHIA, PA., 1310 North American Building
 SEATTLE, WASH.

PRODUCTS.

Manufacturers of PHARMACEUTICAL PRODUCTS, 85% MAGNESIA STEAM-PIPE and BOILER COVERINGS, 85% MAGNESIA SECTIONAL LOCOMOTIVE LAGGINGS, "MAGNABESTOS" STEAM-PIPE and BOILER COVERING, "AMBLER" ASBESTOS AIR-CELL SECTIONAL COVERINGS and FIRE-BOARDS, WOOL-FELT SECTIONAL COVERINGS, CEMENTS of all descriptions in bags of 100 pounds, ELECTRICAL INSULATION of all descriptions, ASBESTOS PAPERS and MILLBOARDS, STEAM and AIR-PUMP PACKINGS, GASKETS, ASBESTOS CLOTH, ASBESTOS YARNS, INCANDESCENT THREAD, ASBESTOS TAPE, THEATER CURTAINS and ASBESTOS TEXTILES of every description, etc. In short—"If it's made of Asbestos, we've got it."

We are also factors for the distribution of the products of the Asbestos Shingle, Slate and Sheathing Company, manufacturers of Asbestos "Century" Shingles and Sheathing for roofing and general construction work.

FACILITIES.

Our plant is the largest of its kind in the world. Our facilities for promptly filling all orders entrusted to us, regardless of quantity, are unequaled.

TERRITORY.

The operations of the Company penetrate into every part of the world.

OFFICIAL INDORSE- MENT.

The products of this Company conform strictly to the Building Law requirements of New York, Chicago, Philadelphia, Boston, and all other cities and towns.

Our products also conform to the rules and requirements of Boards of Underwriters and similar bodies. Architects specifying our products obtain for their clients absolute freedom from all liabilities and disabilities of any kind whatsoever.

INSTRUCTIONS AS TO ORDERS.

All goods of standard size are kept in stock and can be supplied immediately, either direct from the manufacturers or through local agents authorized to accept contracts on behalf of this Company, a list of whom will be supplied upon request.

INSTALLA- TION.

Our goods can be installed by any contractor or local workman, or the work will be undertaken by ourselves, or through our local agents.

FORM OF SPECIFICA- TIONS.

When writing specifications for Steam-Pipe and Boiler Coverings, specify: "85% Magnesia Sectional Covering, 'K. & M.'"

THE GOULDS MFG. COMPANY

Pumps and Hydraulic Machinery

WORKS AND MAIN OFFICES

SENECA FALLS, N. Y.

PRINCIPAL BRANCHES

NEW YORK, 16 Murray St.

BOSTON, Tremont Bldg.

ST. LOUIS, Chemical Bldg.

SAN FRANCISCO 70-72 Tremont St.

PHILADELPHIA, 111 No. 5th St.

CHICAGO, Ohio and Franklin Sts.

PITTSBURG, 420 First Ave.

LOUISVILLE, 325-29 Main St.

NEW ORLEANS, Baronne and St. Joseph Sts.

LOS ANGELES, 212-14 So. Los Angeles St.

PRODUCTS.

HAND and POWER PUMPS for every service; CISTERN, WELL and HOUSE FORCE-PUMPS; WINDMILL, IRRIGATION and SHIP PUMPS; WATER-LIFTERS, HYDRAULIC RAMS; POWER-PUMPS for General Service—DEEP-WELL, ELEVATOR, VACUUM, AIR; MUNICIPAL WATER-WORKS, BOILER FEED, HYDRAULIC PRESSURE, FIRE PROTECTION, SPRINKLER SYSTEMS. Pumps may be operated by belt from line shaft or direct connected to steam, oil, gas, gasoline engine, or electric motor.

ADVANTAGES.

"Gould's" Triplex Power-Pumps are acknowledged to be the highest in efficiency of any pumps built. They are rapidly superseding the direct-acting steam-pump because of the high efficiency and remarkably low cost of operation, small floor space required, etc. These pumps deliver a continuous, steady flow of the liquid without the pulsating jerky action of a direct-acting steam-pump. The power is continuously and uniformly exerted on the fluid column. The cost of operating is from 60 to 80 per cent less in fuel alone with "Gould's" Triplex Power-Pumps than with the steam-pump.

GENERAL INFORMATION.

"Gould's" Fire-Pumps are constructed to meet the requirements of the Fire Underwriters' Association. Our Power-Pumps are self-contained and require only a firm foundation suitable to their size and capacity. Dimension blue-prints and estimates cheerfully furnished on request. Pumps can be built for any purpose upon receipt of full information.

CATALOGUES.

We issue a complete catalogue on all branches of power-pumping, which illustrates many applications of pumps in operation, together with complete and convenient arrangement of tables, information concerning the general operation of pumps, etc. These catalogues are at your service.

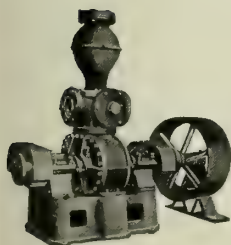
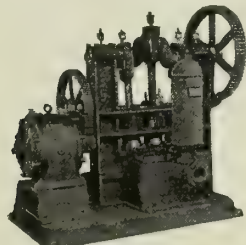
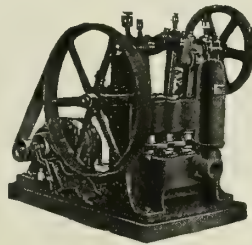


FIG. 1353
UNDERWRITERS'
ROTARY FIRE-
PUMP



FORM "C" ELECTRIC
MOTOR, DIRECT-
CONNECTED



FORM "A" ELECTRIC
MOTOR AND
IDLER

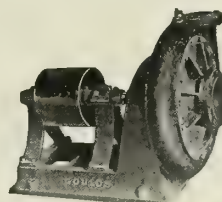
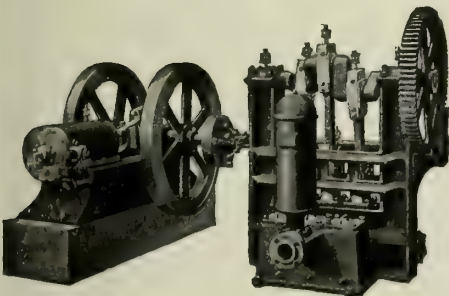


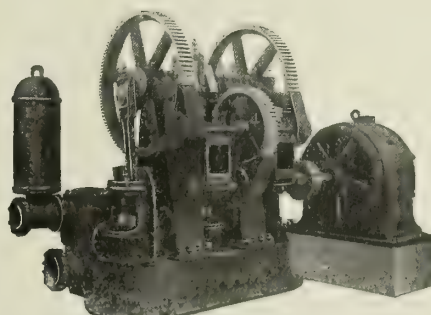
FIG. 1902
CENTRIFUGAL
PUMP



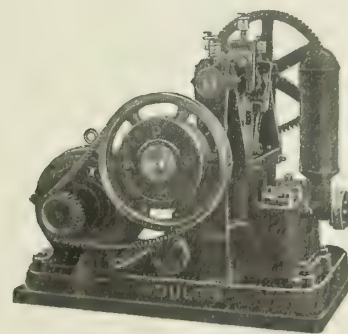
FIG. 971
"GOULD'S"
POWER
DIFFERENTIAL
WORKING-HEAD



FORM "D" FOR DIRECT CON-
NECTION WITH FRICTION CUT-OFF
COUPLING TO ENGINE



FORM "I" DRIVING-CONNECTION
DIRECT CONNECTED TO
ELECTRIC MOTOR



FORM "N" SILENT CHAIN
WITH SPROCKETS FOR
CONNECTION TO MOTOR

A. J. CORCORAN, INC.

ESTABLISHED 1865

Tanks, Windmills, and Water-Supply Material

11-13 John Street

NEW YORK, N. Y.

FACTORY

JERSEY CITY, N. J., Jersey Avenue and 13th Street

TELEPHONE, 3947 CORTLANDT

TELEPHONE, 238 JERSEY

PRODUCTS.

Manufacturers of TANKS, including SPECIAL TANKS for all purposes, FROST-PROOF TANKS, TANK SUNDRIES, TANK GAUGES, SUPPORTS for HOUSE TANKS, WINDMILLS, TOWERS, DYE TUBS, VATS, PUMPS.

DESCRIPTION
OF TANKS.

Our Tanks are made of cedar, cypress, white pine, oak, yellow pine, or other wood as specified, and are warranted water-tight and neither paint, putty nor calking are required to make them so. The A. J. C. band, made of high-grade iron (not steel) treated inside and out with anti-rust paint, with the lug on each end, constitutes the distinctive advantage possessed by our tanks above all others.

The band is put around the staves at the proper place, the lugs brought together and the draw rod passed through and secured and tightened with nut on each end. An anti-friction plate is also used between the wood and the lugs so that they slide easily together without injury to the staves. The larger tanks have several pairs of lugs on each band. By the aid of a wrench the nuts are turned and the space between the ends of the bands lessened, taking up all shrinkage of the wood, and making the tank perfectly water-tight. As the joints of the band can be placed in position to suit the exigencies of the work in hand, the superiority of this method is apparent when contrasted with the old style of riveted hoop, which latter must be forced into place all around the tank, which is often difficult and sometimes impossible.

We keep a number of such tanks as are required for house service in stock, and manufacture to order any size or dimension; and also furnish and put in place all the necessary iron or steel supports for City tanks.

Our method of frost-proofing tanks gives absolute protection.

OUTSIDE MEASUREMENTS OF TANKS

No.	Stave, ft. in.	Diam., ft. in.	Capacity, gals.	No.	Stave, ft. in.	Diam., ft. in.	Capacity, gals.	No.	Stave, ft. in.	Diam., ft. in.	Capacity, gals.	No.	Stave, ft. in.	Diam., ft. in.	Capacity, gals.
1	5	5	560	25	8	5	902	49	10	20	20,855	72	14	14	13,965
2	5	6	845	26	8	6	1,348	50	12	6	1,955	73	14	14 6	15,144
3	5	7	1,159	27	8	7	1,882	51	12	8	3,663	74	14	16	18,376
4	5	8	1,540	28	8	8	2,506	52	12	7	2,742	75	14	18	23,492
5	5	9	1,974	29	8	9	3,219	53	12	9	4,718	76	14	20	29,189
6	5	10	2,462	30	8	10	4,021	54	12	10	6,036	77	14	16 8	20,014
7	6	4 6	536	31	8	12	5,892	55	12	10 9	7,035	78	16	10	7,593
8	6	5	675	32	9	6	1,514	56	12	12	8,807	79	16	12	11,266
9	6	6	1,007	33	9	7	2,117	57	12	11 6	8,111	80	16	14	15,663
10	6	7	1,403	34	9	8	2,821	58	12	13	10,418	81	16	16	20,781
11	6	7 4	1,500	35	9	9	3,625	59	12	14	12,119	82	16	18	26,623
12	6	8	1,865	36	9	10	4,531	60	12	15 6½	15,064	83	16	20	33,187
13	6	9	2,393	37	9	11	5,538	61	12	16	15,885	84	16	22	40,474
14	6	10	2,986	38	9	12	6,645	62	12	17 11	20,080	85	16	24	48,483
15	6	12	4,369	39	10	5	1,114	63	12	20	25,145	86	16	24 6	50,598
16	6 6	7	1,525	40	10	6	1,670	64	14	7	3,141	87	16	30	76,915
17	7	5	790	41	10	7	2,338	65	14	7 10	4,028	88	16	33 6	100,315
18	7	6	1,179	42	10	8	3,119	66	14	8 8	5,028	89	16	38 1	125,003
19	7	6 6	1,401	43	10	9	4,014	67	14	9	5,421	90	18	10	8,504
20	7	7	1,644	44	10	10	5,015	68	14	9 5	6,016	91	18	16	23,357
21	7	8	2,188	45	10	12	7,360	69	14	10	6,849	92	18	24	54,680
22	7	9	2,836	46	10	14	10,065	70	14	10 2	7,093	93	18	30	86,597
23	7	10	3,506	47	10	16	13,162	71	14	12	10,239	94	18	32 2½	100,093
24	7	12	5,134	48	10	18	16,788								

OFFICIAL
ENDORSE-
MENT.

Our designs for supports for house tanks have the approval of the New York Building Department.

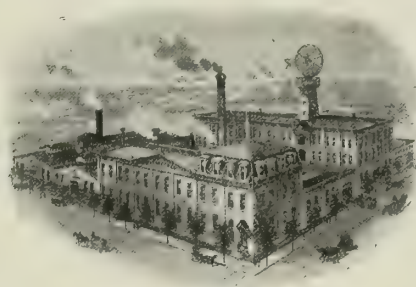
ESTIMATES
AND
CO-OPERATIVE
SERVICE.

Our prices are as low as is consistent with first-class material and workmanship. We will furnish estimates for any size, delivered in knock-down or erected, and also for the frame and bed pieces for the bottom to rest upon. The structures upon which it is intended to place the tanks must be of the requisite strength so distributed as to afford the best results.

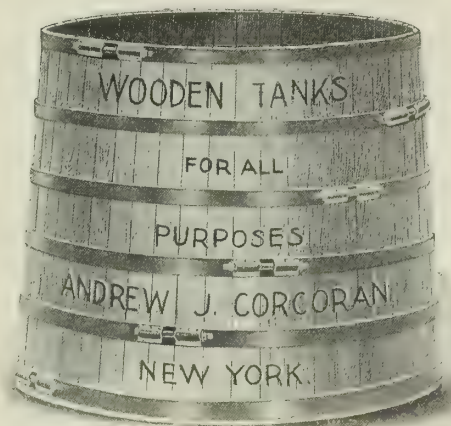
On this point we shall be pleased to give purchasers information based upon long experience; also concerning tanks for various purposes, their uses and the material most appropriate, as well as for the substructures, from the least expensive to the most ornamental, and, in short, on anything pertaining to water supply.



CORCORAN WATER TOWER,
ROSLYN, L. I.



FACTORY OF A. J. CORCORAN, INC.,
JERSEY CITY, N. J.



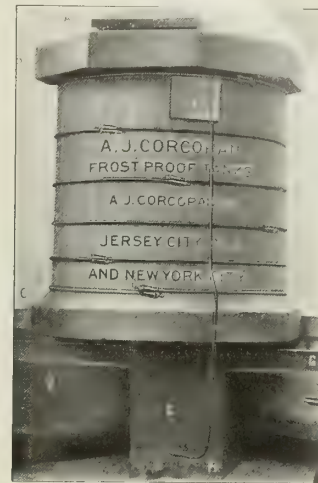
ROUND TANK

CORCORAN WINDMILLS.

The Corcoran Windmill is the result of nearly fifty years of practical experience in the manufacture of windmills. It is made mostly of steel, wrought and malleable iron, uniting great strength and durability with lightness and simplicity of construction. It is fifty per cent stronger than any other windmill, and the only mill the parts of which are made to standard gauge and are absolutely interchangeable. The mill is fitted with the new "X" governor and a new device for bracing wind wheel, and a new direct-balance connection, working in noiseless guides for transmitting the power of the windmill to the pump. It is the only mill having scientifically graduated blades, the only mill having woodwork subjected to a process preventing decay, and the only mill which withstands the gales on the seacoast, having withstood all storms since 1865. There is no necessity for its being taken down in winter.

There are now more than 1,000 of these mills erected in the vicinity of New York, besides being in operation in nearly every part of the globe.

They are made in fourteen sizes. Estimate of cost complete, furnished upon application.



FROST-PROOF TANK,
ERECTED ON CORNER OF
DWELLING ROOF WALLS
Capacity 1,500 gallons



CORCORAN WINDMILL PUMPING OUTFIT,
SHOWING TANK AND SUPPORTING
TOWER

Built to order to suit conditions. Tank capacity from 3,000 to 5,000 gallons; size of windmill decided by elevation of water and quantity required per day

THE DEMING COMPANY

Pumping Machinery

SALEM, OHIO

GENERAL AGENCIES

CHICAGO, ILL., HENION & HUBBELL, 61-69 North Jefferson Street
 PITTSBURG, PA., HARRIS PUMP & SUPPLY Co., 320 Second Avenue
 PHILADELPHIA, PA., W. P. DALLETT, 49 North Seventh Street
 NEW YORK, N. Y., RALPH B. CARTER Co., 50 Church Street
 BOSTON, MASS., CHAS. J. JAGER Co., 281-285 Franklin Street
 BUFFALO, N. Y., ROOT, NEAL & Co., 178-180 Main Street
 SAN FRANCISCO, CAL., HENSHAW, BULKLEY & Co., 219-221 Spear Street
 RICHMOND, VA., SYDNOR PUMP & WELL Co.
 SEATTLE, WASH., MORAN ENGINEERING Co.

BALTIMORE, MD., CROOK-HORNER Co., 301 North Howard Street
 LOUISVILLE, KY., LAIB Co., 441 West Main Street
 BIRMINGHAM, ALA., MOORE & HANDLEY HARDWARE Co.
 KANSAS CITY, MO., THE ENGLISH IRON WORKS Co.
 DENVER, COLO., HENDRIE & BOLTHOFF MFG. & SUPPLY Co.
 LOS ANGELES, CAL., SMITH-BOOTH-USHER Co.
 MONTREAL, CANADA, DARLING BROTHERS
 NEW ORLEANS, LA., WILMOT MACHINERY Co.
 TAMPA, FLA., FLORIDA GAS ENGINE & SUPPLY Co.

PRODUCTS.

Manufacturers of PUMPING MACHINERY for operation by any power, including SINGLE- and DOUBLE-ACTING TRIPLEX PUMPS for various services, DEEP-WELL POWER WORKING HEADS, ARTESIAN WELL CYLINDERS, ROTARY PUMPS, etc. We also make a complete line of HAND PUMPS for shallow and deep wells, WIND-MILL PUMPS and STANDARDS, HYDRAULIC RAMS, HAND FIRE-ENGINES, SPRAY PUMPS, NOZZLES, etc.

FACILITIES.

With our 120,000 square feet of floor area and thoroughly modern equipment of machinery and appliances devoted exclusively to the manufacture of pumps, we are in a position to insure the prompt execution of all contracts.

ADAPTABILITY OF PRODUCTS.

Our power pumps are of the highest type of construction and are particularly adapted for water works, mine service, boiler feeding, hydraulic elevators, railway water supply and general service in paper mills, factories, etc.

GENERAL INFORMA- TION.

Orders for our power pumps, and inquiries regarding same, will have our most careful attention. We should be pleased to have an opportunity of submitting estimates on power pumps for such work as is mentioned above, and will either place same in charge of our Engineering Department or refer to our nearest agency.

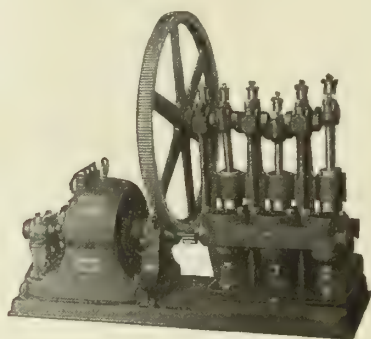


FIG. 1. (Catalogue No. 46)

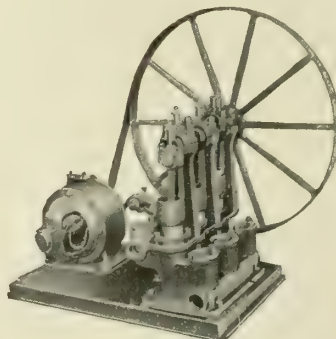


FIG. 2. (Catalogue No. 47)

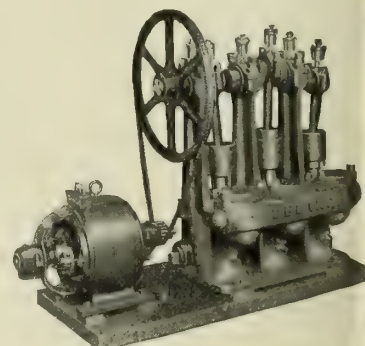


FIG. 3. (Catalogue No. 49)

"DEMING" TRIPLEX PUMPS WITH ELECTRIC MOTORS

"DEMING" ELECTRIC- DRIVEN TRIPLEX PUMPS.

In Figs. 1, 2 and 3 we show different methods of connecting an electric motor with our Triplex House Pump, while Fig. 4 represents one of our popular Deep-Well Power Working Heads.

For quietness of running and durability these combinations of motor and pump can not be excelled.

Fig. 1 shows the connection made by a single reduction of machine-cut gearing, the motor pinion being made of rawhide, unless specified of bronze or steel.

Fig. 2 shows the connection made by belt and spring idler; because of the absence of any gearing this is unusually quiet in operation.

Fig. 3 is also noiseless in operation, the connection being by silent chain and gearing.

SIZES, ETC., OF TRIPLEX PUMPS.

Plungers Diameter, Inches	Stroke, inches	Capacity		Maximum Working Pressure, Pounds	Diameter of Pipes	
		Gallons per Revolution	Usual Speed and Capacity per Minute		Suction, Inches	Discharge, Inches
1½	1½	.034	140 revs. 4.76 gals.	100	1½	1
2	2	.081	120 revs. 9.7 gals.	100	2	1½
2½	2	.127	120 revs. 15.2 gals.	100	2	1½
2½	3	.19	110 revs. 20.9 gals.	100	2½	2
3	3	.27	110 revs. 29.7 gals.	100	2½	2
3½	3	.37	110 revs. 40.7 gals.	100	2½	2
3½	4	.50	90 revs. 45.0 gals.	100	3	2½
4	4	.65	90 revs. 58.5 gals.	100	3	2½

Fig. 4. shows a Deep-Well Pump specially adapted for supplying water from deep wells for private estates, manufacturing plants, farms, etc. The "low-down" design makes it exceptionally substantial and accessible.

The main base is of cast-iron, and carries the crank and pinion shaft bearings, which are lined with best babbitt metal.

The gearing is machine cut, the main gear being bolted to a flange integral with the crank shaft.

The cross-head is babbitt-lined, and the guide rods are of polished steel.

Each pump has a polished steel differential plunger which discharges part of the water on the down stroke, thus equalizing the load and giving a more uniform flow of water.

In connection with this working head we recommend the use of our deep-well brass cylinder, as shown in Fig. 5, together with octagon wood sucker rod.

SIZES, ETC., OF DEEP-WELL PUMPS.

Stroke, Inches	Maximum Diameter of Pipes		Gear Ratio	Tight and Loose Pulley	Maximum Height, Inches
	Suction, Inches	Discharge, Inches			
8, 9, and 10	4½	2½	6 to 1	16 x 3	40½
12, 14, and 16	6	3	7 to 1	20 x 5	51

Diameter and Stroke of Cylinder	Capacity		* Maximum Depth of Well, Feet
	Gallons per Rev. of Crank Shaft	Usual Speed and Capacity at Maximum Stroke per Minute	
2¾ x 10	.257	40 revs. 10.2 gals.	300
2¾ x 16	.411	35 revs. 14.3 gals.	300
3¾ x 10	.478	40 revs. 18.1 gals.	175
3¾ x 16	.765	35 revs. 26.7 gals.	175
4¾ x 10	.614	40 revs. 24.5 gals.	135
4¾ x 16	1.227	35 revs. 42.8 gals.	110
5¾ x 16	1.499	35 revs. 52.4 gals.	95
5¾ x 16	1.798	35 revs. 62.9 gals.	75

* Refers to vertical distance from surface of water to point of delivery.

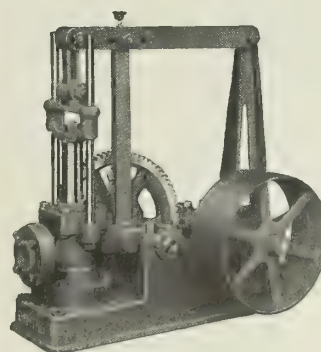


FIG. 4. DEEP-WELL PUMP



FIG. 5. DEEP-WELL CYLINDER

(Catalogue No. 324)

HYGEIA FILTER COMPANY

GENERAL OFFICE AND FACTORY

Larned and First Streets
DETROIT, MICH.

BRANCH OFFICES

DALLAS, TEXAS, 368 Commerce Street
NEW YORK, N. Y., 4 Cedar Street

KANSAS CITY, MO., 24 Scarritt Building
LOS ANGELES, CAL., 113 Merchants Trust Building
MEXICO CITY, MEX., 4a Calle de los Heroes, No. 62

PRODUCTS.

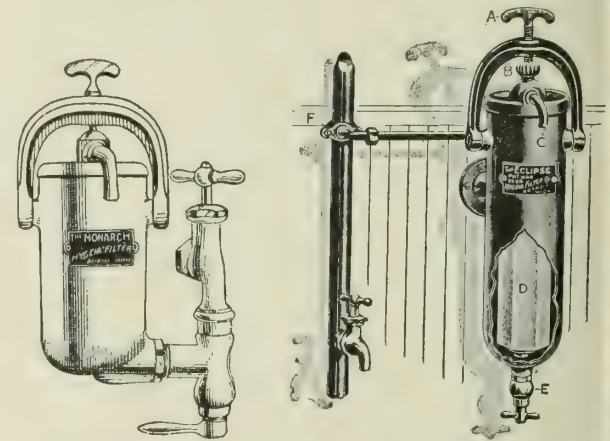
"MONARCH," "ECLIPSE," "MONITOR" and "STEWART" STONE FILTERS; "BOWDEN" SINGLE-VALVE, "BOWDEN" SINGLE-CHAMBER, "BOWDEN" DOUBLE-CYLINDER SAND and CHARCOAL FILTERS; "STEWART" MECHANICAL AGITATOR and NON-AGITATOR FILTERS.

"ECLIPSE" STONE FILTERS.

The "Eclipse" Filters are of the simplest construction. The filter stone can be removed and cleaned in ten seconds.

All are used extensively in apartment houses as individual filters. All stones used in the "Monarch" and "Eclipse" Filters are "flat surface," patented, and are far superior to round stones.

	Dimension of Stone, in inches		Capacity per hour
	Length	Diameter	Gallons
"Monarch".....	4½	2½	10
"Eclipse" No. 0 ..	6	2¼	20
" " No. 1 ..	10	3	30
" " No. 1½	12	3	40
" " No. 2	14½	4	50



"Monarch"

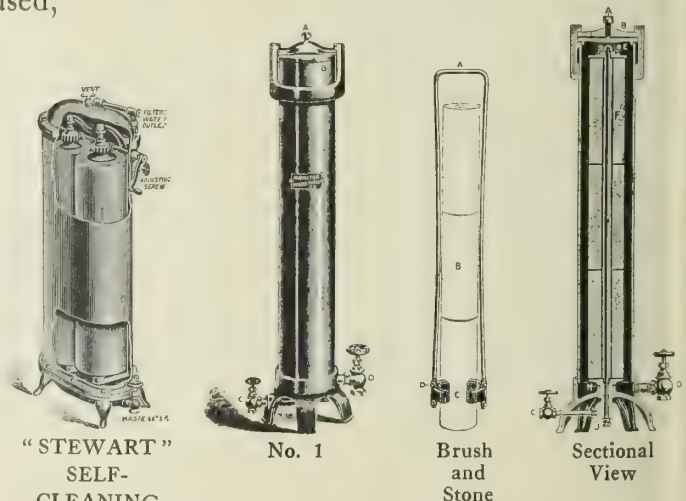
"Eclipse"

STONE FILTERS

"MONITOR" STONE FILTERS.

The "Monitor" Filters are made in four sizes, indicating the number of casings used, and are forty-eight inches high. In figuring head room the length of the brush handles must be taken into consideration, the total height necessary being seven feet. Each casing is provided with an independent shut-off valve. The Filters are easily cleaned by means of the circular brush, as shown.

"Monitor"	Inlet and Outlet Pipes, Inches	Waste Pipe, Inches	Capacity, U. S. Gallons Per Hour
No. 1	¾	½	50
" 2	½	¾	100
" 3	¾	1	150
" 4	¾	1	200



"STEWART" SELF-CLEANING FILTER

No. 1

Brush and Stone

Sectional View

"MONITOR" FILTER

"STEWART" SELF-CLEANING STONE FILTER.

This Filter is specially adapted for filtering the entire supply of private residences, and the drinking supply of large buildings. To clean, it is only necessary to turn the crank a few revolutions, which revolves the stones in opposite directions, one rubbing against the other. This, with a reverse current of water, scours the impurities from the stones. The filter has a capacity of one hundred and fifty gallons of water per hour.

"BOWDEN" SINGLE-VALVE AND DOUBLE-CYLINDER FILTERS.

The "Bowden" Single-Valve or Double-Cylinder Filters are specially designed for filtering the entire supply of private residences, office buildings, hospitals, laundries, breweries, etc., and where the requirements call for exceptionally clear, bright water, free from all suspended matter. These filters can be used with or without coagulation. The shells are made from the best high-pressure steel plate, heavily galvanized. The interior parts are tinned brass. The top pipe and fittings are galvanized. The filtering medium used in all these Filters is the finest quality of white crushed quartz or bone black (charcoal). Pure filtered water is delivered to all parts of the building without any perceptible loss in the water pressure.

They are used by the United States Government.

SIZES AND CAPACITIES OF "BOWDEN" SINGLE-VALVE FILTERS

	Size	Connections		Area	Capacity	Extreme Height Over All Feet	Gross Weight in Operation Lbs.
	Diameter of Shell,	Inlet and Outlet Pipes,	Waste Pipe,	Square Feet Filtering Surface	U. S. Gallons		
	Inches	Inches	Inches		Per Hour		
No. 1	12	1/2	3/4	3/4	150	5 1/2	500
" 2	14	3/4	1	1	180	5 1/2	600
" 3	16	3/4	1	1 1/4	300	5 1/2	700
" 4	20	1	1 1/4	2	400	5 1/2	1000
" 5	24	1 1/4	1 1/2	3	600	5 1/2	1500

Capacity will vary according to the condition of the water to be filtered.

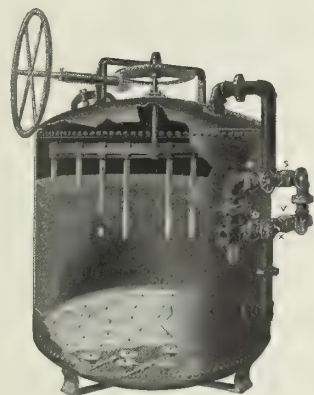
SIZES AND CAPACITIES OF "STEWART" AGITATOR AND NON-AGITATOR FILTERS

	Size	Connections		Area	Capacity	Extreme Height Over all	Gross Weight in Operation
	Diameter of Shell.	Inlet and Outlet Pipes	Waste Pipes	Square Feet Filtering Surface	U. S. Gallons	Feet	Tons
	Inches	Inches	Inches		Per Hour		
No. 15	36	1 1/2	2	7	1250	8	2 3/4
" 16	42	2	2 1/2	9 1/2	2000	8	3 1/2
" 17	48	2	3	12	2400	8	4 3/4
" 18	60	2 1/2	4	19	3600	9	6
" 19	72	3	4	28	5400	10	10 1/2
" 80	84	4	5	38	7600	10	15 1/2
" 70	96	5	6	50	10000	10	23

Capacity will vary according to the condition of the water to be filtered.

"STEWART" AGITATOR AND NON-AGITATOR SAND FILTERS.

The "Stewart" Agitator and Non-Agitator Sand Filters embody all the latest and up-to-date improvements, and are designed especially for very large capacities, and where the water to be filtered is extremely muddy. The stirring device inside the filter aids materially in breaking up the filter bed during the washing process. The shells are made from the best mild boiler steel. The strainers are phosphor bronze, made in two parts, which when screwed together present an annular slot, through which the filtered water passes. All valves, pipe and fittings are standard. All our Sand Filters are constructed with a sight glass, so that the operator can determine the condition of both the filtered and unfiltered water. These filters are constructed singly or in battery as desired, and can be used with or without coagulation.



"STEWART" AGITATOR FILTER

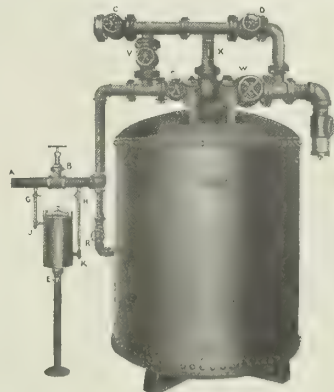
"BOWDEN" SINGLE-CHAMBER FILTERS.

The "Bowden" Single-Chamber Filters are constructed and operated on the same general principle as the Single-Valve Filters, the only difference being that several valves, instead of one, control their operation. They are constructed singly or in battery and can be used with or without coagulation.

SIZES AND CAPACITIES OF "BOWDEN" SINGLE-CHAMBER FILTERS

	Size	Connections		Area	Capacity	Extreme Height Over All	Gross Weight in Operation
	Diameter of Shell,	Inlet and Outlet Pipes,	Waste Pipe.	Square Feet Filtering Surface	U. S. Gallons		
	Inches	Inches	Inches		Per Hour	Feet	Lbs
No. 6	30	1½	2	4¾	900	6	2200
“ 7	36	2	2½	7	1250	7	3100
“ 8	42	2	3	9½	2000	7	4000
“ 9	48	2½	3	12	2400	7	5000

Capacity will vary according to the condition of the water to be filtered.



"BOWDEN" SINGLE-CHAMBER FILTER



"BOWDEN" IMPROVED DOUBLE-CYLINDER FILTER

JEWELL WATER IMPROVEMENT CO.

MANUFACTURERS OF

Water-Filtration, Softening and Distilling Plants

617-619 West Jackson Boulevard
CHICAGO, ILL.

PRODUCTS
AND
SERVICES.

We are Engineers and Contractors for and Manufacturers of WATER-FILTRATION, SOFTENING and DISTILLING PLANTS; SUBSIDENCE PLANTS; STERILIZING APPARATUS; AERATION DEVICES; and FRIGID DRINKING-FOUNTAIN SYSTEMS, under patents of Ira H. Jewell.

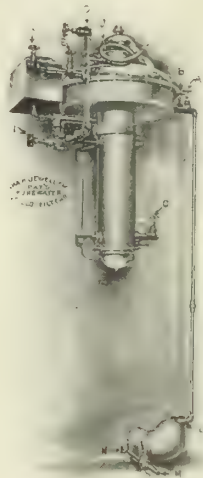


PLATE No. 440
"JEWELL" WATER
STILL
Capacity, 15 gallons per
hour. Mounted on
wall bracket

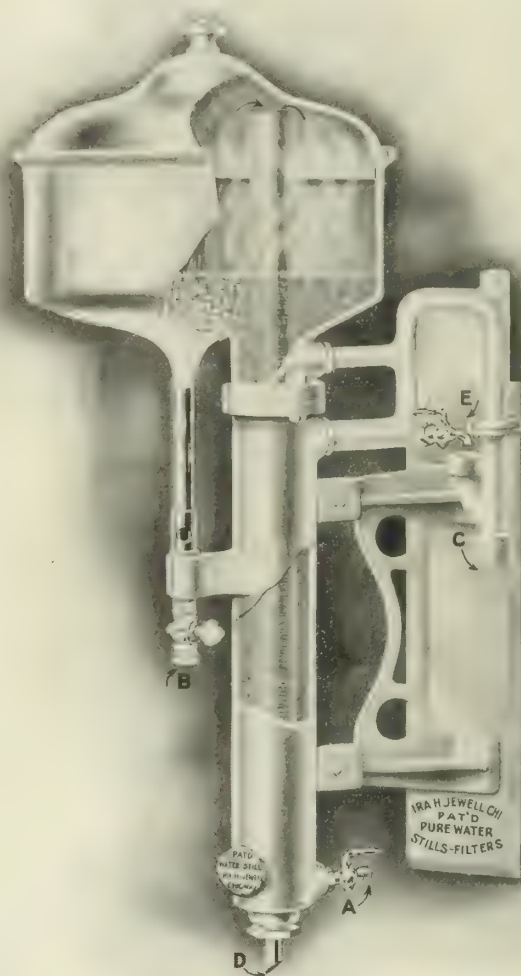


PLATE No. 354. Capacity, $\frac{1}{2}$ gal. per hour
"JEWELL" WATER STILL

PLATE No. 359. Capacity, 1 gal. per hour

PLATE No. 364. Capacity, $1\frac{1}{2}$ gals. per hour

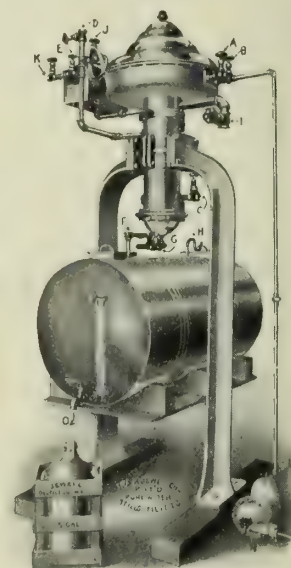


PLATE No. 460 (Single)
"JEWELL" WATER STILL
Capacity, 25 gallons per hour.
Mounted on legs

"JEWELL"
WATER
STILLS.

"Jewell" Water Stills (with gas burners), Plates Nos. 354, 359, and 364, are scientifically constructed for the production of chemically pure, thoroughly aerated and palatable distilled water, for drinking, technical, surgical, industrial, and all other purposes. It is entirely automatic in operation after starting. It is durably and simply constructed, and will last indefinitely. Made of machined-iron castings, baked white porcelain enameled inside of boiling chamber, and handsomely finished outside.

"Jewell" Water Stills (steam operating) are in daily service throughout the world, supplying chemically pure, thoroughly aerated and palatable distilled water for all purposes.

Architects generally are specifying our stills for hotels, clubs, hospitals, office buildings, residences, etc., wherever an absolutely pure quality of water is essential.

The "Jewell" Water Stills of large capacity are equipped with steam coils through which the heat units of live steam are transmitted to the water for boiling purposes. See Plates No. 440 and No. 460.

These stills are made in capacities of from 3 gallons per hour up to 200 gallons per hour.

Every high school in Chicago, several in New York, and numerous other schools, colleges, etc., are supplying pure water for drinking and laboratory purposes with a "Jewell" Water Still.

We are prepared to give advanced ideas on drinking-water systems to any architect interested.

"JEWELL"
STONE
FILTER.

Where a filter of small capacity to clarify ordinary water is required, we recommend our small Stone Filter. Made in sizes from 3 to 50 gallons per hour. See Plate No. 532.

"JEWELL"
WATER
FILTER,
WITH
COAGULATING
TANK.

"Jewell" Water Filters of large capacity are universally used for purifying water of all characters for all requirements. We are prepared to furnish estimates and specifications on filters of any capacity or type. See Plates No. 562 and No. 582.

Our experience and facilities give us first place in our line. Usual or unusual conditions will be satisfactorily handled by us. We can solve any water problem.

We shall be glad to send our catalogue, showing "Jewell" Water Stills and "Jewell" Water Filters, upon request.

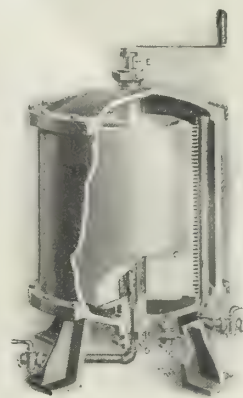


PLATE No. 532
"JEWELL" STONE
FILTER

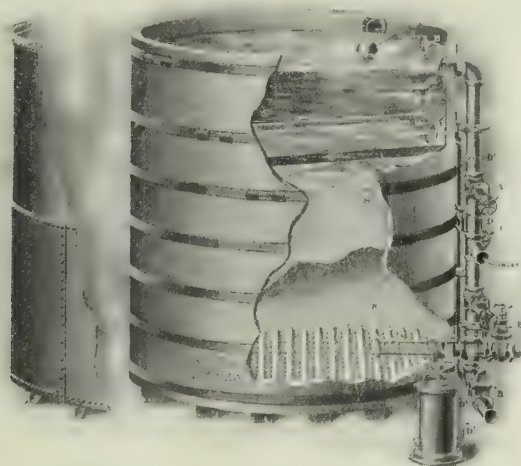


PLATE No. 582
Made in sizes from 3,500 to 21,500 gallons per hour.
Wood, steel, or concrete tanks

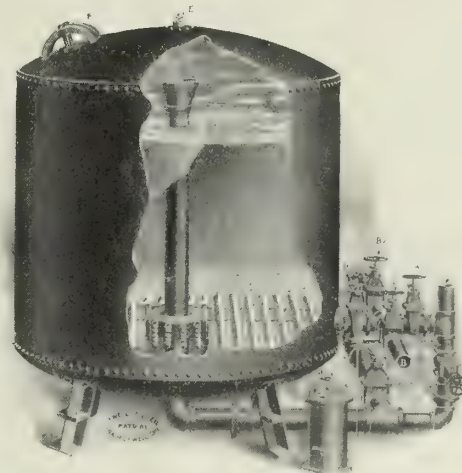


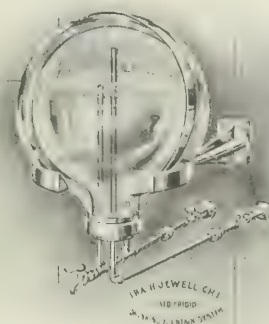
PLATE No. 562
Made in sizes from 3,500 to 6,000 gallons per hour,
Tested to 100 lbs. water pressure. Steel tanks

"JEWELL" WATER FILTERS

"JEWELL"
FRIGID
DRINKING-
FOUNTAIN
SYSTEMS.

A means of distributing pure cold water throughout a building through pressure globes so that the drinking supply is at all times visible—taking the place of the unsanitary bottle-top coolers so commonly used.

This system does away with the expense of buying ice and water for stand coolers and the attention of janitors, bell-boys, etc., in keeping the coolers filled. Recognition should be given to the saving of floor space by this method.



"JEWELL" FRIGID DRINKING-
FOUNTAIN

KEWANEE WATER SUPPLY CO.

MANUFACTURERS OF

The Kewanee System of Water Supply

KEWANEE, ILL.

BRANCH OFFICES

NEW YORK, N. Y., 50 Church Street

PITTSBURG, PA., 305 Diamond Bank Building

CHICAGO, ILL., 1212 Marquette Building

PRODUCTS.

KEWANEE WATER-SUPPLY SYSTEMS; COMPLETE PLANTS for FILTERING and AERATING WATER; KEWANEE PNEUMATIC TANKS; KEWANEE ENGINES and PUMPS; KEWANEE PUMPING MACHINERY, and WATER-WORKS SUPPLIES.

DESCRIPTION.

The Kewanee is the original pneumatic system of water supply, the water being stored in air-tight steel tanks usually placed in the cellar, and delivered by means of compressed air.

The tank may be placed either horizontally or in an upright position, the principle of operation being the same; and the tanks are made in a great variety of sizes, to accommodate all conditions.

For the larger systems the tank may be buried in the ground, and in some cases the tanks and pumping machinery are installed in a separate building.

Any power that is available may be applied in operating the Kewanee System; hand pump, windmill, gasoline engine, hydraulic ram, hot-air engine, steam pump, and electric motor have all been used with the most satisfactory results.

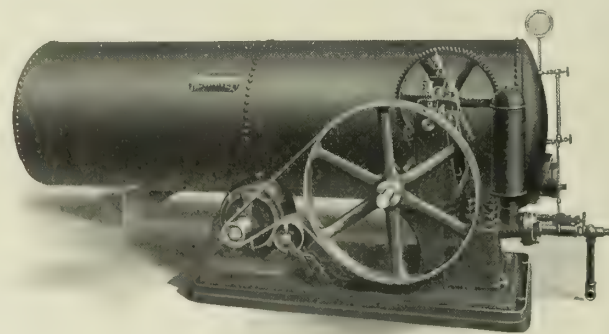
The Kewanee Water Supply Systems are made up in over seventy different standard combinations, are complete in every detail, with all necessary pipes and fittings, and can be installed by any mechanic.

Kewanee Engines and Kewanee Combined Engines and Pumps are also furnished independent of complete Kewanee Systems, and we are prepared to design original outfits where our standard systems do not meet unusual requirements, to test them under your own conditions and guarantee just what they will do.

KEWANEE SYSTEM.

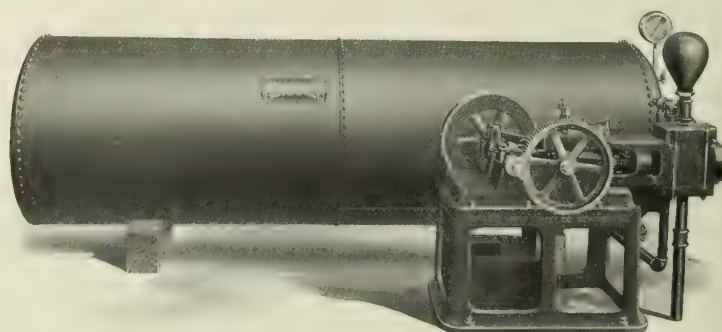
TANK—The Kewanee Tanks are guaranteed to remain air tight. They are constructed from open-hearth boiler steel, and on standard tanks the horizontal seams are double-riveted lap joints, and the girth seams, single-riveted.

Kewanee Tanks are supplied from stock, in all sizes, from 2 x 6 feet, holding 140 gallons, to 9 x 40 feet, holding 19,000 gallons. They are tested under a pressure of 125 pounds per square inch and are guaranteed for a working pressure of 75 pounds per square inch, which is equivalent to the pressure from a tower 175 feet high. Tanks of special size or capacity are made up promptly to order.



KEWANEE SYSTEM NO. 22

Includes a Kewanee Automatic Tank with electric motor and triplex pump. The pump and motor are direct-connected and are mounted on cast-iron sub-base. The motor can be started by hand or by an automatic starting and stopping device



KEWANEE SYSTEM NO. 250

Includes a Kewanee Automatic Tank and 2 horse-power combined engine and pump, all mounted on base blocks complete. This pumping engine will deliver 1,000 gallons per hour and will stand continuous service and high pressure

VALVE—The Kewanee Automatic Valve delivers to the water pump the exact quantity of air required and the air is taken into the tank with the water. No attention is required by the valve, as it is absolutely automatic in operation.

PUMP—We can furnish Kewanee Pumps in any capacity, from a hand pump delivering five gallons a minute, to a fifty horse-power engine and pump with a capacity of 1200 gallons a minute.

ENGINE—The Kewanee Engine is built throughout in accordance with the best practice in the construction of the highest grade automobile engines, and has the same perfect mechanism and high quality of material and efficiency.

ADVANTAGES.

The Kewanee System has many advantages over the old style attic tank, and the elevated tower tanks. It does not disfigure the landscape; no part of the system is exposed to extremes of temperature; being placed on solid ground, there is no danger due to collapse of the tower, as in the elevated tank system, or from leaks, as frequently happens in the attic tanks.

Being built of steel, the Kewanee Tank is practically indestructible.

The water is free from germs, dirt and foreign matter, and being aerated, makes water from streams, city mains, or any other source, fresh, safe, and free from all contamination.

The Kewanee System is compact, easy to operate and provides a sufficient supply of water for all domestic and household purposes; and in addition, the high pressure guarantees adequate fire protection at all times.

COMPARATIVE COST.

Kewanee Systems of water supply for city or country service are furnished complete for \$75 and up. They cost more than the old style attic tank or wood elevated tank, and about the same as a steel elevated tank on a steel tower.

KEWANEE METHOD.

The KEWANEE WATER SUPPLY CO. has had ten years' experience in solving water supply problems, and as every system is designed by our engineering department to meet the needs of each particular client, it is necessary that the questions on our information blank be carefully answered and sent to us by the architect before writing his specification.

With this information we are enabled to design the Kewanee System which will best meet your requirements, and we will submit promptly and without charge our estimate and specifications, and if the equipment we recommend is ordered from us, it will be fully guaranteed by this company.

INFORMATION BLANK.

Answer the following questions, giving your name, address, and date:

- (1) How many people will use the water daily?
- (2) How many buildings are to be supplied with water?
- (3) What is the height of highest building?
- (4) How high above the cellar is highest floor on which plumbing will be used?
- (5) How many and what plumbing fixtures do you wish to provide with water?
- (6) Do you also wish to furnish water to hydrants in barn, garden or other outside points? If so how many? (If you have stock to water, state how many head.)
- (7) About how many gallons of water do you think will be used per day?
- (8) What is the source of water supply?
- (9) If a well, what is the depth and diameter, and what is the distance from ground to surface of water? Does the water level fall under continuous pumping?
- (10) By what method do you prefer to pump the water—Hand pump, windmill, gasoline engine, hydraulic ram, city water, hot-air engine, steam pump, or electric motor.
If electric motor, state voltage and whether the current is direct or alternating; and, if alternating, whether it is one, two, or three phase; and give number of cycles.
If hydraulic ram, give flow in gallons per minute and available fall between spring and lowest point near.
If windmill, give height of nearest buildings or trees which obstruct the breeze.
- (11) If you have pumps or machinery now installed which you wish to use, give description and we will tell you if they can be used to good advantage with the Kewanee System.
If your source of water supply is located at a distance, please make a rough sketch showing the distance, and whether above or below the level of buildings, and how much.

LEADER IRON WORKS

Manufacturers of "Leader" Water Supply Systems

NEW YORK OFFICE
15 WILLIAM STREET
TELEPHONE, 6419 BROAD

MAIN OFFICE AND FACTORY

DECATUR, ILL.

WAREHOUSES AT PRINCIPAL JOBBING CENTERS

ROCHESTER, N. Y., OFFICE
LEADER-BEERS ENGINEERING CO., GRANITE
BUILDING

PRODUCTS.

COMPLETE "LEADER" PNEUMATIC WATER SUPPLY SYSTEMS for furnishing water under pressure to residences and buildings where city pressure is not available, or in cities where pressure is not satisfactory. Also, MUNICIPAL PLANTS for villages.

PNEUMATIC STEEL TANKS, Black or Galvanized; PUMPS; STEAM, GASOLINE or HOT-AIR ENGINES; ELECTRIC MOTORS; WINDMILLS, and all materials used for complete Water Supply Systems.

We also manufacture STANDARD HOT-WATER STORAGE TANKS, Black or Galvanized; HIGH-DUTY STORAGE TANKS; STEAM WATER HEATERS, and SPECIAL TANKS for all requirements.

PRINCIPLE OF "LEADER" WATER SUPPLY SYSTEMS.

In the "Leader" Water Supply System an air-tight steel tank is located in basement, or away from danger by frost, having connected to the bottom a pipe with suitable force pump attached and with pipe connecting pump to source of supply. The water being forced into the tank compresses the air, which is then available at all times to force the water through the service pipes to outlets on any floor, the pressure corresponding to the height to which water is to be delivered.

"LEADER" TANKS.

All "Leader" Pneumatic Tanks have double riveted longitudinal seams, are double tested with water and air to 125 pounds pressure and are absolutely guaranteed. Storage and Special Tanks are built for the service required of them and are guaranteed tight at the pressure specified.

SPECIFICA- TION FORMS FURNISHED.

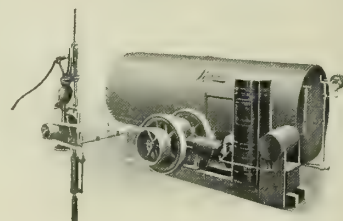
We furnish standard specifications describing outfits with various kinds of power and outline the proper manner of constructing tanks and other material designed for any pressure. Our broad experience in this line enables us to draft specifications suitable to all conditions. Much time can be saved by the use of "Leader" Architects' Specifications.

We also furnish plans, specifications, and estimates for water service systems for villages and towns, state and county infirmaries, and other public institutions where an independent water service is required.

DATA TO BE FURNISHED BY CLIENT.

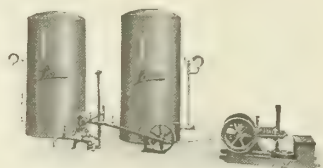
When inquiring, give the approximate amount of water that will be used per day and the depth and size of well; or, if water is taken from some other source, describe same.

Leader
TRADE-MARK



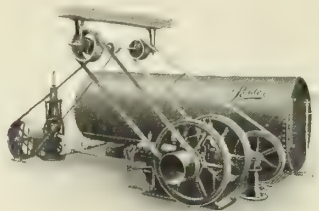
OUTFIT FIG. 160

For larger installation. Tank 42" x 10'. Total capacity, 720 gals.; working capacity, 480 gals.



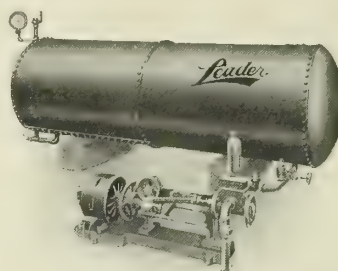
OUTFIT FIG. 170

For hard and soft water. Tanks 36" x 6'



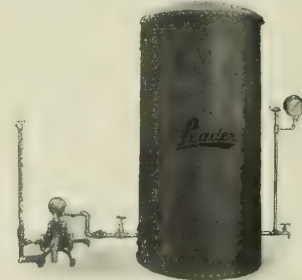
OUTFIT FIG. 165

For large institutions, etc., using deep well. Tank 48" x 24'. Total capacity, 2260 gals.; working capacity, 1500 gals.



OUTFIT FIG. 185

For city and suburban use. Tank 30" x 8'. Total capacity 295 gals.; working capacity, 200 gals.



OUTFIT FIG. 115

For cottages using shallow well or cistern. Tank 36" x 6'. Total capacity, 315 gals.; working capacity, 225 gals.

PRICE-LIST, ETC.

You should also have on file our catalogue, information blanks and price-list. Write for prices on outfits here shown. See General Catalogue and 1909 "SWEET'S" for other outfits.

The outfits shown here, and in our General Catalogue, are merely suggestions, and for most requirements special specifications will have to be furnished. Our engineering department will furnish expert information in such cases.

ESTABLISHED 1880

30TH ANNIVERSARY

LOOMIS-MANNING FILTER CO.

828 Land Title Building, Broad and Chestnut Streets

Factory, 24th and York Streets

PHILADELPHIA, PA.

BRANCH OFFICES AND SALESROOMS

NEW YORK, 9203 Metropolitan Life Tower, 1 Madison Avenue,
Cor. 23rd Street

BOSTON, 440 Exchange Building, 53 State Street

CHICAGO, 712 Marquette Building, Adams and Dearborn Streets

BALTIMORE, 603 Calvert Building, Fayette and St. Paul Streets

BUFFALO, 942 Ellicott Square Building

WASHINGTON, 306 Colorado Building, 14th and G Streets,
N. W.

PRODUCTS.

THE LOOMIS-MANNING FILTER, for the preparation, purification and cleansing of all water supplies for all purposes; rendering the water bright, clean, and free from all deleterious matter, color, taste and smell; PRESSURE and GRAVITY FILTERS; FILTER PLANTS of all capacities; FILTER EQUIPMENT; DISTILLING and STERILIZING PLANTS; QUARTZ, ANIMAL CHARCOAL, SAND, SULPHATE of ALUMINA, and ALUM, for filtration purposes.

THE FILTER.

The Loomis-Manning Filter is the outcome of thirty years' study, practical application, experience and scientific skill.

ITS APPLICATION.

It furnishes pure water for public buildings, hotels, public and private institutions, hospitals, clubs, apartment houses, office buildings, private residences, farms, etc.; also, for mills, dye and bleach works, boiler plants, sugar refineries, paper mills, laundries, bottling establishments, public water supplies, etc.

ITS VALUE.

It prevents disease, such as typhoid, cholera, diarrhea, and other intestinal troubles.

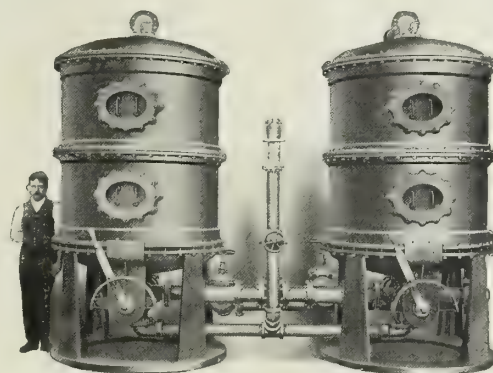
It increases the value of any product where water is used in any way in the process of manufacture.

It conserves the health of all employees, which is a vital question with all employers of labor.

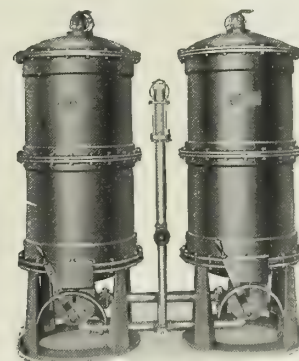
It protects all plumbing, plumbing fixtures, tanks, boilers, brass valves, bibbs, and elevator machinery, and it presents for use at all points, and for all purposes, bright, sparkling, clean water, instead of dirty water which spoils everything with which it comes in contact.

CONSTRUCTION.

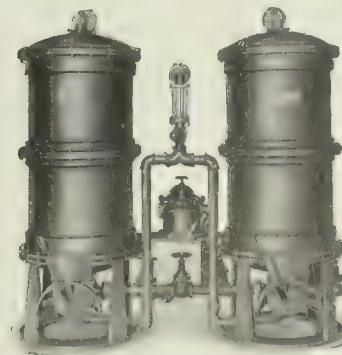
The first essential is efficient construction, demonstrating its ability to thoroughly cleanse or wash its filtering material or bed; its efficiency and economy depend on this feature, for without it all other features, no matter how valuable in themselves, are worthless; from this point of view it stands unequaled and unchallenged, as is demonstrated by glass working model.



STYLE "SPECIAL." 104 TO 124



STYLE "M." 64 TO 124

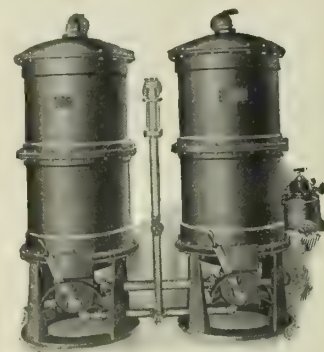


STYLE "SPECIAL." 67 TO 127

The second essential is substantial construction; its presence furnishes its own proof on this point and is emphasized by the fact that it costs from three to ten times as much in its construction as any other make. Demonstrated by nine years' service without repairs in Hotel Manhattan and Hotel Buckingham, New York, N. Y.

The third essential is simplicity in construction. This has been attained in a very high degree through the use of the Loomis Cutting and Confining Plates, and the Manning Single Controlling Valve, for they do away with the antiquated forms, such as rakes and other agitators, and of many valves in the operation of the machine. Demonstrated by glass working model.

The fourth essential is attractive construction, which is exemplified in the details of its fetching ensemble. Demonstrated by a personal examination.



STYLE "M." 67 TO 127

QUALITY OF MANUFACTURE.

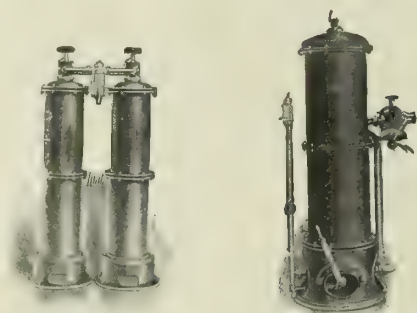
Only the very best materials enter into the construction of the various sizes and styles of the Loomis-Manning Filters, such as gray iron loam castings, gun-metal, brasswork and valves, tinned copper perforated diaphragms, best grades of galvanized wrought-iron pipe, or seamless tinned brass tube, galvanized malleable-iron fittings, or tinned red brass fittings, etc., and no expense is spared to produce with skilled mechanics an efficient and handsome as well as practically indestructible machine. Demonstrated by thirty years of daily use in the "White House," Washington, D. C.

OPERATION.

The Manning Single Valve controls the operation of the Filter, and by the movement of its operating lever an eighth of a circle over the plane of its graduated dial, any desired action of the Filter may be obtained, such as: *Filtering, Filtering to Waste, Washing Filter Bed or By-Pass.*

GLASS MODEL.

We are the only manufacturers who exhibit by glass model the complete working of a Filter; thereby showing the operation of intercepting the refuse and suspended matter, and producing from the contaminated and unclean current the purified, sparkling stream; also, showing the methods of cleaning the Filter, the simplest and most perfect known.



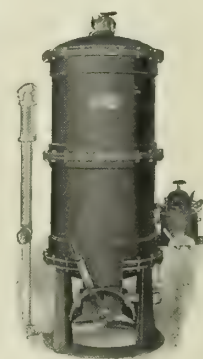
STYLE "M." 14 TO 24 STYLE "L." 37 TO 57

COAGULATION WHEN REQUIRED OR DESIRED.

We control the only method known of feeding coagulants indirectly in preparing water for filtration. All of our Filters which are designated by the numeral or figure "7" are equipped with either our direct or indirect method of feeding a coagulant or with both.

CAPACITIES.

From one gallon per minute to as many thousand gallons per minute as the requirements of any supply desired might indicate. Correspondents should state number of gallons desired per minute, per hour, or ten hours, or twenty-four hours; also source and average condition, as well as the general characteristics of the water.



STYLE "L." 67 TO 127

STYLES AND
SIZES.
PRICES.

Various styles and sizes are on exhibition at our many salesrooms.

Prices furnished upon application.

Owing to the great variety of and the many different conditions which surround water supplies, it is impossible to issue a standard price-list; for the filter which is calculated to produce a certain quantity per minute may, under different conditions, produce only half that quantity.

SPECIFICA-
TION.

Filter Plants for large supplies should be divided into two or more units, and the number of gallons required for each unit per minute, per hour, per ten, twelve or twenty-four hours, should be clearly given.

ESTIMATES.

We shall be pleased to have our engineers prepare plans and specifications for any desired supply of water or requirement of construction; also, estimates for complete Filter Plants, both pressure and gravity-systems, large or small, will be promptly furnished.

OFFICES.

We invite every one interested in the subject of filtration to call at any of our Salesrooms and examine the working model.

Competent men in attendance will explain fully our system, and give any desired information. Or, we should be pleased to call by appointment at your residence or office with a glass model filter, and have you see how perfectly it will cleanse itself. This demonstration requires but from ten to fifteen minutes.

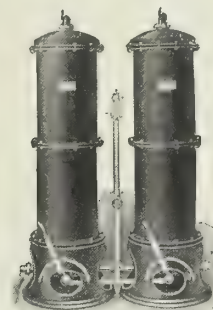


SIDE ELEVATION
STYLE "L." 67 TO 127

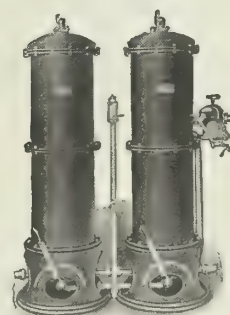
SIZES AND
STYLES.

LIST OF SIZES AND STYLES

Size Numbers	Supply Pipe	Capacity, gallons per minute Style "L," Style "M," Each unit Style "Special," In Tandem Style "Special"	Shipping weight in pounds Style "L"	Shipping weight in pounds Style "M" and Style "Special"
14 or 17	3/8"	1 1/2 to 3	300	600
24 or 27	3/4"	3 to 6	450	900
34 or 37	1"	4 to 8	550	1,000
44 or 47	1 1/4"	6 to 12	750	1,500
54 or 57	1 1/2"	8 to 16	950	1,800
64 or 67	1 3/4"	11 to 22	1,500	3,200
74 or 77	2"	15 to 30	1,800	3,500
84 or 87	2 1/2"	25 to 50	3,000	6,000
94 or 97	3"	50 to 100	5,000	10,000
104 or 107	4"	75 to 150	8,000	16,000
114 or 117	5"	100 to 200	12,000	24,000
124 or 127	6"	125 to 250	17,000	34,000



STYLE "M." 34 TO 54



STYLE "M," 37 TO 57

All Single-Cylinder Loomis Filters are designated Style "L."

All Double-Cylinder or Tandem Loomis Filters are designated Style "M."

All Loomis Filters in Batteries of two cylinders are designated Style "Special."

All Loomis Filters without Coagulant Feeding Attachment are designated by numbers ending in figure "4."

All Loomis Filters with Coagulant Feeding Attachment are designated by numbers ending in figure "7."

All Loomis Filters contain as filtering medium boneblack or flint, quartz or polarite, or the most efficient combination of these materials.

STOCK.

We carry in stock all sizes and styles, ready for immediate delivery or shipment.

LUNT-MOSS COMPANY

MANUFACTURERS OF

"Lunt-Moss" System of Pneumatic Water Supply

MAIN OFFICE

43 South Market Street
BOSTON, MASS.

BRANCH OFFICE

NEW YORK, N. Y., Room 1360, 50 Church Street
TELEPHONE, CORTLAND 6259

TELEPHONE, RICHMOND 970 AND 971

PRODUCTS.

"LUNT-MOSS" PNEUMATIC WATER SYSTEMS, made up of our high quality Double-Riveted Special TANKS in connection with HAND PUMPS, ELECTRIC, GASOLINE or STEAM PUMPING MACHINERY; also, PNEUMATIC TANKS, "ALAMO" GASOLINE ENGINES, ELECTRIC PUMPS, STEAM PUMPS, HOT-AIR ENGINES, WIND-MILL OUTFITS, and complete isolated ELECTRIC LIGHTING PLANTS.

"LUNT-MOSS" WATER SYSTEMS.

"Lunt-Moss" Water Systems are complete and made in as many different styles as there are situations to be taken care of. Where outfits are listed complete they include everything except suction pipe to well.

A "Lunt-Moss" Tank is made of steel, double-riveted with flange tappings, and pressure is created by pumping water against the air cushion in the tank. The expansion of the air forces the water to fixtures at all points on service pipe at uniform pressure.

ADVANTAGES.

The "Lunt-Moss" Pneumatic Systems, when properly installed with tank placed in cellar or underground, will not freeze, leak or burst.

When a suitable size pump is used it forms an ideal fire protection with as high pressure as metropolitan systems in use in our largest cities.

The systems installed on good foundations are assured of long life with practically no repairs.

UTILITY.

The "Lunt-Moss" Systems are best adapted for the water supply in public buildings, hospitals, clubs, schools, villages and country homes.

SIZES.

The following list gives the dimensions and the capacity of a few of the stock sizes of the "Lunt-Moss" Tanks. These, however, we manufacture as high as 30,000 gallons capacity:

Diam., Feet	Length, Feet	Capacity, Gallons	Diam., Feet	Length, Feet	Capacity, Gallons	Diam., Feet	Length, Feet	Capacity, Gallons
2	6	140	4	18	1700	6	30	6360
2	8	190	4	20	1880	6	32	6780
2	10	235	4	24	2260	6	34	7205
2½	6	220	4½	12	1430	6	36	7630
2½	8	295	4½	16	1905	7	13	3740
2½	10	365	4½	20	2430	7	14	4030
2½	12	440	4½	24	2955	7	20	5760
2½	14	515	5	20	2920	7	22	6335
3	6	315	5	22	3190	7	24	6910
3	8	420	5	24	3470	7	26	7490
3	10	525	5	26	3780	7	28	8070
3	12	630	5	28	4090	7	30	8645
3	14	735	5	30	4400	7	32	9220
3½	10	720	5	32	4670	7	34	9795
3½	12	865	5	34	4965	7	36	10370
3½	14	1000	5	36	5260	7	40	11522
3½	16	1150	6	20	4240	8	13	4890
4	10	940	6	22	4665	8	32	12050
4	12	1130	6	24	5090	8	36	13500
4	14	1300	6	26	5515	8	40	15040
4	16	1500	6	28	5940			

The above tanks are all tested under an air pressure of 125 pounds to the square inch, and guaranteed under working pressure of 75 pounds to the square inch, or equal to an elevated tank 175 feet high. Under average conditions the amount of water stored and delivered is two thirds of that given in above table, the upper third being occupied by compressed air.

DIRECTIONS FOR ORDERING OR SECURING ESTIMATES.

Our Estimate of a Water Plant suited to your requirements will be facilitated and our Engineering Department will be able to offer recommendations as to the best solution of your water problem if you will answer the following questions. Specifications and prices will be furnished without charge.

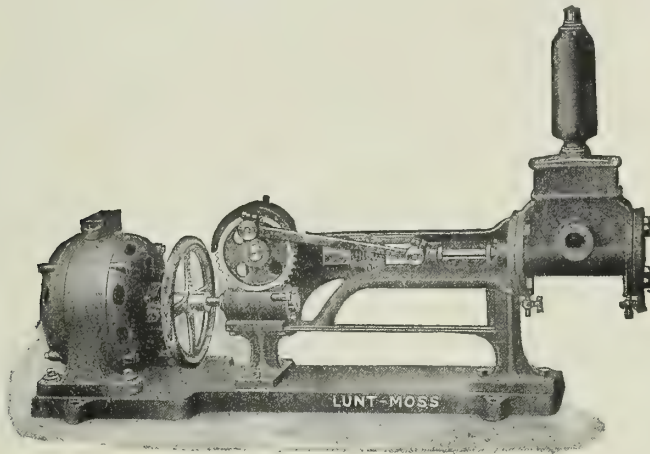
(1) How many people will use the water daily? (2) How many buildings are to be supplied with water? (3) What is height of highest building? (4) How high above the cellar is highest floor on which plumbing will be used? (5) How many and what plumbing fixtures do you wish to provide with water? (6) Do you also wish to furnish water to hydrants in barn, garden, or other outside points? If so, how many? (If you have stock to water, state how many head.) (7) About how many gallons of water do you think will be used per day? (8) What is the source of water supply? (9) If a well, what is the depth and diameter, and what is the distance from ground to surface of water? (This information is important.) (10) Do you prefer to pump water into the tank by means of a hand pump, windmill, gasoline engine, hydraulic-ram, hot-air engine, steam-pump, city water, or electric motor? (If electric motor, state voltage and whether direct or alternating current; and if alternating, whether one, two or three phase; also give number of cycles. If hydraulic-ram, give flow in gallons per minute, also available fall between spring and lowest point near.) A hydraulic-ram can

Continued on next page

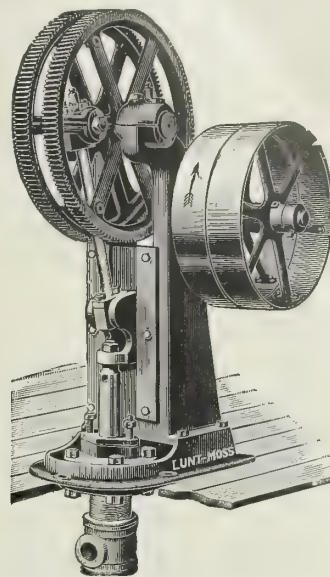
SILENT
ELECTRIC
PUMPS.

be used only with flowing water. (11) If you have pumps or machinery now installed which you wish to use, give description, and we will tell you if they can be used to good advantage with the "Lunt-Moss" System. (12) Do you want to filter all or any part of the water?

Our combined Pump and Electric Motor, Bulletin No. 11, is designed for estates or business buildings of moderate size which require a positive supply where noise is objectionable. This style of pump requires very little attention and can be fitted with automatic switch to take care of itself, operating on a suitable minimum and maximum pressure in connection with "Lunt-Moss" Pneumatic Tanks.



SILENT ELECTRIC PUMP
Bulletin No. 11

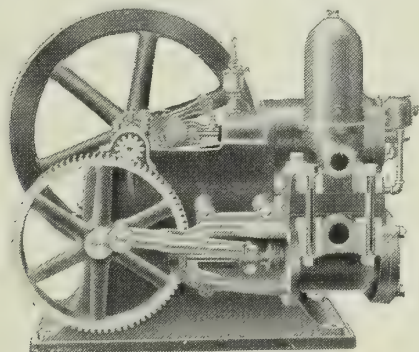


DEEP-WELL WORKING HEAD
Bulletin No. 13

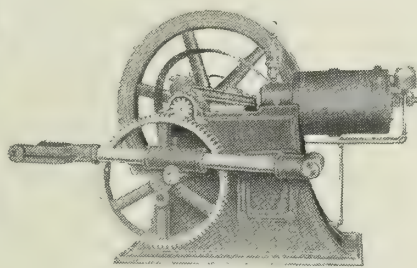
DEEP-WELL
WORKING
HEAD.

When writing for information please give kind of current to be used. This is our extreme duty type of Working Head, Bulletin No. 13, designed for deep-drilled wells from 200 to 1,000 feet deep. Can be operated by gasoline engine or steam engine. Where electricity is available motor can be attached direct to main frame. Made in different sizes: 8, 12, 16 and 24 inch strokes, double and single.

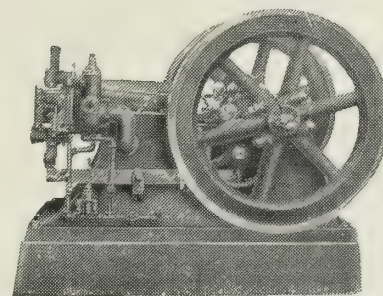
Write for detailed description, stating diameter, depth and flow of well.



TWO H. P. COMBINED GASOLINE
ENGINE AND PUMP
Bulletin No. 4



TWO H. P. COMBINED ENGINE
AND DEEP-WELL PUMP
Bulletin No. 5



"ALAMO" GASOLINE, KEROSENE
OR ALCOHOL ENGINE
Bulletin No. 3

COMBINED
GASOLINE
ENGINE AND
PUMP.

Our two horse-power Combined Gasoline Engine and Pump, Bulletin No. 4, is particularly adapted to large places where considerable water will be used. The pump is 4 inches x 4 inches, of the double-acting type, capacity 1000 gallons per hour. Can not be used where water is more than twenty-five feet actual vertical lift. Can be placed in any insurable building.

COMBINED
ENGINE AND
DEEP-WELL
PUMP.
"ALAMO"
ENGINES.

Our two horse-power Combined Engine and Deep-Well Pump, Bulletin No. 5, for wells from 50 to 200 feet deep, is very compact and economical for the average country home where water is below suction limit (26 feet). Get Bulletin No. 5 for details.

"Alamo" Gasoline, Kerosene and Alcohol Engines, Bulletin No. 3, are adapted to all kinds of heavy pumping or combined power and pumping work. Made in sizes from three to fifty horse-power. Send for special catalogues.

CATALOGUES.

Send for our dealers' catalogue describing all our pumping machinery in one volume. Each article covered by list prices subject to discount.

We issue a special catalogue on Isolated Electric Lighting Plants.

THE LYNN-SUPERIOR COMPANY

MANUFACTURERS OF

Water Filters and Complete Systems, Bakers' and Laboratory Machinery

3248-3256 Spring Grove Avenue
CINCINNATI, OHIO

BRANCH OFFICES

NEW YORK, N. Y., 6207 Metropolitan Life Building
PHILADELPHIA, PA., Bourse Building

BOSTON, MASS., 515 Board of Trade Building
KANSAS CITY, MO., 701 New York Life Building

PRODUCTS.

"LYNN" WATER FILTERS in all capacities and in three distinct types: CAST-IRON or STEEL FILTERS with SINGLE CONTROLLING VALVE for the entire supply of buildings; CAST-IRON or STEEL FILTERS with INDEPENDENT VALVES; PORCELAIN CYLINDER and TUBE FILTERS for drinking-water systems. Also BAKER'S MACHINERY and COMPLETE BAKE-SHOP EQUIPMENT; LABORATORY MIXING MACHINERY.



TRADE-MARK

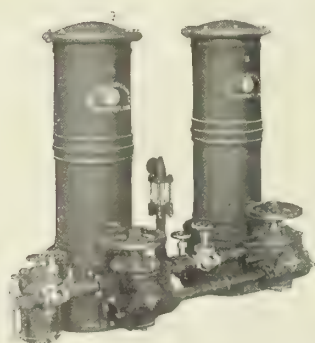
SINGLE-VALVE FILTERS.

This type has gray cast-iron shell, carefully treated to insure against corrosion. The various operations of the filter, such as filtering, washing, re-washing, etc., are controlled by the single valve shown in the styles "I," "J," and "O." This is bolted directly to the filter casing, thereby doing away with supports or valves underneath the filter. By this plan a considerable saving in head-room is obtained.

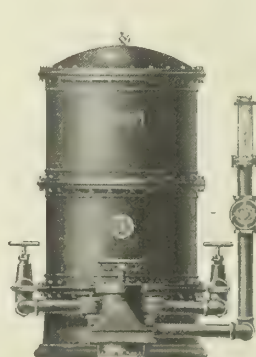
The "Lynn" Single Valve is a distinct departure in the construction of compound-filter valves in that it operates vertically instead of horizontally, the method heretofore used. The vertical plan allows the grit to go to the bottom pocket where it may easily be removed through an opening provided for the purpose. The horizontal type allows this grit and sand from the water to remain between the key and the body of the valve, to the detriment of both parts. The Lynn Single Valve contains nine operations within one revolution of the hand-wheel. The latter has a dial which plainly indicates each function. The filtering bed is of quartz or bone-carbon, as conditions require, and is agitated during the cleaning process by stationary propeller blades with which it is brought in contact. This breaks up the lumpy material, which is thoroughly scoured and returned to its original efficiency. A sight glass is provided to inspect the wash water when cleaning.



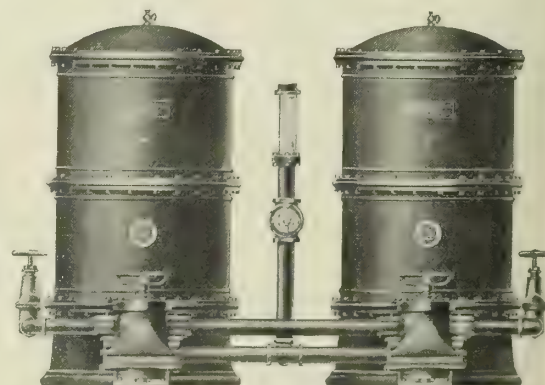
Style "I." No. 100



Style "O." No. 141



Style "I." No. 320



Style "J." No. 320

"LYNN" SINGLE-VALVE FILTERS

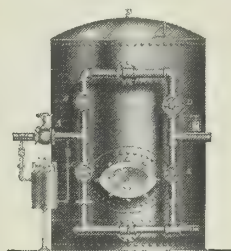
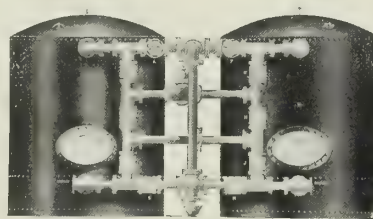
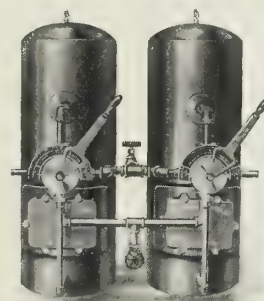
STEEL-SHELL
FILTERS.

We make a variety of other types in both cast-iron and steel-shell filters. For very large buildings and power plants the steel filters are recommended to effect a saving in the cost and also in floor space. Such installations are in charge of a competent operator, and independent valves are used; these are shown in filters "M" and "L." The coagulant, when used, is fed to the raw water automatically by finely adjusted valves. The quantity may be regulated to suit the water conditions, and indicated on a graduated dial, so no trace will appear in the filtered supply.

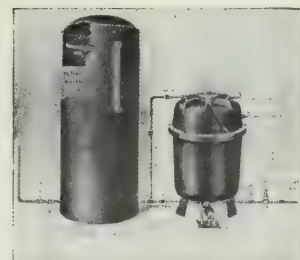
TABLE OF CAPACITIES AND DIMENSIONS
Styles I, J and O Filters

No.	Supply pipe	Capacity per minute	Height over all	Floor space	Approximate shipping Weight
100	$\frac{3}{4}$ "	2 - 4	4'	10" x 18"	300
140	1"	$3\frac{1}{2}$ - 7	4' - 4"	15" x 26"	550
180	$1\frac{1}{4}$ "	8 - 16	4' - 6"	25" x 29"	1000
220	$1\frac{1}{2}$ "	10 - 20	4' - 9"	29" x 33"	1600
260	2"	12 - 25	5' - 0"	34" x 38"	2000
320	2"	15 - 30	5' - 6"	42" x 48"	3600
380	$2\frac{1}{2}$ "	25 - 50	5' - 9"	49" x 55"	5500
440	3"	50 - 100	6' - 0"	56" x 62"	7000
500	3"	60 - 120	6' - 2"	62" x 68"	4800
560	4"	75 - 150	6' - 4"	68" x 74"	5000
620	$5\frac{1}{2}$ "	100 - 200	6' - 6"	74" x 80"	5500

These ratings are for single filters "Style I." For capacities of double units Styles "J" and "O" connected in parallel take double the above figures, not including filtering material.

STYLE "K"
HOUSE FILTER
Single filtrationCOAGULANT FILTER
STYLE "M"
Single filtrationSTYLE "L"
Single or double filtration for
large plantsSTYLE "H"
Single or double
filtrationPORCELAIN
FILTERS.

This Company is probably the oldest manufacturer of Stone or Porcelain Filters, and has the largest variety, comprising about twenty sizes and types. This medium is a special process bisque porcelain from our own pottery and is the result of years of research and experimental work. Our patent Two-Surface Cylinder affords double capacity of other makes and renders a very white, sparkling water, free from bacteria. Numerous analyses have been made of this water for drinking purposes, and on repeated tests at various Universities it has shown a bacterial efficiency of 100 per cent.

STYLE "A-2"
FILTER
10 gals. per hour
For drinking water
for domestic uses,
etc.STYLE "D"
FILTER
20 gals. per hour
For bars, clubs,
cafés, etc.NO. 5 FILTER
Capacity 100 to 300
gallons per hourPRESSURE SYSTEM
For drinking system or ice-
plant in hotels, cafés, and
office buildingsBAKERS'
MACHINERY.

We manufacture a complete line of Bakers' Machinery and Equipment including the "L-S" Double-Arm and "Thorobred" Single-Arm Dough Mixers, Dividers, Brakes, Beaters, Cake Machines, Pony Mixers, Troughs, Racks, etc. Complete catalogue or plans for layout furnished on application. In asking for plans, furnish dimensions of building and number of ovens contemplated.

CO-OPERATION.

We solicit correspondence on filtration or bakers' machinery matters of any size, kind or capacity. Detailed information, plans or drawings, or a personal call from our representatives on request.

WILLIAM E. QUIMBY, INC.

Specialists in Electric Pumps

3 West Twenty-Ninth Street

NEW YORK, N. Y.

AGENCIES

BOSTON, MASS., BENJAMIN K. HOUGH, 88 Broad Street

PHILADELPHIA, PA., SUPLEE ELEVATOR COMPANY, 3207-11
Spring Garden Street

PRODUCTS.

We manufacture ELECTRICALLY DRIVEN PUMPS for all services, particularly the "QUIMBY" SCREW PUMPS for ELEVATOR and HOUSE SERVICE and the "QUIMBY" SUBMERGED SUMP PUMPS for DRAINAGE SERVICE.

SPECIAL CASES.

Unusual conditions, involving specially designed apparatus, are frequent in the installation of electric pumps, and in most all cases the best results are obtained by having the apparatus built to meet the particular condition. For fifteen years we have been solving, successfully, electric-pump problems and we have had a wide experience.

PRICES.

We give, further on, a list of our regular line of small pumps which are standard for ordinary building conditions. We can not attempt to describe all the special apparatus we build, but we will promptly reply to any request for information regarding the installation of electric pumps. We can give references to the best architects, engineers and builders in the country. Do not hesitate to write to us.

"QUIMBY" HOUSE-SERVICE PUMPS.

In a pump for house service the important requirements are that the pump shall be automatic, noiseless, require little attention, and need no repairs.

The "Quimby" Electric Pump shown in Fig. 1 fulfils these requirements better than any pump heretofore put on the market.

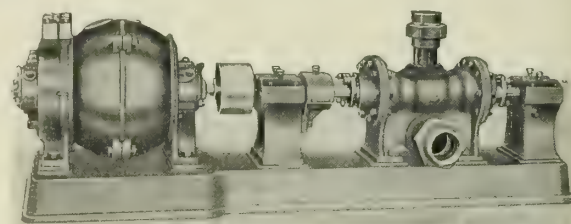


FIG. 1. "QUIMBY" ELECTRIC PUMP FOR HOUSE SERVICE

CONSTRUCTION.

The water is positively propelled through the pump by four screws. The action of the screws on the water is perfectly continuous, thus doing away with all pulsations and water-hammer effect in the delivery pipe. As the pump has no valves or internal packing, noise will not be the result of wear in the pump. As will be seen in the illustration, the pump and motor have a common shaft, thus doing away with intermediate connecting mechanism which is always a source of noise and repairs.

EASY MANAGEMENT.

The next important requirement in a house pump is that it shall not require adjusting. The only attention that the "Quimby" Screw Pumps require is to see that the commutator of the motor is kept clean and that the motor and pump are thoroughly oiled. The pump and motor both have self-oiling bearings and large oil receptacles.

ADVANTAGES.

To appreciate the simplicity of the "Quimby" pump it should be compared with other pressure pumps in common use, of the duplex or triplex pattern, particularly in the case of electrically driven pumps.

INSTALLATION.

The following recommendations as to the size of pumps used in various buildings are the result of years of experience with the best architects and sanitary and electrical engineers in the country.

For a private house less than 85 feet high and containing not more than five bathrooms, a No. 2 Pump is generally sufficient. For a larger private house the No. 2½ Pump is best, and in the case of exceptionally large houses the No. 3 Pump is recommended.

CAPACITY.

These pumps are made in all sizes from 10 to 3,000 gallons per minute.

HOUSE PUMP,
SIZES AND
PRICES.

Size	Gallons per Minute	Gallons per Hour	Head in feet	Horse-power of Motor	Price	PIPING		Extreme Width	Extreme Length	Extreme Height	Approximate Net Weight
						Suction, inches	Discharge, inches				
2	8 $\frac{1}{3}$	500	85	$\frac{1}{2}$	\$290	2	1 $\frac{1}{2}$	15	42	18	325
2A	6 $\frac{2}{3}$	400	130	1	320	2	1 $\frac{1}{2}$	15	46	18	375
2 $\frac{1}{2}$	16 $\frac{2}{3}$	1000	100	1	410	2	1 $\frac{1}{2}$	24	54	18	525
2 $\frac{1}{2}$ A	13 $\frac{1}{3}$	800	200	2	460	2	1 $\frac{1}{2}$	24	54	24	675
3	34	2000	90	2	525	2 $\frac{1}{2}$	2 $\frac{1}{2}$	24	60	24	975
3A	30	1800	160	3	565	2 $\frac{1}{2}$	2 $\frac{1}{2}$	30	66	30	1100

PRICES FOR
OTHER SIZES.

The prices are for pumps with directly connected direct-current motors of 110, 220 or 500 volts. These prices are also approximately correct for pumps with directly connected two- or three-phase alternating-current motor. Prices for pumps with single-phase motors and for larger sized pumps will be promptly furnished on receipt of detailed information.

"QUIMBY"
SUBMERGED
SUMP PUMP.

In a pump for sump-pit service the requirements are that the pump shall be automatic; that it shall be able to handle water containing more or less solids; that it shall run with very little care or attention; and, most important, that it shall be easily accessible in all its parts at all times. The grit and other solids contained in the water in sump pits have eliminated the positive form of pump and necessitated the adoption of centrifugal pumps. The "Quimby" Submerged Centrifugal Pump (Fig. 2) meets the above requirements better than any other that has been put on the market.

PRIMING.

By submerging the pump, priming is always absolutely secured and the necessity for depending upon foot-valves eliminated. This is essential where a pump is to operate automatically.

CONSTRUC-
TION.

These pumps are very heavily built, and the bearing which carries the impeller and vertical shaft is situated at the level of the sump-pit cover, instead of being at the pump and therefore underneath the gritty water, as such pumps are usually built. This bearing is a ball-bearing with a large oil receptacle. The vertical shaft is suspended in a steel tube, and in order to obtain the rigidity which is necessary to quiet and successful operation, this tube is braced by means of diagonal braces.

The suction is at the bottom, and the discharge elbow is at the same time a taper connection, thus arranging for the most economical flow of water from the pump to a proper sized pipe.

ACCESSI-
BILITY.

The submerged pump is attached rigidly to a plate which forms a part of the cover of the sump pit. The discharge pipe rises through the plate and is connected to the pipe system by a flange connection.

If for any reason it is necessary to get at the pump this is easily done by breaking the flange connection. Then the iron plate covering the sump pit can be lifted, lifting the pump out bodily and giving free access to it in all its parts.

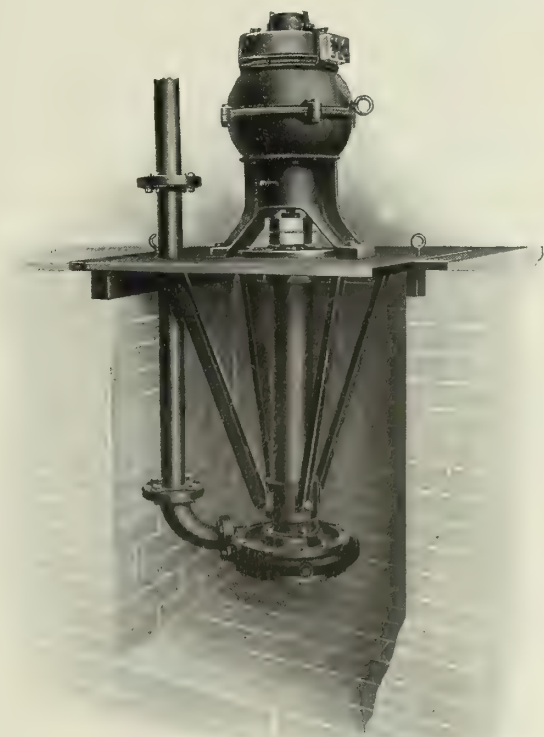


FIG. 2. "QUIMBY" SUBMERGED CENTRIFUGAL
SUMP PUMP

ROBERTS FILTER MANUFACTURING CO.

Cor. Thirtieth and Chestnut Streets
PHILADELPHIA, PA.

BRANCH OFFICES

NEW YORK, N. Y., Fuller Building, 23rd Street and 5th Avenue

PITTSBURG, PA., 217 Diamond Street

PRODUCTS.

WATER FILTERS of any capacity, STONE FILTERS, CHARCOAL FILTERS, PRESSURE FILTERS and GRAVITY FILTERS, FILTER SUPPLIES and APPURTENANCES, including FILTER SAND. Contractors for the installation of complete FILTRATION SYSTEMS for Residences, Hotels, Office Buildings, Hospitals, Public Institutions, all branches of Industry, and for Municipal Work.

COAGULATION.

The water on its way to the Roberts Sand Filter is prepared for filtration, when necessary, by coagulation, which consists in introducing alumina or alum into the water before it reaches the filter. By an ingenious and automatic device (Fig. 3), the alum is dissolved and added, drop by drop, to the water before it enters the filter.

SMALL FILTERS.

For local service, a large number of very small filters becomes necessary; and, for some demands, they must be very small indeed. To meet this demand, filters have been designed of sufficient size to supply water for a small or large house, for groups of houses, or for hotels, etc.

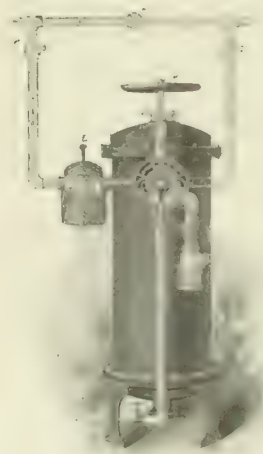


FIG. 1. STYLE "D" FILTER

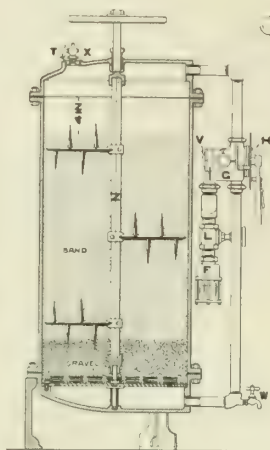


FIG. 2. SECTIONAL VIEW

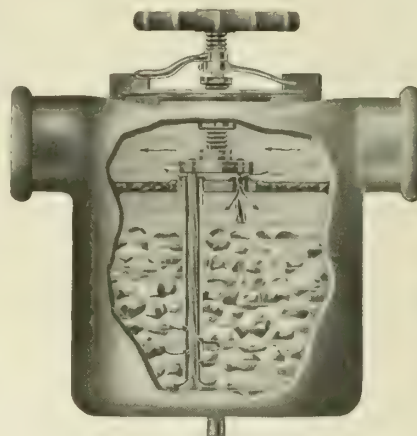


FIG. 3. SECTIONAL VIEW OF COAGULANT FEED

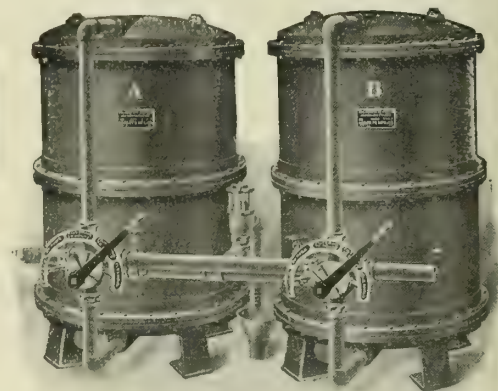


FIG. 4. STYLE "O" FILTER

STYLE "D" FILTER.

Style "D" is the ideal household filter. The cylinder, base, head and legs of these filters are of the best grade gray-iron castings, all flanges being faced and peripheries turned true. These filters are equipped with a mechanical rake or agitator, as shown in Fig. 2. The external piping on them is galvanized iron, and filters of this type are operated with a single controlling-valve, "H." The filtering material furnished with them is a mixture of pure silicate sand, marble and gravel, carefully screened, washed and sterilized. An automatic coagulant feed-tank (Fig. 3) is furnished with each filter. A brass sand-valve or screen is used in them. The number of screens in a filter increases with its diameter, the screens in all filters being arranged over the bottom of the apparatus in a manner to insure the equal and thorough distribution of water when the filter is being washed. Our style "D" Filters are equipped with a glass sewer-trap (see illustration) which exposes to view the condition of the wash water and the first filtered water. Each filter is provided with a brass drain-bibb, W. The pipes A, B, and C, shown in shaded lines Fig. 1, and the valves O, P, and Q are not furnished with the filters.

SCHEDULE OF SIZES, CAPACITIES, ETC., STYLES "D" AND "M" FILTERS

No. of Filter	Size of Piping	Cap. Gal. per min.	Cap. Gal. per hour	Height over all in inches		Shipping weight, in lbs.		Floor Space	
				"D"	"M"	"D"	"M"	"D"	"M"
40	1 in.	8	480	48	64	450	1,350	1½' x 1½'	1½' x 3'
60	1½ in.	16	960	52	68	700	2,000	2' x 2'	2' x 4'
80	1½ in.	22	1,320	54	70	1,100	3,100	2½' x 2½'	2½' x 4½'
90	2 in.	30	1,800	70	70	1,975	3,900	3' x 3'	2¾' x 5'
100	*2½ in.	*50	*3,000	79		3,050		3½' x 3½'	

The data preceded by star refers only to style "D" filter. This filter is also made with steel cylinder. Test pressure in every case, 100 lbs. Capacities given are maximum, being based on Croton water as supplied to New York City under 40 lbs. pressure. Size of piping varies according to water pressure and conditions under which filters are installed.

MEDIUM FILTERS.

Some buildings demand a water supply ranging from 30 to 200 gallons of water per minute, and for this service class filters "E" and "O," described in the following table, are applicable. Filter "E" is single and filter "O" double.

SCHEDULE OF SIZES, CAPACITIES, ETC., STYLES "E" AND "O" FILTERS

No. of Filter	Size of Piping	Cap. Gal. per min.	Cap. Gal. per hour	Height over all in inches	Shipping weight, in lbs.		Floor Space	
					"E"	"O"	"E"	"O"
90	2 in.	30	1,800	70	1,975	4,800	2½' x 3'	4' x 7'
100	2½ in.	50	3,000	70	3,050	7,600	3½' x 4'	5' x 8'
110	3 in.	70	4,200	70	4,075	10,000	4' x 4½'	6' x 8'
120	3 in.	100	6,000	78	5,830	12,950	4' x 5½'	6' x 10'
130	4 in.	150	9,000	80	9,000	18,600	4½' x 6'	6½' x 11'
140	4 in.	200	12,000	89	11,725	25,600	5½' x 7'	7' x 12'

Test pressure in every case, 100 lbs.

FILTRATION SYSTEMS.

The Roberts System as applied to water-works and large industries is adapted to the filtration of water in any quantity. We construct plants for purifying the entire consumption of a city or the largest industrial establishments, guaranteeing to render any water, regardless of its turbidity, bright, clear and sparkling. We are also prepared to guarantee the removal of from 97 to 98 per cent of bacteria. Plants already constructed have shown a removal of more than 99 per cent.

In rapid or mechanical filtration plants for water-works systems provision is always made for preparing the water for filtration by coagulation, but in some industrial plants, where the removal of suspended particles only is the prime object, this feature is occasionally omitted.

TYPES OF FILTERS.

There are two distinct types of rapid or mechanical filters—one generally known as "Pressure Filters," the other as "Gravity Filters," the former being closed cylinders and the latter open filters of wood, steel, concrete or masonry construction.

HIGH BACTERIAL EFFICIENCY.

Physical and other conditions permitting, Gravity Filters (Fig. 6) are recommended as preferable where a high bacterial efficiency is required. They are usually operated in connection with subsiding or settling tanks, and operate practically independently of the pumps supplying the filtered water to the distributing mains. They are usually designed to deliver filtered water into basins or reservoirs. This filtered water is generally taken from these reservoirs and pumped to the distributing mains.

The process of filtration being entirely by gravity the filter beds are not disturbed as in the pressure type, and by the use of effluent controllers a uniform rate of filtration can be maintained. Under these conditions filters produce their maximum bacterial efficiency.

Pressure Filters are installed for water-works, and water is usually forced through them with pumps into a stand-pipe or reservoir, or directly into the distributing system. The rate of filtration or delivery of water through the filters, therefore, is subject to more or less variation, and filters do not produce their highest bacterial efficiency with fluctuating rates of delivery.

GENERAL INFORMATION.

The volume of water which can be properly filtered and delivered by a mechanical sand filter depends upon the character of water under treatment and the square feet of effective filtering area it contains.

If a natural water carries excessive quantities of suspended matters it is advisable, if not mandatory, to subject such waters to subsidence, before filtering, for the removal of the bulk of the heavier matters, which can be more economically removed from the subsidence

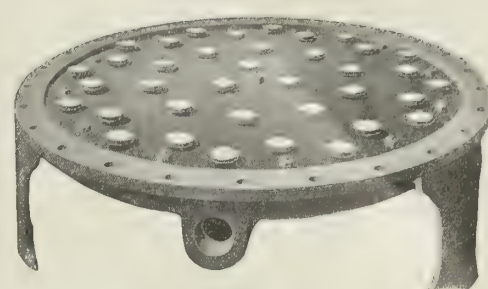


FIG. 5. BOTTOM OF FILTER, SHOWING DISTRIBUTION OF STRAINERS

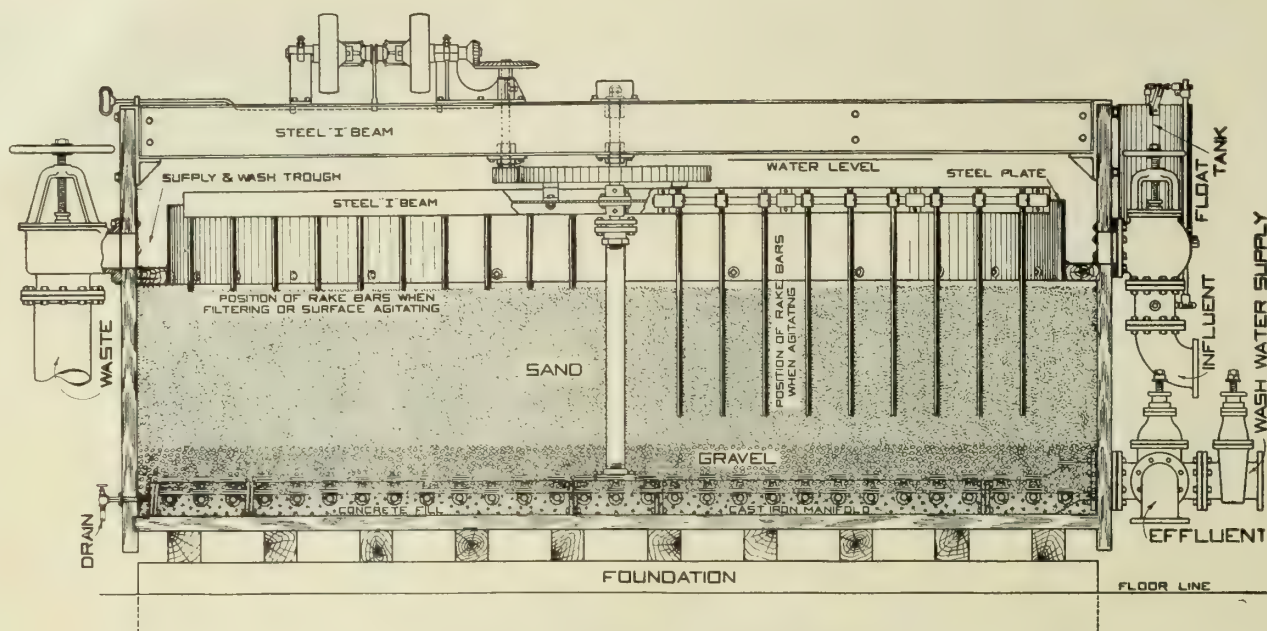


FIG. 6. SECTIONAL VIEW OF STANDARD CYPRESS TANK GRAVITY FILTERS

basin than from the filter, and the prior removal of heavy suspended particles lengthens the run of the filter between washings and consequently reduces the amount of wash water consumed.

Several methods for washing the sand-bed of a filter are used at the present time, the best method to adopt depending upon local conditions. We install filters wherein the filtering material is cleansed with a simple reverse current of filtered or unfiltered water. In other plants we provide filters with mechanical agitators or rakes which are revolved to plough up the sand-bed while washing with the reverse current.

In our municipal filtration plants, where square or rectangular filters are built, we use what is generally termed "air-wash."

ESTIMATES
AND CO-
OPERATIVE
SERVICE.
REFERENCES.

For those who contemplate the installation of filtration plants we will gratuitously make recommendations, prepare plans, and submit estimates. When conditions justify it we will send one of our engineering force to look over water-works systems.

Roberts Filters have been installed in residences, hotels, hospitals, and in every class of industrial buildings, as well as city water-works, in all parts of the country. A few representative users are given in the following list:

CITY WATER-WORKS

New Orleans, La. (Equipment)
Algiers, La. (Equipment)
Chester, Pa.
Manchester, Va.
Albany, Ore.
Eugene, Ore.
Medicine Hat, Canada

Berthoud, Colo.
Roseburg, Ore.
Holmesburg, Pa.
Murfreesboro, Tenn.
Renfrew, Ont.
Sanford, N. C.

PAPER MILLS

Parsons Pulp and Paper Co., Parsons, W. Va.
Williamette Pulp and Paper Co., Oregon City, Ore.
Finch, Pruyn & Co., Glens Falls, N. Y.

Eastern Mfg. Co., South Brewer, Me.
Everett Pulp and Paper Co., Everett, Wash.
John Lang Paper Co., Philadelphia, Pa.

MILLS AND FACTORIES

Philadelphia Rubber Works, Philadelphia, Pa.
Babcock & Wilcox Co., Bayonne, N. J.
North American Lace Co., Philadelphia, Pa.
Auger & Simon Silk Dyeing Co., Paterson, N. J.

E. I. Du Pont Co., Wilmington, Del.
Cluett, Peabody & Co., Troy, N. Y.
Pennsylvania Steel Co., Steelton, Pa.
Harrison Brothers, Philadelphia, Pa.

BUILDINGS, HOTELS, APARTMENTS, HOSPITALS, ETC.

B. Altman & Co., New York, N. Y.
United Engineering Building, New York, N. Y.
Seligman Building, New York, N. Y.
Lorsch Building, New York, N. Y.
Arts Club Studio, New York, N. Y.
Holland House, New York, N. Y.
Ostend Apartments, New York, N. Y.
Chatsworth Apartments, New York, N. Y.
The Devon Apartments, New York, N. Y.
The Courtenay Apartments, New York, N. Y.
Bellevue Hospital, New York, N. Y.
St. Vincent's Hospital, New York, N. Y.

Aldine Hotel, Philadelphia, Pa.
Presbyterian Home, Philadelphia, Pa.
Keith's New Theater, Philadelphia, Pa.
Wabash Terminal, Pittsburg, Pa.
Baltimore & Ohio Office Building, Baltimore, Md.
Travelers' Insurance Building, Hartford, Conn.
Greenwood Apartments, Cincinnati, Ohio.
Georgia State Sanitarium, Milledgeville, Ga.
Powers, Weightman & Rosengarten Co., Philadelphia, Pa.
Swift & Company, Philadelphia, Pa.
Ryerson Library, Grand Rapids, Mich.

J. G. McDOWELL CO.

MANUFACTURERS OF

"Eureka" Pneumatic Pumps

PITTSBURG, PA.

PRODUCT.

"EUREKA" PNEUMATIC PUMPS for Water Systems.

DESCRIPTION.

The accompanying illustration shows our No. 4 Pump, which is suitable for use in drilled wells where standard six-inch casing is used. This pump will deliver from six hundred to eighteen hundred gallons of water per hour. Being automatic in its action it meets every requirement, the number of spigots open regulating the delivery of water.

Larger pumps of design and construction suitable for the purpose intended are made up to any reasonable limit of capacity.

The pump illustrated here is suitable for farms, suburban and country houses, hotels, small manufacturing plants and similar requirements; while our larger sizes will satisfactorily supply large hotels, hospitals, sanitariums, large manufacturing plants and systems for small country towns.

INSTALLATION.

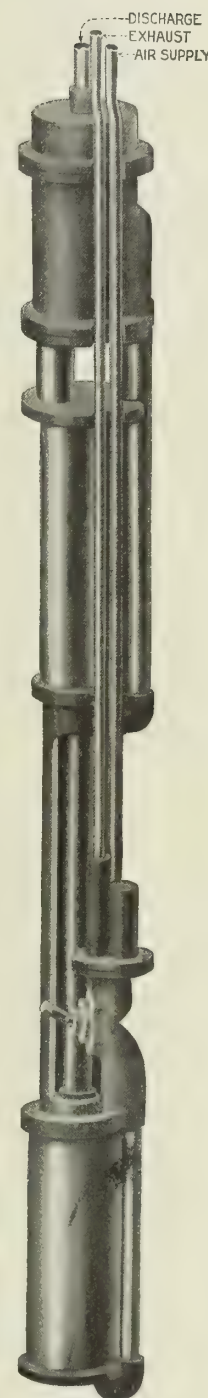
Where both hard and soft water are required it is only necessary to place one of our No. 4 Pumps in a well and another in a cistern, and both pumps will be supplied with air from the one power plant. The users are then assured of fresh cold water at an even pressure for all faucets, for whatever purpose may be necessary, including domestic use, lawn sprinkling and fire protection; while the soft-water pump will supply the kitchen, sink, bath and laundry. By three-pipe plumbing, hot and cold water may be taken at all fixtures, the lift being regulated by the air pressure. The size of pipe lines is regulated to conform to the distance the water is carried and consequent friction in line. By what is termed cross connecting, hard water may be turned into the soft-water lines should the soft-water supply fail.

ADAPTABILITY.

These pumps can be used for any purpose where pumps are required. Some of the many uses to which they may be applied are the following: For pumping from either deep or drilled wells, cisterns, or springs which may be located at any reasonable distance; for the pumping of water from excavations or cellars, as fluid pressure is usually available in these cases; also, for pumping out boats or barges, and for many other purposes, placing these pumps far in the lead of any other system now in practical use.

CO-OPERATIVE SERVICE.

We shall be glad to offer suggestions regarding the adaptability of our pumps to any special requirement and to estimate upon installation and expense of operation. Our long experience in the construction and installation of these pumps and systems make our advice in this direction valuable.



"EUREKA"
PNEUMATIC
PUMP

THE SANITARY PUMP COMPANY

Pumps and Pneumatic Systems for General Water Supply

DAYTON, OHIO

EASTERN OFFICE: NEW YORK, N. Y., 42 Broadway

AGENCIES

CHICAGO, ILL., ERWIN & Co.

BOSTON, MASS., F. H. HAYES MACHINERY Co.

ST. LOUIS, MO., MAHLER MACHINERY & SUPPLY Co.

PORTLAND, ORE., J. M. ARTHUR & Co.

DUBUQUE, IOWA, THE A. Y. McDONALD & MORRISON MFG. Co.

PITTSBURG, PA., MODERN WATER SUPPLY Co.

ROCHESTER, N. Y., BEERS ENGINEERING & EQUIPMENT Co.

CLEVELAND, OHIO, THE W. M. PATTISON SUPPLY Co.

DETROIT, MICH., FAIRBANKS, MORSE & Co.

CINCINNATI, OHIO, FAIRBANKS, MORSE & Co.

PRODUCTS.

"SANITARY" DUPLEX and SINGLE DOUBLE-ACTING POWER PUMPS; DEEP-WELL HEADS; ROTARY PUMPS; WATER LIFTS; AUTOMATIC CONTROLLING DEVICES; HYDRO-PNEUMATIC WATER-SUPPLY SYSTEMS.

ADVANTAGES.

Designed specially for domestic service. Are suitable for any general water supply. Noiseless, durable, economical. Pumps will pump more water at less cost for power than any others. They are simplicity itself.

DUPLEX DOUBLE- ACTING POWER PUMPS.

We manufacture these pumps in sizes as listed below. They were designed with a view to making them specially suitable for domestic or general water supply. Being without gears they are silent in operation. Brass fitted throughout with crank shafts of cast-steel and having long plunger pistons sliding in brass sleeves; in fact every point in their construction has been as carefully taken as in much larger machinery. They throw a perfectly steady stream, have maximum suction lift, and will deliver twice the amount of water that would be delivered by a single-acting pump of the same size. They can be driven by any power and are the pumps to use in all first-class installations for domestic water supply, factory or farm.

DEEP-WELL POWER HEADS.

This Power Head is designed along correct lines, making a machine of good appearance. It has a single connecting rod with crank swung between the two main bearings, centralizing all strains. The special design puts it in a class by itself, and for long and continuous service this will be found satisfactory. It can be economically operated by any

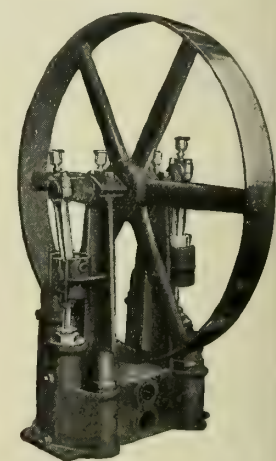


FIG. 726. "SANITARY"
DUPLEX DOUBLE-ACT-
ING POWER PUMPS
Patent applied for

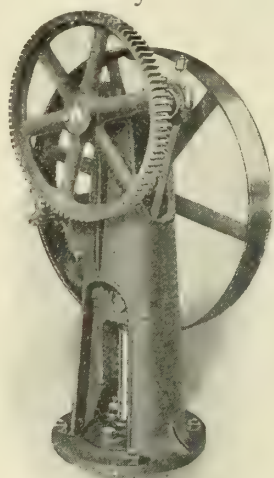


FIG. 706. "SANITARY"
DEEP-WELL POWER
HEADS

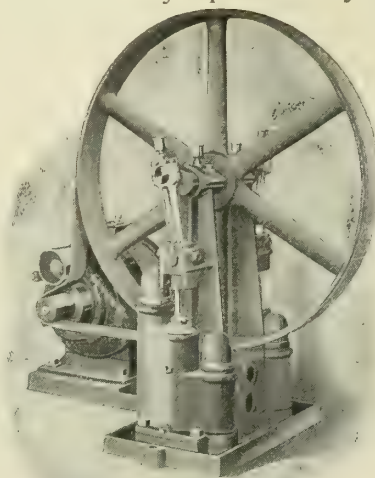


FIG. 660. "SANITARY" DUPLEX
POWER PUMP, MOTOR-DRIVEN

"SANITARY" DUPLEX DOUBLE-ACTING PUMPS WITH ELECTRIC MOTOR

Size	Lift in feet	Size Motor	Gals. per Min.	R. P. M.	With A. C. 60-Cycle 1 Ph. Motor	With D. C. Motor
1 3/4 x 2	80	1/4	5	120	\$240.00	\$193.00
1 3/4 x 2	125	1/2	5	120	264.00	206.00
1 3/4 x 2	60	1/4	6	120	245.00	200.00
1 3/4 x 2	125	1/2	6	120	270.00	211.00
1 3/4 x 2 1/2	60	1/2	10	120	306.00	248.00
1 3/4 x 2 1/2	125	3/4	10	120	367.00	272.00
1 3/4 x 2 1/2	60	1/2	12 1/2	120	306.00	248.00
1 3/4 x 2 1/2	125	3/4	12 1/2	120	367.00	272.00
2 x 3	60	3/4	20	120	430.00	335.00
2 x 3	125	1	20	120	440.00	365.00
2 1/4 x 3	60	3/4	25	120	448.50	353.00
2 1/4 x 3	125	2	25	120	523.00	445.00
2 5/8 x 4	60	1	40	100	563.50	497.50
2 5/8 x 4	125	2	40	100	635.50	558.00
3 x 4	60	2	50	100	658.00	581.00
3 x 4	125	3	50	100	700.00	603.50

NOTE—For higher lifts than those listed above, the added price is the difference in cost of the larger motor and base.

Pumps are suitable for 150 lbs. maximum pressure.

These pumps are furnished with the best motors on the market.

Where air pump is wanted, add \$10.95 to list.

A suction strainer goes with each pump.

kind of power. Our Power Heads are made in two sizes, 8 and 12-inch stroke. Briefly the 8-inch Power Head will handle a 2 1/4-inch cylinder on 300 feet head, up to a 4 1/4-inch cylinder and 75 feet head. In other words, it will pump 6 gallons per minute against 300

feet head, or 18 gallons against 75 feet head. The 12-inch head will handle a 2 $\frac{3}{4}$ -inch plunger pumping 14 gallons per minute against 300 feet head, or a 5 $\frac{3}{4}$ -inch plunger pumping 60 gallons per minute against 75 feet head.

WATER-SUPPLY SYSTEMS.

We make no mystery about our Pneumatic Systems. They are simple, and we tell you frankly that any plumber can install them with the aid of our diagrams and instruction sheets. We can supply systems from the size suitable for the smallest cottage up to the largest office building; also, for a small village. They are operated either by hand, gas-engine or electric motor.

HYDRO-PNEUMATIC TANKS.

We manufacture a full line of Hydro-Pneumatic Tanks in sizes from 120 gallons capacity up. They are guaranteed to be air-tight, have double-riveted longitudinal seams, and are all tested against 125 pounds of air pressure. There are no better tanks. We furnish tanks either separately or with complete systems.

PRICES.

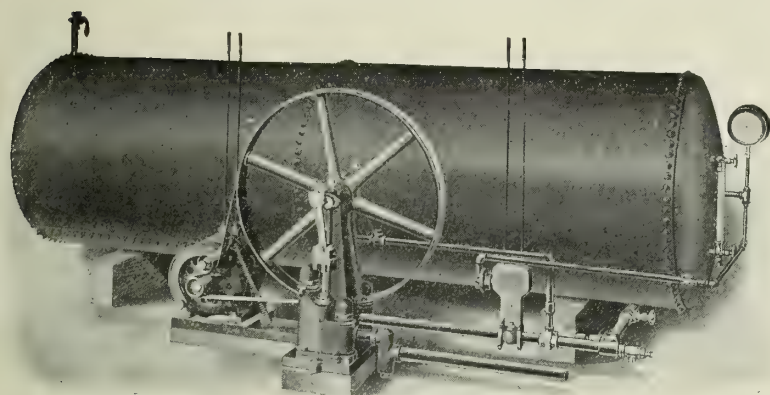
Our prices are reasonable and our discounts interesting.

CO-OPERATIVE SERVICE.

All our engineering ability and experience are at your service whenever you wish to avail yourself of it.

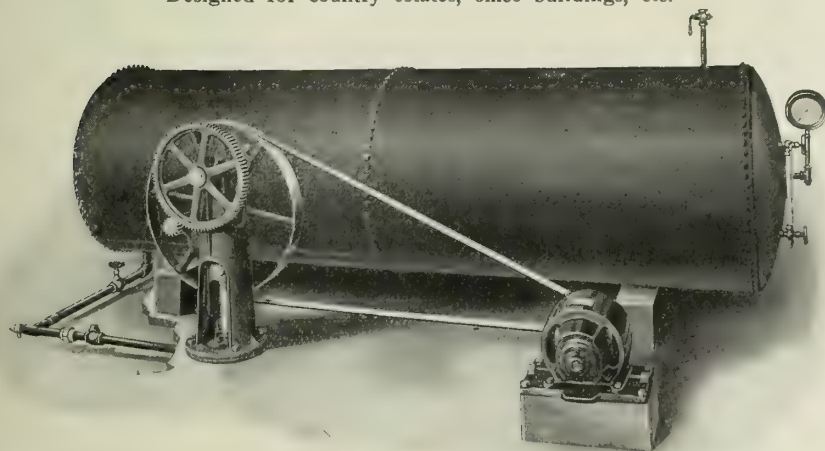
GUARANTEE.

We manufacture our own Pumps. This fact alone protects the purchaser of either pump outfits or complete systems. We are the only concern furnishing pneumatic water-supply systems who do manufacture their own pumps. This is the strongest possible guarantee to a customer, and in addition we guarantee pumps and tanks against defects from either poor workmanship or material; we guarantee every unit to do what we claim for it and to give perfect service if installed according to our directions.

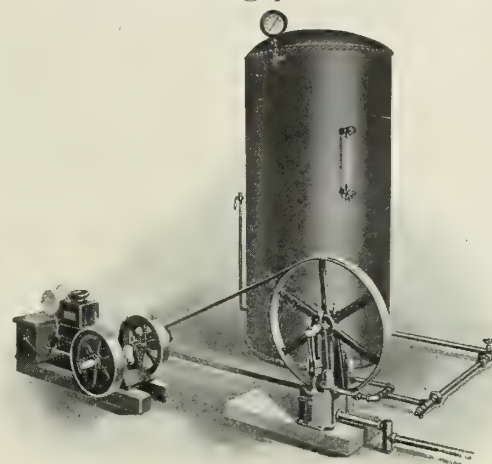


SYSTEM NO. 7, FIG. 822. MOTOR-DRIVEN DUPLEX PUMP AND TANK, AUTOMATIC

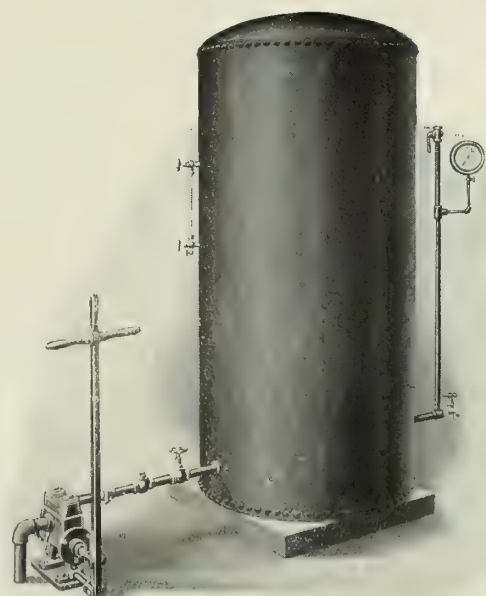
Designed for country estates, office buildings, etc.



SYSTEM NO. 11, FIG. 823. ELECTRICALLY DRIVEN DEEP-WELL PUMPING OUTFIT AND TANK



WATER-SUPPLY SYSTEM NO. 5, FIG. 824
For the country home where electric power is not available



"SANITARY" WATER-SUPPLY SYSTEM NO. 4,
FIG. 832

For supplying the ordinary residence for kitchen and bathroom purposes

THE SANITARY WATER-STILL COMPANY

MANUFACTURERS OF

"Sanitary" Triple Purification Water-Stills
JAMAICA, N. Y.

PRODUCTS.

"SANITARY" WATER-STILLS; SMALL HOUSEHOLD STILLS; LARGE WATER-DISTILLING PLANTS; COMPLETE DRINKING-WATER SYSTEMS; WOOD TANKS (Copper or Block-Tin lined); TIN-LINED or TIN-COATED PIPE.

"SANITARY" TRIPLE PURIFICATION WATER-STILLS.

By our System of Distillation raw water is rendered absolutely pure in one distillation. The distilled water is aerated during the process of distillation. The volatile gases are entirely eliminated, therefore "Sanitary" Distilled Water is deliciously palatable, never tasting flat. The water never shows sediment and is clear as crystal.

USES.

"Sanitary" Distilled Water is extensively used for drinking, ice-making, industrial and technical purposes.

"Sanitary" Stills are specified by architects for providing an absolutely pure drinking water for hotels, office buildings, hospitals, clubs, etc.

NEW PRINCIPLES AND EXCLUSIVE FEATURES.

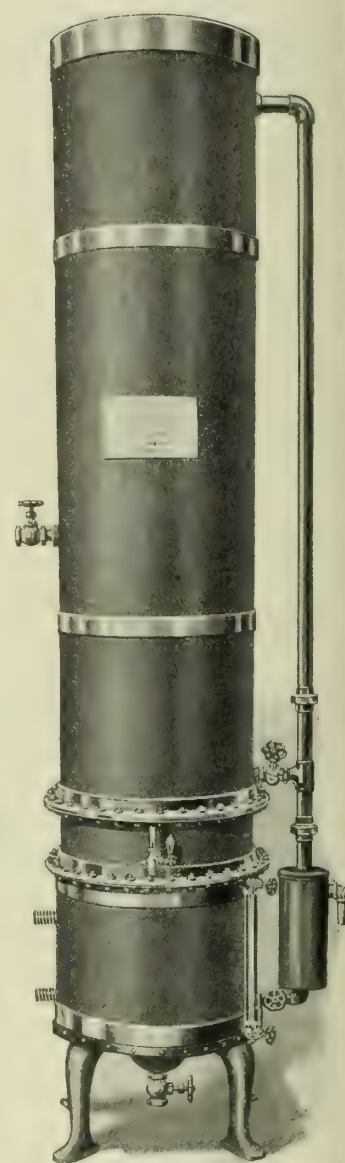
Our System of Distillation does away with annoying coke and charcoal. It will be noted that the evaporator is at the bottom of the apparatus, therefore the vapor is permitted to ascend (its natural tendency) and the empyreumatic gases are allowed to escape before condensation takes place. Our apparatus is the only Triple Purification Still made.

FIRST PURIFICATION—The volatile gases are partly blown off from the hot condenser water in the condenser shell before this water is fed to the evaporator.

SECOND PURIFICATION—The admission of heated air at the point of introduction of the vapor to the condensing tubes.

THIRD PURIFICATION—Takes place in the condenser top.

The Still is self-contained, being supported by one base (except style shown on Plate No. 900), doing away with wall supports, etc. The operation is entirely automatic and requires no attention after starting. The floor space occupied is exceedingly small (as shown on table). All Stills leave our factory erected, ready for steam and water connections, and can very easily be installed.



COMPOSITE TYPE
Model "C"

Simple as a Steam Radiator

CAPACITY

AND DIMENSIONS.

Capacity per day of 24 hours, Gallons	Boiler H. P. required	Diameter, Inches	Height, Ft. Ins.	Steam Inlet and return, Inches	Water Inlet, Inches	Water Outlet, Inches	Net Weight, Pounds	Shipping Weight, Pounds	Price
125	2	14	3 6	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{3}{4}$	60	90	\$115
250	3	16	5 0	$\frac{3}{4}$	$\frac{3}{4}$	1	90	140	205
500	4	19	8 0	1	1	1 $\frac{1}{4}$	450	600	355
750	6	21	8 6	1	1	1 $\frac{1}{4}$	500	650	510
1000	8	23	9 0	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	550	700	560
1250	10	24	9 6	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	625	775	660
1500	12	26	9 6	1	1 $\frac{1}{4}$	1 $\frac{1}{2}$	675	825	710
1800	15	28	10 0	1 $\frac{1}{4}$	1 $\frac{1}{2}$	2	750	950	850
2500	18	36	10 6	1 $\frac{1}{2}$	1 $\frac{1}{2}$	2	1000	1400	950
5000	30	42	12 0	2	2	2 $\frac{1}{2}$	1800	2200	1875
7500	50	48	12 6	2	2 $\frac{1}{2}$	3	2500	3000	2280
10000	60	54	12 6	2 $\frac{1}{2}$	2 $\frac{1}{2}$	3	3000	3600	3000

Write for discounts

MATERIAL
AND CON-
STRUCTION.

The evaporator and condenser shells are constructed of galvanized boiler sheet. The connecting rings are of pressed steel, faced true. The gaskets are of best quality seamless rubber.

The condenser tubes are of finest seamless copper heavily coated with pure block-tin.

The distilled-water chamber, vapor tubes and aerating flues are of finest cold-rolled copper heavily coated with pure block-tin.

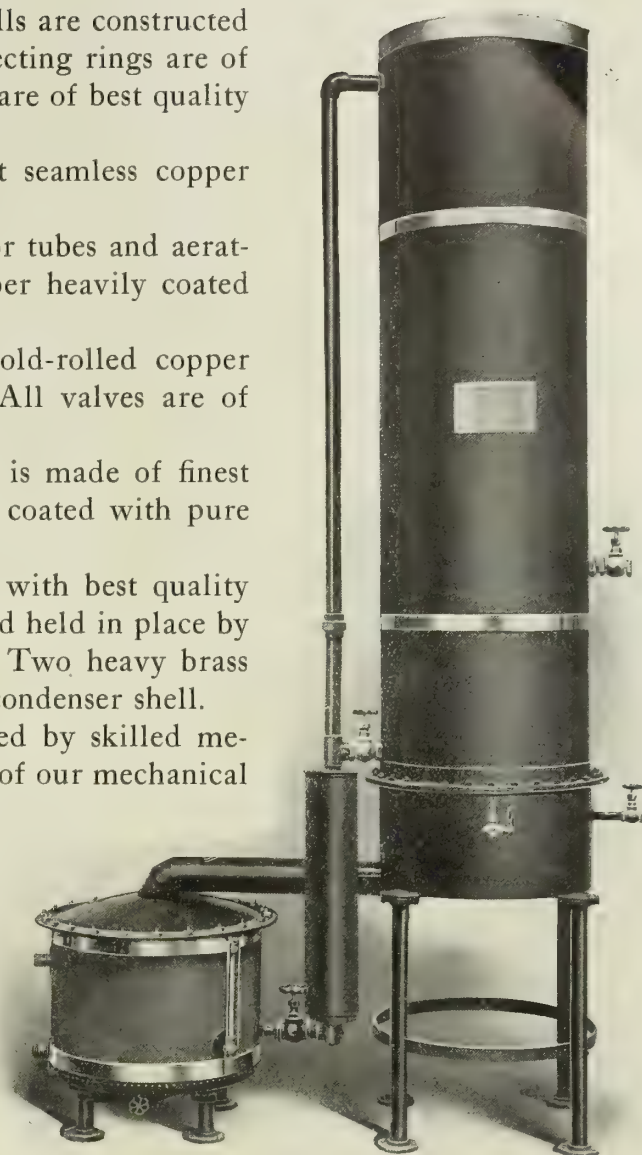
The condenser top is of finest cold-rolled copper heavily coated with pure block-tin. All valves are of best quality brass.

The steam coil in the evaporator is made of finest seamless drawn-copper tubing heavily coated with pure block-tin.

The evaporator shell is insulated with best quality air-cell asbestos covered with canvas and held in place by two heavy brass nickel-plated bands. Two heavy brass nickel-plated bands also surround the condenser shell.

The entire apparatus is constructed by skilled mechanics under the personal supervision of our mechanical engineers. All the raw material is carefully inspected before being employed in construction.

The Stills are finished in red enamel. The condenser top, evaporator and condenser bands and all valves are heavily nickel-plated and buffed to a high finish, therefore the Still presents a very handsome appearance.



INDEPENDENT EVAPORATOR TYPE

Model E. Plate No. 900

CO-OPERATIVE
SERVICE.

Any desired assistance will be given to architects by our engineers. We will gladly write specifications, if wanted. We have valuable data in regard to the proper piping for handling distilled water, special pumps, etc. We are prepared to install Distilled Drinking-Water Systems. We solicit correspondence.

REFERENCES.

In open competition the United States Navy Department has selected our apparatus. This Company was awarded the contract for the largest Distilled-Water System in the world, installed at the United States Naval Training Station, Newport, R. I. 1,500 gallons per hour of "Sanitary" Distilled Water is circulated through over a mile of tin-coated pipe to drinking fountains in the various buildings. Another large plant we have installed for the Navy Department being at the United States Naval Hospital, Portsmouth, Va. On account of limited space we can not give a list of the thousands of "Sanitary" Stills sold, but have selected a few large plants at random, as follows:

Emporia Ice & Cold Storage Co., Emporia, Kans. 250 Gallon Plant
Coney Island & Brooklyn R. R. Co., Brooklyn, N. Y. 500 Gallon Plant
Newport Mineral Water Co., Newport, Ky. 1,250 Gallon Plant
Standard Ink Co., Buffalo, N. Y. 500 Gallon Plant
Imperial Ice Co., Ocean Park, Cal. 500 Gallon Plant
Croft-Anderson Co., Little Rock, Ark. 1,000 Gallon Plant
Bennett & Son, Hutchinson, Kans. 1,800 Gallon Plant
Fred D. Van Order, Ithaca, N. Y. 500 Gallon Plant
C. W. Elliott Co., Williamson, W. Va. 1,000 Gallon Plant
F. P. Shaw, Ventura, Cal. 1,000 Gallon Plant

Peoples' Ice & Cold Storage Co., Long Beach, Cal. 500 Gallon Plant
W. H. Weisbach, Alton, Ill. 250 Gallon Plant
Geyser Mineral Water Co., Rosedale, Kans. 500 Gallon Plant
Jas. Brown Potter, 59 Wall St., New York. 500 Gallon Plant
C. Valaer, Bottling Works, Charlotte, N. C. 1,250 Gallon Plant
Arctic Soda Water Works, Honolulu, Oahu, Hawaii. 500 Gallon Plant
C. C. Mengel & Bro. Co., Louisville, Ky. 500 Gallon Plant
North Wood Club, Minerva, N. Y. 75 Gallon Plant

WENDNAGEL & COMPANY

Manufacturers and Builders of Tanks and Towers

2150 South Jefferson Street

CHICAGO, ILL.

ESTABLISHED 1856

PRODUCTS.

WOOD TANKS, STEEL TANK TOWERS, RAILROAD TANKS, CAR TANKS, FACTORY TANKS, TRANSMISSION TOWERS, and WATER-SUPPLY OUTFITS.

USES.

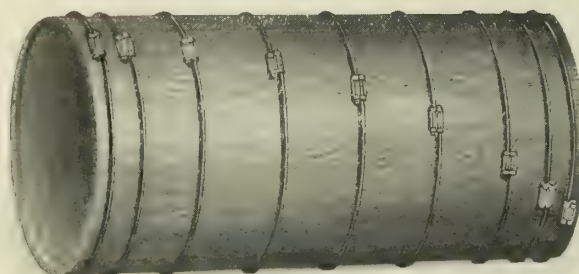
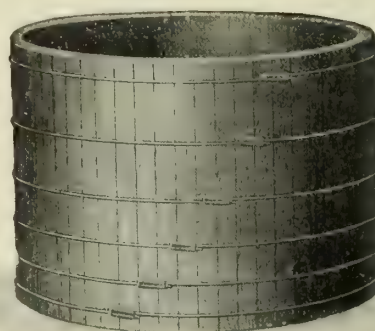
General Water Supply for factories, towns, railroads, private institutions; Tanks and Vats for acids and all kinds of liquids.

INFORMATION FOR TANK SPECIFICATIONS.

LUMBER—For durable tanks it is of the utmost importance to use heart (free from sap) lumber. It should be at least 90 per cent heart because the sappy part of any kind of wood rots very quickly, especially in a tank. Fir and red cypress are the most durable and best adaptable for tanks. We use only the highest grade in both—free from knots and fully 90 per cent heart.

HOOPS—Round Hoops are slightly more expensive than flat ones but last a great deal longer, the metal is thicker, and they are well worth the difference in price. All Hoops should be made with lugs; they can then be drawn up with a wrench very easily in case the tank shrinks.

WORKMANSHIP—Our joints are all smoothly planed (not sawed), and staves have bevel croze; sawed joints and square-cut croze make leaky tanks. Our staves are convexed to the proper circle, giving full bearing to the hoops, the entire width of the stave, and making a neatly finished tank.



TYPES OF WOOD TANKS
PRICES OF STANDARD GRAVITY TANKS

Capacity, Gallons	Outside Diameter	Length of Stave	No. Round Hoops	Weight	Price, Complete
10,000	13 ft. 8 in.	12 ft.	11	7,900 lbs.	\$285.00
15,000	15 " 2 "	14 "	14	10,000 "	371.00
20,000	16 " 2 "	16 "	16	12,100 "	455.00
25,000	18 " 0 "	16 "	16	13,600 "	520.00
30,000	18 " 5 "	18 "	20	15,700 "	594.00
40,000	20 " 0 "	20 "	22	20,000 "	746.00
50,000	22 " 3 "	20 "	23	23,000 "	877.00

These prices are for Gravity Tank complete, including a heavy steel ladder extending from tank platform to roof of tank, a wood ladder for inside tank, flat covers and conical roofs, and 4x6 sub-joist, all as shown in illustrations. Ask for discounts.

GRAVITY
TANKS TO
MEET
INSURANCE
REQUIRE-
MENTS.

These tanks are all made of 3-inch first-quality fir, with heavy round lug hoops, and are made to meet the requirements of Factory, Mutual, or Stock Insurance Companies.

For the diameter of a tank, multiply the circumference by .31831.

For the circumference of a tank, multiply the diameter by 3.1416.

For the area of a circle, multiply the square of the diameter by .7854.

A gallon of water (U. S. Standard) weighs $8\frac{1}{3}$ pounds and contains 231 cubic inches.

A cubic foot of water contains $7\frac{1}{2}$ gallons, 1,728 cubic inches and weighs $62\frac{1}{2}$ pounds.

USEFUL
TANK IN-
FORMATION.

TOWER SIZES.

We make towers for tanks up to 100,000-gallon capacity, in heights from 15 feet to 125 feet (varying in 5-foot heights, viz: 15', 20', 25', etc.). Heights are figured from top of foundation piers to low-water line in tank.

INFORMA-
TION FOR
TOWER SPECI-
FICATIONS.

We make our towers with a safety factor of not less than 4 to 1 against a 30 lb. per sq. ft. wind pressure. Towers for tanks under 15,000 gallons are made with single "L" angle for columns; and for those over 15,000 gallons, with double angles, making a star (*) column. This is the most reliable and economical tower construction. All parts are accessible for cleaning and painting. All our towers are of four-post construction, as eight and twelve post towers do not last as long, the metal being lighter.

FACILITIES.

Chicago is the largest railroad center and lumber market in the world. We are the largest exclusive tank manufacturers and we carry over a million feet of lumber always. We make and erect both tower and tank. Many manufacturers of the one do not make the other. Our factories are strictly up to date, and our experience in this line extends over half a century.

INSTALLA-
TION.

We erect anywhere in the United States, Canada or Mexico, or deliver f. o. b. cars.

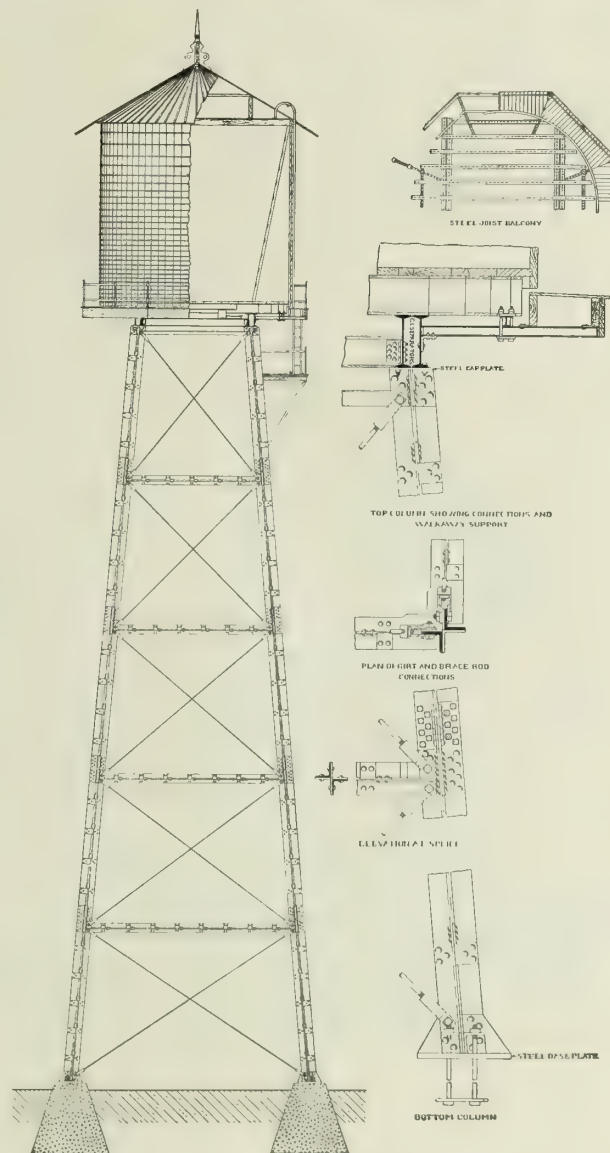
REFERENCES.

We have built over 400 Tower and Tank Equipments, and have never had one either collapse or blow down.

Write for reference list.



GRAVITY TANK



GRAVITY TANK AND TOWER

CHARTER GAS ENGINE COMPANY

MANUFACTURERS OF

“Charter” and “Sterling” Gas and Gasoline Engines

P. O. Box 24
STERLING, ILL.

PRODUCTS.

The “CHARTER” and “STERLING” GAS, GASOLINE, DISTILLATE, ALCOHOL, KEROSENE and NAPHTHA ENGINES, for Stationary, Portable and Marine use; also, direct connection to Generators, Pumps and Hoists.

DESCRIPTION.

The “Charter” is the original Gasoline Engine of the world. Our engines are liberally designed, the water jackets having ample capacity for cooling and can be drained off quickly to prevent freezing in cold weather. Engines are fitted with a very simple and efficient Speed Regulator, giving a variation of 50 per cent between fastest and slowest speed, and our system of Spark Control prevents the sparking except when the fuel is admitted by the governor.

STANDARD “CHARTER” GAS ENGINE.

Our Standard type “Charter” is substantially built, is fitted with phosphor-bronze bearings and piston connections and forged-steel crank and rods. As shown in illustrations, the “Charter” is adapted for all classes of service. Direct-connected to dynamo, pump or hoist, it makes a compact efficient unit.

CO-OPERATIVE SERVICE.

We have an engineering and designing department for the purpose of offering expert advice and assistance to architects and others, and can provide some extremely interesting data as to the possibilities of running ice machinery, vacuum-cleaning apparatus and electric light machinery from the same power.

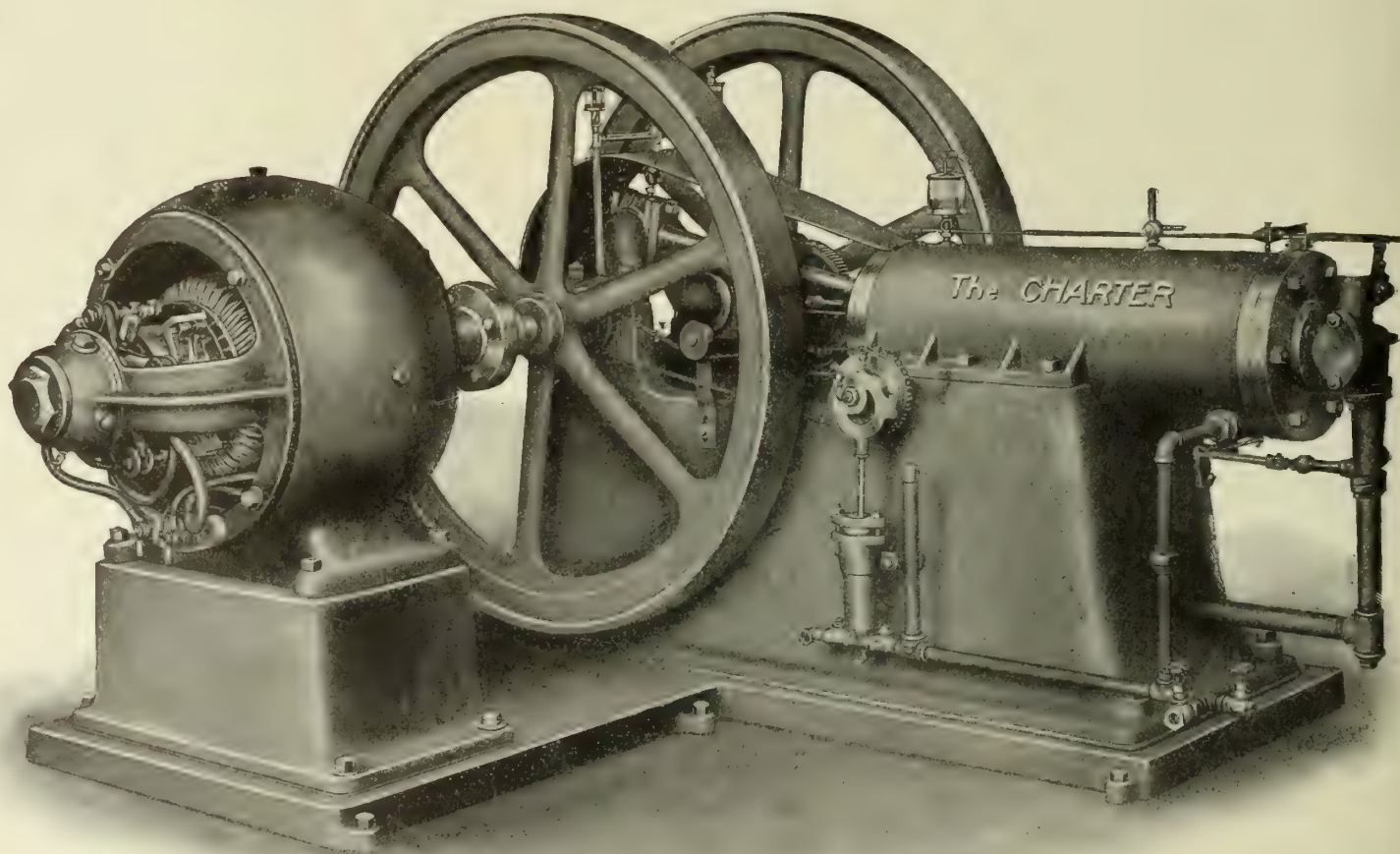


FIG. S1. DIRECT-CONNECTED LIGHTING UNIT

SIZES,
PRICES, AND
COST OF
OPERATION
OF ELECTRIC
LIGHTING
UNITS.

From the following table, having in mind the price of either gasoline or manufactured gas in your locality, the cost of lighting with standard 16 candle-power carbon filament lamps can be figured. By using Tungsten lamps lighting capacity of each size is doubled. It will be noted that the cost of running each outfit is very much below the cost of buying a similar amount of current from most public service corporations.

ENGINES AND DYNAMOS, DIRECT-CONNECTED WITH FIELD RHEOSTAT COMPLETE

Engine	16 C. P. lights engine will operate	Gals. of Gasoline used per hour	Feet of Manufactured gas used per hour	Floor space, inches	Weight	List Price
2½ horse-power	25	.32	63	42 x 42	1,450 lbs.	\$345.00
3½ horse-power	34	.44	88	42 x 42	1,550 "	365.00
5½ horse-power	50	.69	138	60 x 60	3,100 "	565.00
7½ horse-power	75	.95	188	72 x 72	4,000 "	680.00
10 horse-power	102	1.25	250	90 x 90	5,600 "	845.00
12 horse-power	127	1.5	300	90 x 90	6,200 "	995.00
16 horse-power	170	2.	400	102 x 102	8,800 "	1180.00
20 horse-power	204	2.5	500	102 x 102	9,700 "	1400.00
24 horse-power	255	3.	600	120 x 120	12,500 "	1575.00
28 horse-power	305	3.5	700	120 x 120	13,500 "	1685.00

Larger sizes can be furnished.

Engines and Dynamos for Belt Connection can be furnished.

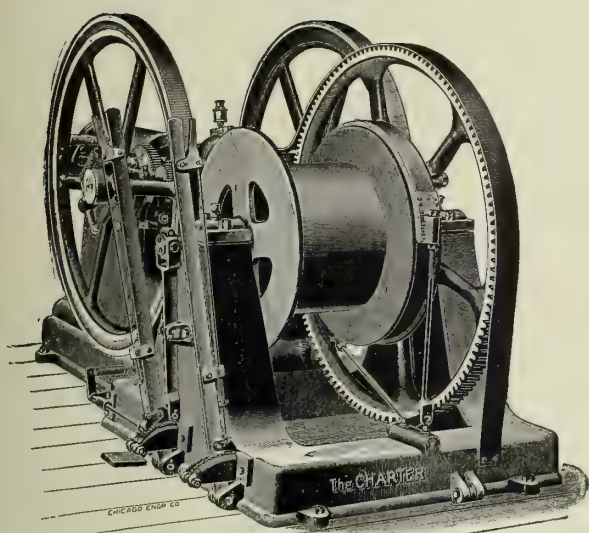


FIG. S 2. "CHARTER" ENGINE AND HOIST

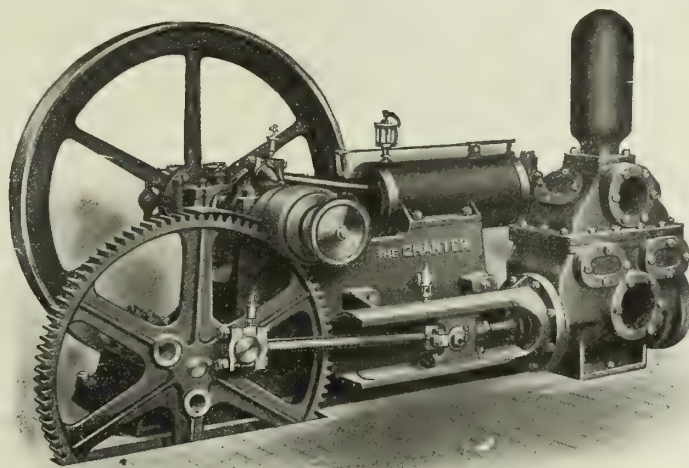


FIG. S 3. COMBINED "CHARTER" ENGINE AND DOUBLE-ACTING PUMP

EQUIPMENTS
FOR
SPECIAL
SERVICE.

Our Special Outfits include the following:
SEMI-PORTABLES—On hardwood frames, for mounting on portable concrete mixers, well drills, portable grain dumps, etc.
SAWING OUTFITS—For cord-wood or pole sawing.
COMBINED "CHARTER" ENGINE AND DOUBLE-ACTING PUMP—For railway supply and other tanks, irrigation, etc. (See Fig. S 3.)
"CHARTER" ENGINE AND PUMPING GEARS—For deep-well pumping.
STERLING PUMPING JACK—For attaching to windmill standard for ordinary wells.
MOUNTED OUTFITS—For portable power.
"CHARTER" ENGINE AND HOIST—With friction clutch, brake, speeding device, indicator and all desirable features. (See Fig. S 2.)
BOAT ATTACHMENTS—For stern and side-wheel boats.

SPECIFICA-
TIONS.

Specifications should name "Charter" Form S 10, stating service for which engine is required.

OFFICIAL EN-
DORSEMENT.

"Charter" equipments have been tested by the Underwriters Laboratory and listed by the Consulting Engineers of the National Board of Fire Underwriters.

INTERNATIONAL HARVESTER COMPANY OF AMERICA

(INCORPORATED)

DISTRIBUTERS OF

Internal Combustion Engines

Harvester Building, Michigan Avenue and Harrison Street

CHICAGO, ILL.

CABLE ADDRESS, "INTHASAL"

PRODUCTS.

INTERNAL COMBUSTION ENGINES adapted for the use of gas, gasoline, kerosene and alcohol.

DESCRIPTION.

The I. H. C. line of gas and gasoline engines includes vertical and horizontal types in many styles; stationary, semi-portable, portable and traction. They are exceptionally simple in design and embody the latest improvements in gas-engine design. Stationary engines are designed for installation in insured buildings. Semi-portable engines are mounted on skids so that they may be hauled from place to place on the runners, or by mounting on trucks. Portable engines are mounted on substantial steel trucks. Traction engines are adapted for hauling heavy loads and for supplying power from the crank shaft.

ADAPTABILITY.

These engines are especially desirable for use as contractors' outfits in construction work and for operating electric lighting and pumping plants.

The portable and Famous skidded engines are ideal contractors' outfits for well drilling and stone crushing, pumping water out of sewers and lowlands, and for operating temporary electric lighting plants, etc. These engines have been successfully used to operate concrete and asphalt mixers.

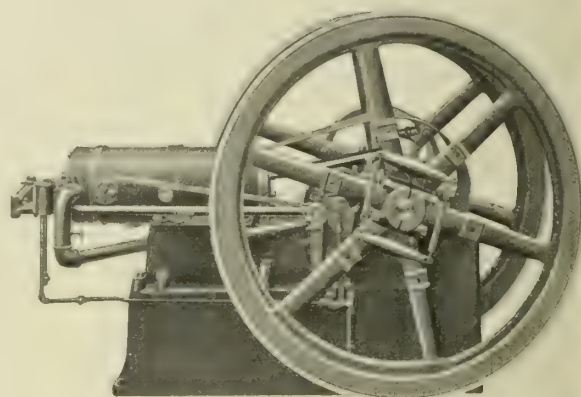
The hoisting engines are adapted for use in building construction.

The I. H. C. vertical and horizontal engines are the ideal power for country home installation. The small engines can be used for operating small electric-lighting plants, pumping water, etc. The two-cylinder, 25 horse-power engines can be used for large lighting plants. The speed regulation on this engine is less than 2 per cent, so that the engine can be directly connected to generator, or belted.

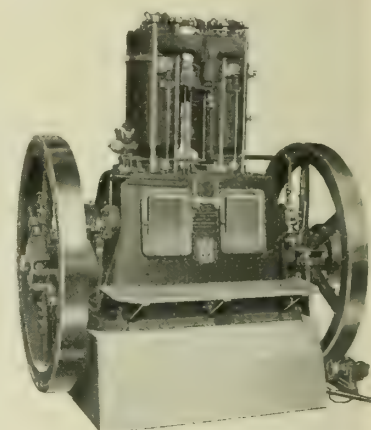
The fact that I. H. C. engines are constructed to secure the measure of safety prescribed by the rules of the National Board of Fire Underwriters permits their use in insured buildings.

FUEL CONSUMPTION.

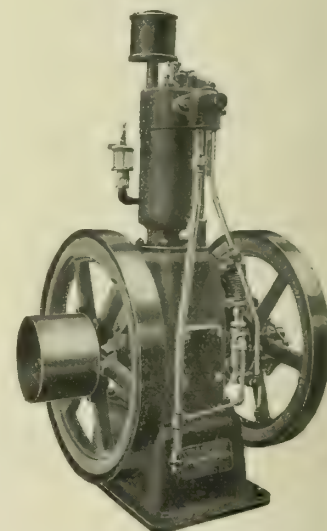
The fuel consumption of these engines is about one tenth of a gallon per horse-power per hour. They use a correspondingly small amount of either natural, city or producers



I. H. C. HORIZONTAL GASOLINE ENGINE
4, 6, 8, 10, 12, 15 and 20 horse-power



I. H. C. GAS AND GASOLINE ENGINE
25 horse-power



I. H. C. VERTICAL GASOLINE ENGINE
2 and 3 horse-power

gas, alcohol or kerosene. The use of gas, alcohol, or kerosene in these gasoline engines requires only slight alterations in the engine itself.

STYLES AND SIZES.

Vertical, 2, 3 and 25 horse-power.

Horizontal (stationary and portable), 4, 6, 8, 10, 12, 15 and 20 horse-power.

Gasoline tractors, 12, 15 and 20 horse-power.

Famous air-cooled, 1 and 2 horse-power.

Famous skidded engines, 2, 3, 4, 6 and 8 horse-power.

Also a complete line of Famous mounting engines from 4 to 20 horse-power, and Sawing, Spraying, Hoisting and Pumping Outfits and Jacks.

OFFICIAL ENDORSEMENT.

I. H. C. gasoline engines are constructed so as to secure the measure of safety prescribed by the rules of the National Board of Fire Underwriters.

Traction, Portable and Famous outfits are self-contained and therefore are not listed in the above classification.

GUARANTEE.

The INTERNATIONAL HARVESTER COMPANY OF AMERICA (INCORPORATED) guarantees these engines to do good work, to be well made, of good materials, and durable if used with proper care.

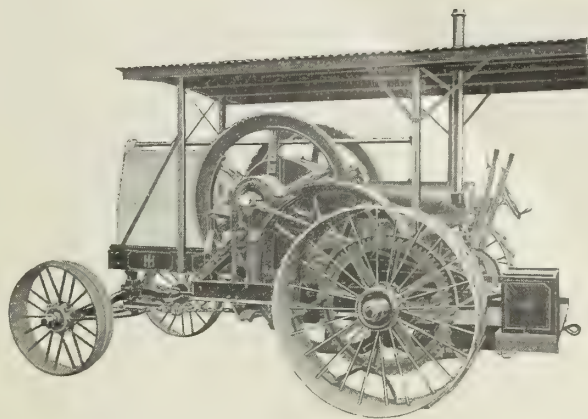
PRICES.

Prices and catalogues will be furnished upon application to any local International dealer handling the line; by the general agent or upon request to the general offices at Chicago.

AGENCIES AND BRANCHES.

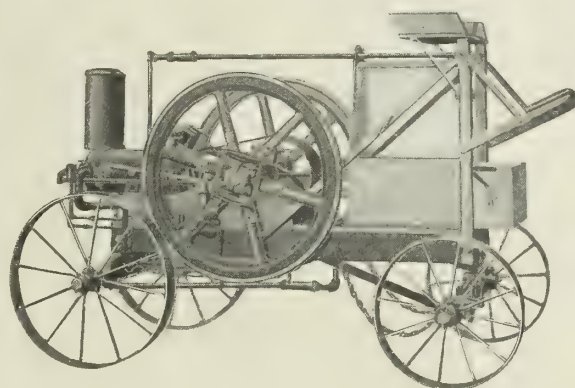
General agents in many of the principal cities of the United States and local representatives in 25,000 towns and cities throughout the country.

Foreign branches in the principal cities of Europe, Canada, England, Australia, New Zealand, South Africa, South America, Mexico and Cuba.



INTERNATIONAL HARVESTER COMPANY
GASOLINE TRACTION ENGINE

Made in 12, 15 and 20 horse power sizes



INTERNATIONAL HARVESTER COMPANY
PORTABLE GASOLINE ENGINE

JACOBSON MACHINE MANUFACTURING CO.

MANUFACTURERS OF

Gas and Gasoline Engines

HOME OFFICE AND WORKS

WARREN, PA.

CABLE ADDRESS, "JACOBSON"

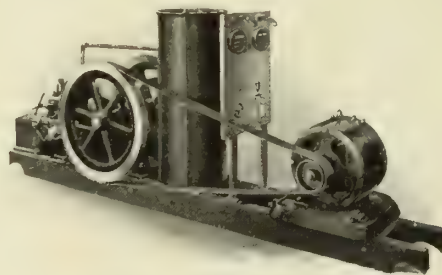
SOUTHERN OFFICE: ATLANTA, GA., 676 Marietta Street

PRODUCTS.

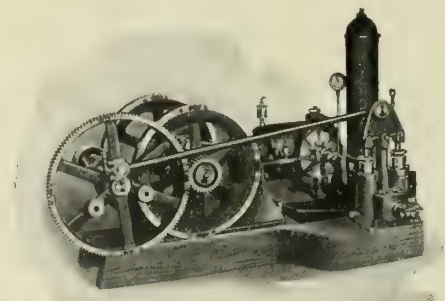
GAS and GASOLINE ENGINES; GAS or GASOLINE PUMPING OUTFITS; SEMI-PORTABLE INDIVIDUAL ELECTRIC LIGHTING PLANTS; MULTIPLE-CYLINDER AUTOMATIC ENGINES; AIR COMPRESSORS.

SEMI-PORTABLE INDIVIDUAL ELECTRIC LIGHTING PLANT.

The Semi-Portable Individual Electric Lighting Plant is for the country home. It costs less than kerosene lamps to operate and is as reliable as a clock or sewing-machine. The cost of complete installation does not exceed ten per cent of the cost of the house and no expert is required to install it.



SEMI-PORTABLE INDIVIDUAL
ELECTRIC LIGHTING PLANT



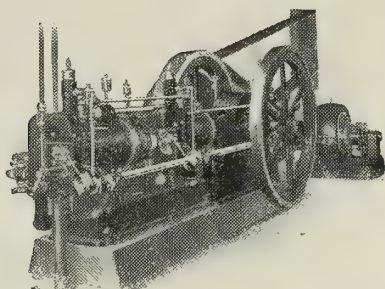
GAS OR GASOLINE PUMPING
OUTFITS

GAS OR GASOLINE PUMPING OUTFIT.

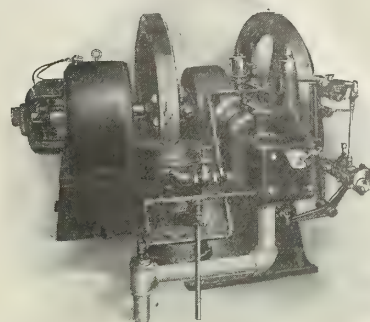
Our Gas and Gasoline Pumping Outfits are complete. They are suitable for pumping water in connection with pneumatic water-supply outfits.

MULTIPLE-CYLINDER AUTOMATIC ENGINE.

The Multiple-Cylinder Automatic Engine is adapted to meet the requirements of office buildings and other places requiring power and lighting under conditions exacting very close speed regulation and reliability on the part of the engine. The engine is belted either to dynamos or to line shafting or both, as required.



MULTIPLE-CYLINDER
AUTOMATIC ENGINE



GAS AND GASOLINE AUTOMATIC
ENGINE

GAS AND GASOLINE AUTOMATIC ENGINES.

The Gas and Gasoline Automatic Engines are direct connected to dynamos for installation in residences, country homes, club houses, and places of any kind requiring lighting equipment when central station current is not available, or is too expensive.

The engine used for lighting purposes can also be used for furnishing power for pneumatic outfits, etc.

BATTERIES.

We install storage batteries complete with each lighting outfit, if desired.

COMPARATIVE COST OF POWER.

COMPARATIVE COST OF POWER FOR VARIOUS TYPES OF ENGINES AS AGAINST COST FROM CENTRAL STATIONS

Type of Engine	Fuel	Price of Fuel	Fuel Consumed per Brake H. P. per Hour	Cost per Brake H. P. per hour or 10-16 C. P. Lamps per Hour
Simple Slide-Valve Steam Engine...	Bituminous Coal	\$3.00 per Ton	8 lbs.	.0120
Compound Condensing Corliss.....	Bituminous Coal	\$3.00 per Ton	3 lbs.	.0045
Steam Turbine	Bituminous Coal	\$3.00 per Ton	3 lbs.	.0045
Gasoline Engine	Gasoline	12c per Gal.	1-10 gal.	.0120
Oil Engine	Crude Oil	4c per Gal.	1-10 gal.	.0040
Gas Engine	Illuminating Gas	75c per M.	18 cubic feet	.0135
Gas Engine	Natural Gas	25c per M.	10 cubic feet	.0024
Gas Engine on Producer Gas.....	Anthracite Pea Coal	\$5.00 per Ton	1 lb.	.0025
Gas Engine on Producer Gas.....	Coke	\$5.00 per Ton	1½ lb.	.0031
Electric Power from Central Station		3c per K. W. Hr.		.0025
Electric Power from Central Station		5c per K. W. Hr.		.0370

QUALITY.

The Jacobson Gas and Gasoline Engines are better than the ones you thought were best.

PLANS AND SPECIFICA- TIONS.

We are in a position and always ready to draw plans and specifications for any part, or for the whole of electric lighting and power plants, machine-shop, mill, grain elevator and general power equipments. Also plants for country homes, club houses, isolated buildings of all kinds, including city office buildings, hotels, etc.; pneumatic water-supply outfits, fire protection and all standard electrical apparatus.

ESTABLISHED 1864

E. KEELER COMPANY

MANUFACTURERS OF

High-Grade Boilers, Steel Stacks and Tanks

WILLIAMSPORT, PA.

BRANCH OFFICES

NEW YORK, N. Y., A. B. DEAN, T. R. BROWN, 29 Broadway
 PHILADELPHIA, PA., J. W. PARKER, G. L. JONES, Real Estate
 Trust Building
 PITTSBURG, PA., JAMES T. CASTLE, Arrott Building
 SCRANTON, PA., J. O. CHRISTIAN, Board of Trade Building
 HOUSTON, TEX., HARRY PENNINGTON CO.

CHARLESTON, W. VA., CHARLESTON MINE AND MILL SUPPLY CO.
 BOSTON, MASS., W. N. SHEAFF, Oliver Building
 ROCHESTER, N. Y., M. E. WHITHAM, Powers Building
 CHICAGO, ILL., O. A. ROCHLITZ, Fisher Building
 ATLANTA, GA., GEORGE M. ILLGES, Empire Building
 RICHMOND, VA., J. L. LINDSAY, 1321 East Main Street

PRODUCTS.

We are manufacturers of High-Grade BOILERS of the WATER-TUBE, RETURN-TUBULAR and INTERNALLY FIRED TYPES.

We design and build large SELF-SUPPORTING STEEL STACKS, GUYED STACKS, and heavy STEEL PLATE TANKS for Pressure or Storage, etc.

"KEELER"
 WATER-
 TUBE
 BOILER.

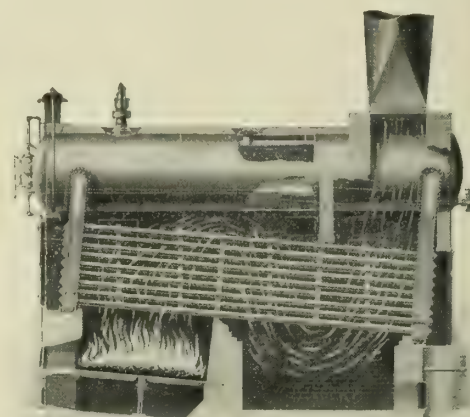
There is no feature of any boiler in the market to-day that is any more efficient or reliable than a similar feature of the "Keeler" Water-Tube Boiler.

Perfect circulation adds to the life and efficiency of "Keeler" Water-Tube Boilers.

"Keeler" Boilers are characterized by absence of all experimental features.



Front elevation



Longitudinal Section

"KEELER" WATER-TUBE BOILER

DESIGN.

The Boiler consists of one or two horizontal steam and water drums to which are securely riveted a front and rear water leg or header of flange steel. Tubes are four inches in diameter and sixteen or eighteen feet long. The tubes are expanded into the headers in straight horizontal and staggered vertical rows. Boilers of three hundred horse-power and under have single drums. All tubes are on six-inch centers and are inclined one inch to the foot.

Hand-holes are placed opposite each end of every tube, making all portions of the interior easily accessible. Plates are of pressed steel with bolts permanently riveted in place. They are placed inside of the header, so that increased pressure tightens the joint without increasing the strain on the bolt. Vertical baffle-walls, as illustrated, are used wherever three feet on each side of a battery or one side of a single boiler can be allowed. Horizontal baffles can be provided if required. Our experience with both types leads us to recommend only the vertical baffle. This type does not fill up with soot. By inserting a steam blower through the separate openings of the side cleaning doors it is possible to keep the entire tube surface free from dust.

HAND-HOLE PLATE AND
YOKE

SIZES.

Keeler Boilers are offered in sizes from 80 to 500 horse-power and 150 to 250 pounds' pressure.

SPECIFICATIONS.

A thoroughly modern shop equipment, a progressive policy and 45 years' experience enable us to meet the requirements of the most exacting specifications.

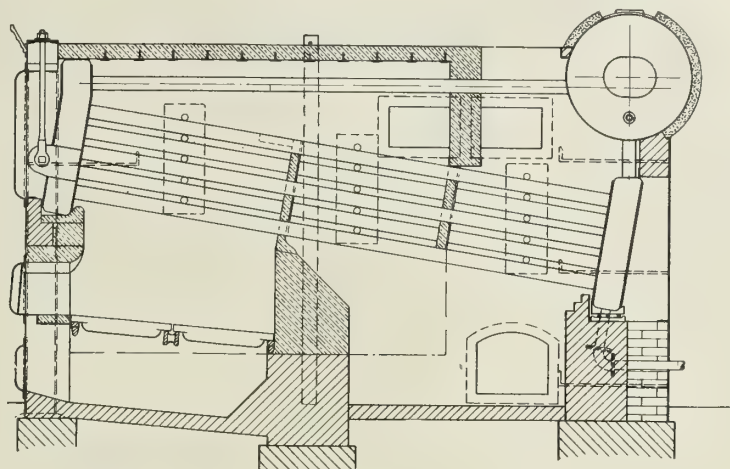
In writing specifications for Water-Tube Boilers we suggest that by including the

following items the architect can insure for his client efficient, dependable boilers of a standard and well-tried design.

Boilers to be of the Water-Tube type of horse-power each. Boilers to contain not less than 10 square feet of heating surface per horse-power.

Boilers to consist of a bank of straight tubes, inclined from the horizontal, expanded at each end into headers of flange steel. Drums to be riveted to headers. Stay-bolts to be of stay-bolt iron. Each end to have a $\frac{3}{8}$ -inch hole drilled one inch deep. Hand-hole and man-hole plates to be of pressed steel with bolts riveted in place. They are to be on the inside of the header and to close with the pressure. Baffle walls to be of the vertical or three-pass type. The front end of the boiler shall be hung on a loop from overhead girders, loop to extend around the drum in front of the header where it is not in contact with the fire.

The front shall consist of two I-beam columns resting on cast-iron foundation plates, and supporting the channel iron girders from which the boiler is hung. There shall be two horizontal I-beams framing the tube door openings. The fire front shall be a removable panel bolted in position. The rear header shall be protected from losses by radiation by means of hinged steel doors on an angle-iron frame.



"KEELER" CROSS-DRUM WATER-TUBE BOILER
Longitudinal Section

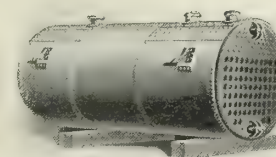
CROSS-DRUM
WATER-TUBE
BOILERS.

"Keeler" Cross-Drum Boilers are offered in sizes from 63 to 230 horse-power. They are recommended for all situations where head room is limited and especially where boiler must pass through restricted openings. Tubes are from twelve and one half to sixteen feet long. Drums are thirty-six and forty-two inches in diameter.

The Cross-Drum Boiler has all the valuable features of the standard design.

TUBULAR
AND
INTERNALLY
FIRED
BOILERS.

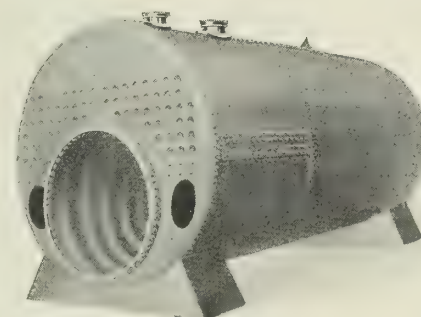
"Keeler" Return Tubular and Internally Fired Boilers are well and favorably known. The same care that has always been used in their construction, combined with the most modern shop methods and equipment, keeps our boilers in the class of the very best.



"KEELER" RETURN TUBULAR
BOILER

ADAPTABILITY.

"Keeler" Water-Tube Boilers, with their quick steaming properties and great capacity for over load, are adapted to electric and heavy duty power plants and wherever the demand for steam is sudden and intermittent. Internally Fired Boilers are adapted to situations where the load is nearly constant.



"KEELER" INTERNALLY FIRED
TUBULAR BOILER

SOME IN-
STALLATIONS
OF "KEELER"
WATER-TUBE
BOILERS.

Jacob Dold Packing Co., Buffalo, N. Y.
Elmira Water, Light and Railway Co., Elmira, N. Y.
Gunn Furniture Co., Grand Rapids, Mich.
North Shore Railroad, San Francisco, Cal.
Ohio River Electric Railway and Power Co., Pomeroy, O.
Saco and Pettie Machine Shops, Newton Upper Falls, Mass.
R. Blankenberg and Co., Philadelphia, Pa.
Southern Cold Storage and Produce Co., Fort Worth, Tex.
New Jersey Coated Paper Co., Montclair, N. J.
American Cotton Oil Co., New Orleans, La.
American Car and Foundry Co., Milton, Pa.
Handling plants for Locks at Gatun and Miraflores, Panama Canal
West Electric and Gas Co., Consolidated, Plymouth, Pa.
United States Bureau of Standards, Washington, D. C.

Chicago Stock Exchange Building, Chicago, Ill.
Buckingham Apartments, Pittsburg, Pa.
Perry Building, Philadelphia, Pa.
Pennsylvania State Capitol Building, Harrisburg, Pa.
United States Custom House, Baltimore, Md.
West Street Building, New York, N. Y.
Danville State Hospital, Danville, Pa.
Powers Building, Rochester, N. Y.
Irem Temple, Wilkesbarre, Pa.
White Building, 95 Liberty Street, New York, N. Y.
St. Joseph's Home, Peekskill, N. Y.
Houston Post Building, Houston, Tex.
Washington National Bank, Pittsburg, Pa.
Pennsylvania Railroad Co., Pittsburg, Pa.
D. L. & W. Railroad Co., Kingston, Pa.

MURPHY IRON WORKS

MANUFACTURERS OF

Murphy Automatic Smokeless Furnace

DETROIT, MICH.

SALES AGENCIES

NEW YORK, N. Y., 1671 Hudson Terminal Building
 CHICAGO, ILL., Marquette Building
 PHILADELPHIA, PA., Stephen Girard Building
 PITTSBURG, PA., 1301 Farmers Bank Building

CLEVELAND, OHIO, Citizens' Building
 CINCINNATI, OHIO, Union Trust Building
 BOSTON, MASS., Board of Trade Building
 ST. PAUL, MINN., ROBINSON, CARY & SANDS CO.

PRODUCTS.

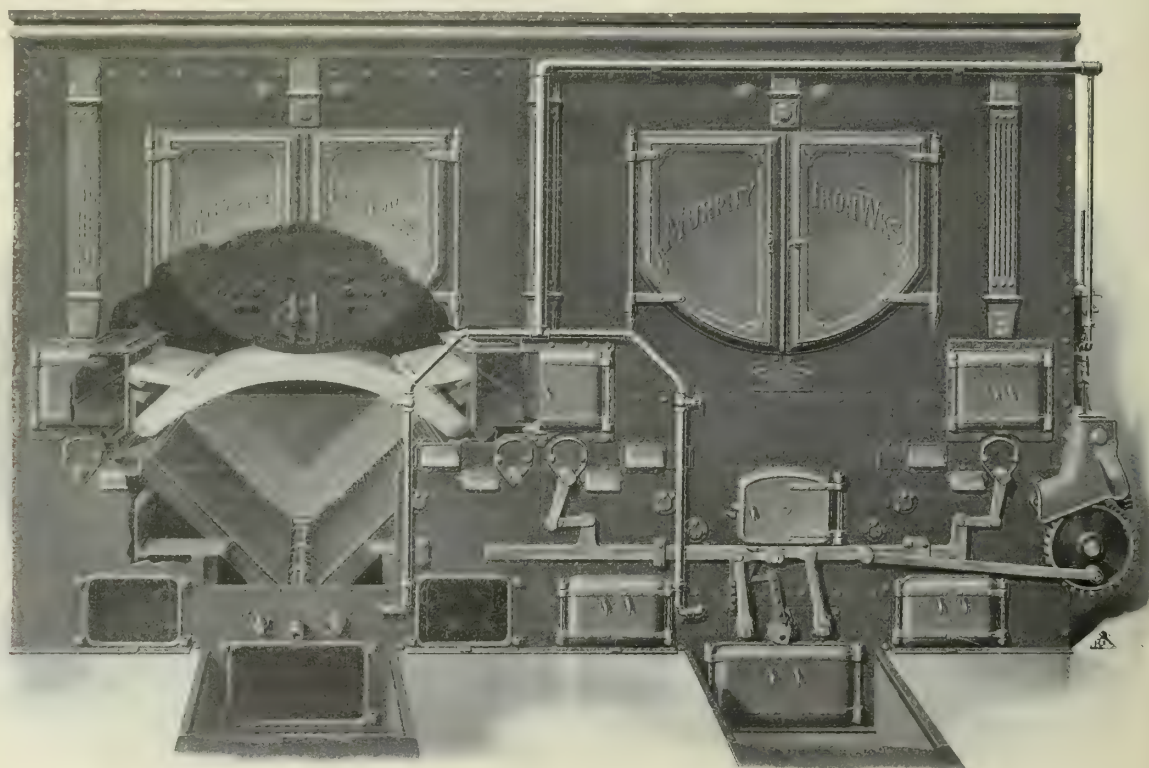
Manufacturers of the "MURPHY" AUTOMATIC SMOKELESS FURNACE and AUTOMATIC STOKERS.

ECONOMY,
 CAPACITY,
 SMOKE
 PREVENTION.
 AUTOMATIC
 FURNACE.
 DURABILITY.

Progressive engineers have long been aware that economy, both in coal and labor, demands the use of automatic furnaces. Their use is justified not only by economy but also by increased capacity and the elimination of smoke.

The "Murphy" is automatic in all its functions. Not only does it automatically feed and distribute the coal, but it also removes the ash and refuse.

Owing to the details of construction of mechanical stokers, prospective users fear large repair bills. This fear is justified where insufficient protection and cheapness of construction are allowed. In the "Murphy" Furnace, the magazines and fronts are protected by fire-brick, the coking plate by the air passing under it, and the clinker grinder, grate bearer and grates by exhaust steam and air. The construction of the grate bars is peculiar to the "Murphy" Furnace in that to every half inch of exposed surface there are nine inches of cooling or radiating surface. The actuating mechanism is entirely outside of the furnace. All the iron parts are of ample strength. The arrangement for lubrication (where it is necessary) is complete; all bearing surfaces are liberal and no moving parts are subject to undue wear.



DIRECT FRONT VIEW, SHOWING SECTION OF TUBULAR BOILER SETTING AND FULL FRONT

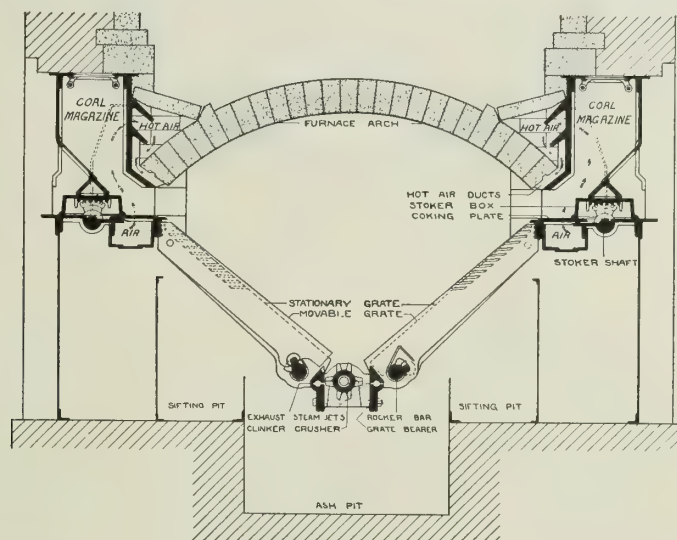
The weight of iron in the "Murphy" Furnaces is greater than in any other furnace. "Murphy" Furnaces have been in operation twenty-five years with practically no repairs; we certainly can not say more than that for their durability.

DESCRIPTION.

At either side of the furnace, extending from front to rear, is a coal magazine into which the coal may be introduced either mechanically from conveyors, or by hand. At the bottom of this magazine is the coking plate against which the inclined grates rest at their upper ends. The stoker boxes, operated by segment gear shaft and racks, push the coal out over the coking plate and on to the grates.

GRATES.

The grates are made in pairs—one fixed, the other movable. The movable grates, pinioned at their upper ends, are moved by a rocker bar at their lower ends, alternately above and below the surface of the stationary grates. Down these the coal slowly travels

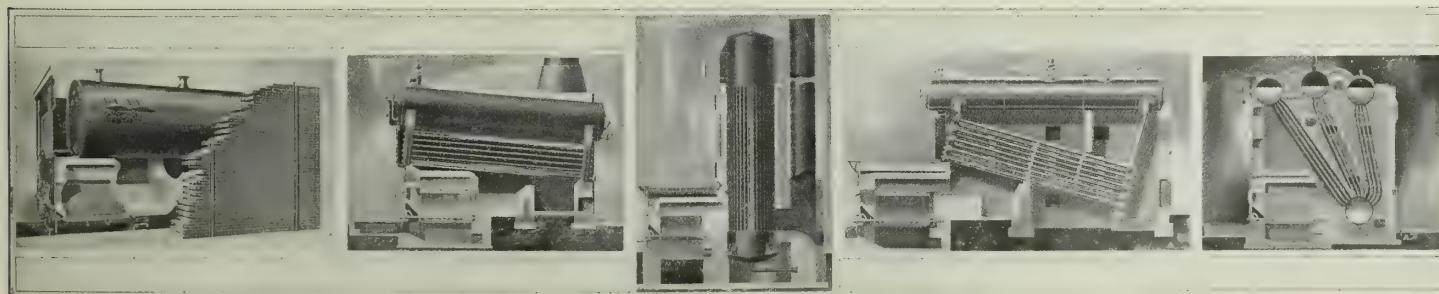


TRANSVERSE SECTION

during the process of combustion, the refuse passing through the clinker grinder at the bottom. Provision is made to carry the exhaust steam from the stoker engine through the grate bearer to soften the clinker and assist the cleaning process.

FURNACES
OPERATED BY
SMALL
ENGINE.

The furnaces are operated by a small automatic engine which may be located on either side of the battery, as desired, geared to a reciprocating bar across the entire front. To this bar all working parts are attached by links which may be removed at will by the operator. Thus any furnace may be thrown in commission or disconnected without stopping the engine or interfering with the operation of the remainder of the plant, and when disconnected can be successfully operated by hand, the fuel fed and ash removed in the same manner as when controlled by the engine. This prevents any possibility of the furnace or boiler being thrown out of commission by the breaking of any portion of the actuating mechanism. The stoker may also be adapted to operate by motor.



"MURPHY" AUTOMATIC SMOKELESS FURNACE APPLIED TO BOILERS OF VARIOUS TYPES

USES.

It is adaptable to any type of boiler and to units of any size. It may also be used wherever high temperatures are required, as in brick drying, salt evaporating, calcining of soda, ash, etc.

THE RIDGWAY DYNAMO AND ENGINE CO.

RIDGWAY, PA.

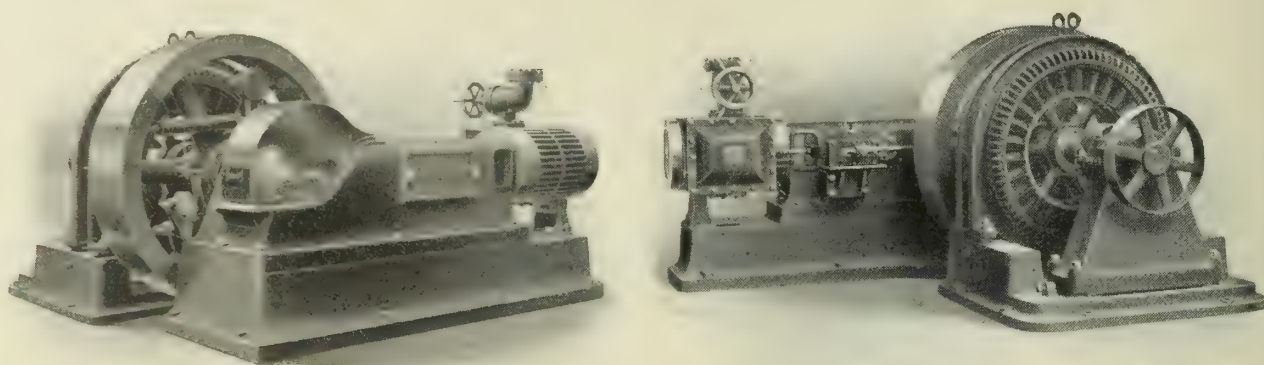
SALES OFFICES

PHILADELPHIA, PA., 1017 Witherspoon Building
 PITTSBURG, PA., 1415 Keenan Building
 WILKESBARRE, PA., Second National Bank Building
 CINCINNATI, OHIO, 806 Andrews Building
 LOUISVILLE, KY., 426 West Main Street
 CHICAGO, ILL., 824 Marquette Building
 NEW YORK, N. Y., 90 West Street
 BOSTON, MASS., Exchange Building
 CLEVELAND, OHIO, 1311 Schofield Building
 BIRMINGHAM, ALA., 401 Woodward Building

ST. LOUIS, MO., A. W. OLIVER, Granite Building
 ST. PAUL, MINN., DWYER-FIELD Co., American National Bank Building
 KANSAS CITY, MO., GREAT WESTERN MANUFACTURING Co., 1221 Union Avenue
 DENVER, COLO., LINDROOTH-SHUBART & Co., Boston Building
 SEATTLE, WASH., HALLIDIE MACHINERY Co.
 SPOKANE, WASH., HALLIDIE MACHINERY Co.
 NEW ORLEANS, LA., RANTZ & BIGGAR, 736 Conti Street
 OKLAHOMA CITY, OKLA., C. A. TAPPAN, 217 West Reno Street

PRODUCTS.

AUTOMATIC, MEDIUM and HIGH-SPEED STEAM ENGINES; DIRECT and ALTERNATING CURRENT GENERATORS.

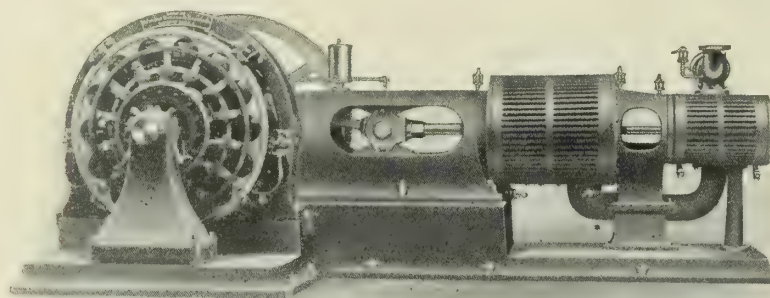


RIDGWAY SIMPLE AUTOMATIC ENGINE DIRECT CONNECTED TO RIDGWAY ALTERNATOR

ENGINES.

The Engines illustrated are of simple design, built of the best materials we can secure, and the workmanship is such as only skilled mechanics can produce. Our center-crank engines are oiled by the gravity system. Our side-crank engines are entirely enclosed and are arranged for splash oiling. Circulating systems will be furnished when desired.

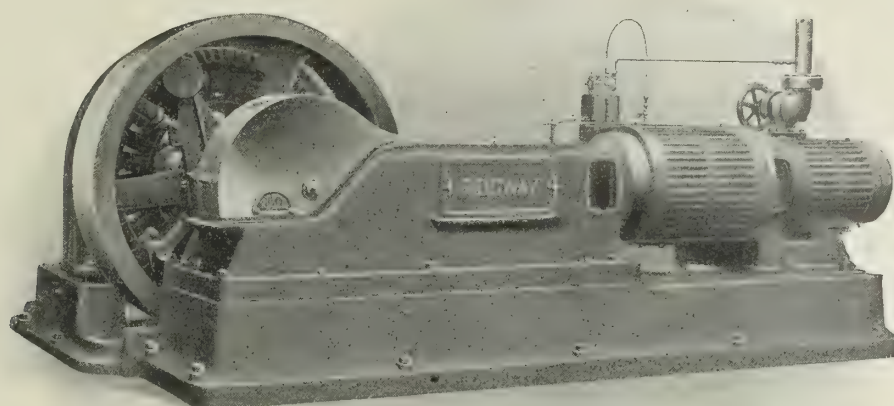
The side-crank lines include single and four valve engines in all types, except vertical. All of these engines have quarter-box bearings and the economies obtained, particularly from our four-valve types, are unsurpassed.



RIDGWAY TANDEM COMPOUND, CENTER-CRANK ENGINE DIRECT CONNECTED TO DIRECT-CURRENT GENERATOR

UTILITY.

All of our engines give the closest possible regulation, and when combined with our generators are specially satisfactory where lights and elevators are to be served from the same bus-bars. Their use however is not limited and they can be depended on for splendid service in any kind of power plant.



RIDGWAY TANDEM COMPOUND SIDE-CRANK ENGINE

SIZES.

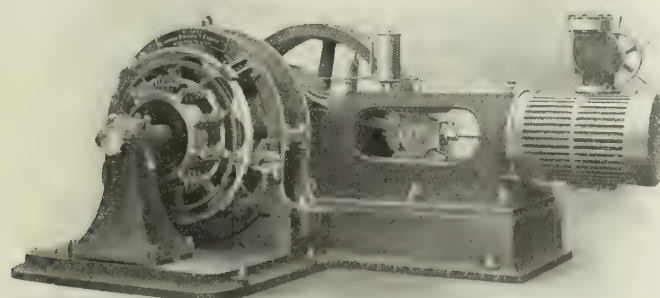
These Engines are built in sizes from simple engines of eight horse-power to cross-compounds of 1500 horse-power.

GENERATORS.

We have recently brought out a line of Alternating Current Generators in sizes ranging from 35 to 750 Kilowatts. We are still offering our well-known line of direct-current apparatus. These machines are equipped with our patented balancing coil-winding which entirely prevents sparking even under the most severe overloads. Direct-current generators can be furnished in sizes from 10 up to 500 Kilowatts for direct connection, and wound for any of the standard voltages.

TESTING.

All of our machinery is assembled and given a thorough running test under conditions approaching as nearly as possible those of actual service. The advantage of having direct-connected units assembled and tested together before shipment must be apparent to every careful buyer.



RIDGWAY SIMPLE CENTER-CRANK ENGINE DIRECT CONNECTED
TO DIRECT-CURRENT GENERATOR

W. D. ALLEN MANUFACTURING COMPANY

Fire Protection Equipments

151-153 East Lake Street

CHICAGO, ILL.

BRANCH OFFICES

NEW YORK, N. Y., 69 Warren Street
 DENVER, COLO., Mining Exchange Building
 SALT LAKE CITY, UTAH, Scott Building

FACTORY

2318-2326 South Western Avenue
 CHICAGO, ILL.

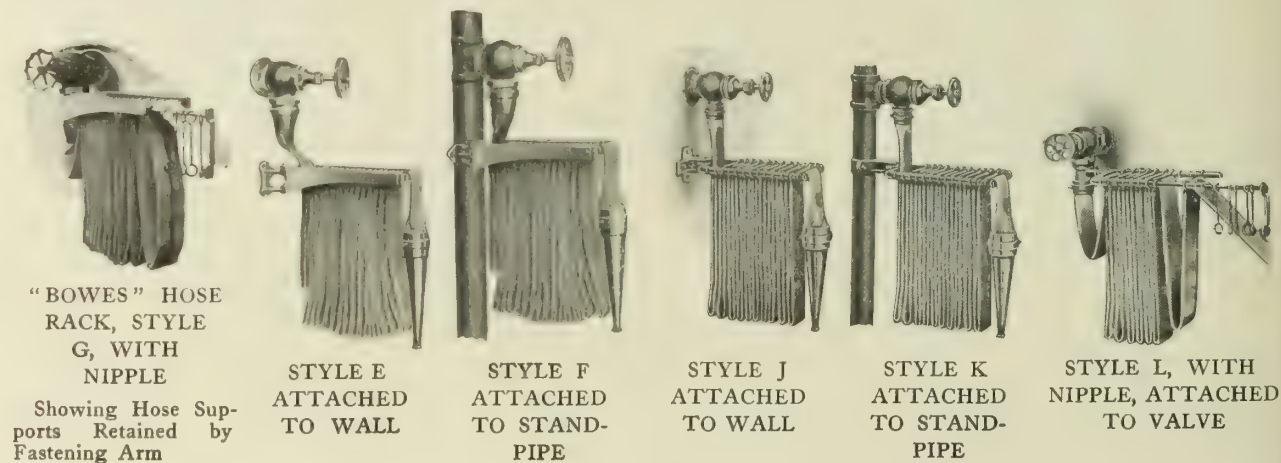
PRODUCTS.

Manufacturers of FIRE-FIGHTING APPLIANCES, including HOSE RACKS and REELS, NOZZLES, COUPLINGS, VALVES, SIAMESE CONNECTIONS, and complete FIRE PROTECTION EQUIPMENTS; also, UNLINED LINEN FIRE HOSE.

"BOWES"
 HOSE RACK.

This rack represents a new idea in the way of holding hose in pendant loops. It will be noted by the illustrations that the supports remain on the rack and are a part of it. As the hose is drawn off the supports are retained by the extension arm. There is no possibility of supports binding or of entangling the hose. Our regular rack, styles E, F, and G, is made of iron, red enameled; styles J, K, and L, iron, with an electroplate finish, but they are also made in brass and in any other possible finish.

Below we illustrate the various methods of supporting the rack, together with list prices, capacities and dimensions of the various styles.



SIZES AND
 PRICES.

Capacity of unlined linen hose. Size of hose	50 feet 1½ inch hose	50 feet 2-inch hose	50 feet 2½-inch hose	100 feet 1½-inch hose	100 feet 2-inch hose	100 feet 2½-inch hose
	Inches	Inches	Inches	Inches	Inches	Inches
A	15 ¾	15 ¾	15 ¾	21	20 ¾	20 ¾
B	2 ¾	2 ¾	2 ¾	2 ¾	2 ¾	2 ¾
C	6 ¼	7 ¾	7 ¾	6 ¼	7 ¾	7 ¾
D	4 ¾	4 ¾	4 ¾	4 ¾	4 ¾	4 ¾
List price, regular finish....	\$5.00	\$5.00	\$5.00	\$6.00	\$6.00	\$6.00

Dimensions and capacities of Styles E, F, and G "Bowes" Hose Racks

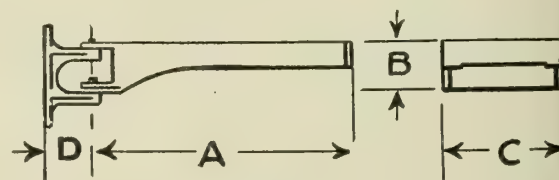


DIAGRAM OF RACK

Capacity of unlined linen hose. Size of hose	50 ft. 1½ in.	50 ft. 2 in.	50 ft. 2½ in.	75 ft. 1½ in.	75 ft. 2 in.	75 ft. 2½ in.	100 ft. 1½ in.	100 ft. 2 in.	100 ft. 2½ in.	150 ft. 1½ in.	150 ft. 2 in.	150 ft. 2½ in.
	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.
A	13 ¾	13 ¾	13 ¾	17 ¾	17 ¾	17 ¾	19 ¾	19 ¾	19 ¾	25 ¾	25 ¾	25 ¾
B	1 ¾	1 ¾	1 ¾	1 ¾	1 ¾	1 ¾	1 ¾	1 ¾	1 ¾	1 ¾	1 ¾	1 ¾
C	5 ¾	6 ¾	7	5 ¾	6 ¾	7	5 ¾	6 ¾	7	5 ¾	6 ¾	7
D	3 ¾	3 ¾	3 ¾	3 ¾	3 ¾	3 ¾	3 ¾	3 ¾	3 ¾	3 ¾	3 ¾	3 ¾
List price, regular finish.....	\$5.00	\$5.00	\$5.00	\$5.00	\$5.00	\$5.00	\$6.00	\$6.00	\$6.00	\$7.00	\$7.00	\$7.00

Dimensions and Capacities of Styles J, K, and L "Bowes" Hose Racks

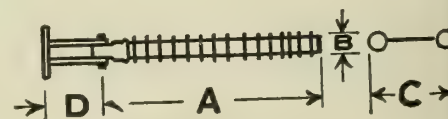


DIAGRAM OF RACK

Our Alenco brand of Underwriters' unlined linen hose is listed and approved by all Insurance Inspection Departments. It will stand a pressure of 500 pounds and is so woven as to reduce leakage to the minimum.

"RYERSON"
HOSE REELS.

Our "Ryerson" Swinging Hose Reels are made chiefly for cotton rubber-lined hose, though we make them in a variety of sizes for unlined linen hose. They are made either of brass or iron, can be finished in any manner and attached to either the wall or standpipe. They are provided with a clip attachment which holds the reel in place but does not interfere with its workings. It is listed and approved by the Insurance Companies.

SIZES AND
PRICES.

Capacity of cotton rubber lined hose. Size of hose	50 ft. 1½ in.	50 ft. 2 in.	50 ft. 2½ in.	100 ft. 1½ in.	100 ft. 2 in.	100 ft. 2½ in.
	Inches	Inches	Inches	Inches	Inches	Inches
A	3½	3½	3½	3½	3½	6⅜
B	24	24	24	24	24	24
C	7	7¾	9¾	9¾	11	13¼
D	28	28	28	28	28	28
list price, regular finish	\$6.00	\$6.50	\$7.00	\$7.00	\$8.00	\$8.50

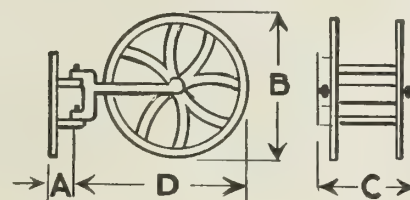
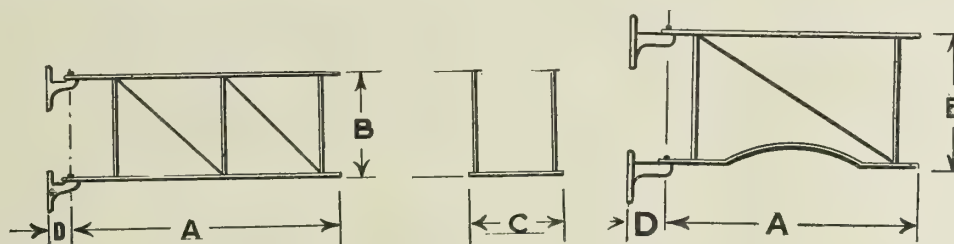


DIAGRAM OF "RYERSON" REEL

Dimensions and Capacities of "Ryerson" Reels for Cotton Rubber-Lined Hose

"DEWEY"
AND
"HARTFORD"
HOSE RACKS.

These Racks are made chiefly for linen hose, although the larger sizes will hold cotton rubber-lined, if desired. They are made of brass or iron in any finish. They are listed and approved by the Insurance Companies.



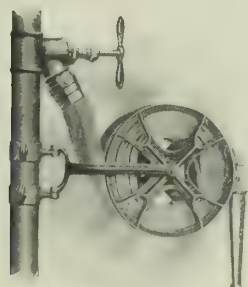
DIAGRAMS OF "DEWEY" AND "HARTFORD" RACKS

Capacity of unlined linen hose Size of hose	50 ft. 1¼ in.	50 ft. 1½ in.	50 ft. 2 in.	50 ft. 2½ in.	75 ft. 1¼ in.	75 ft. 1½ in.	75 ft. 2 in.	75 ft. 2½ in.	100 ft. 1½ or 2 in.	100 ft. 2½ in.	150 ft. 1½ or 2 in.	150 ft. 2½ in.
	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches
A	20	20	20	20	20	20	20	20	27¼	27¼	27¼	27¼
B	9	9	9	9	11½	11½	11½	11½	11½	11½	15¾	15¾
C	4¼	4¾	6	6¾	4¼	4¾	6	6¾	6	6½	6	6½
D	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½	3½
E	11½	11½	11½	11½	13½	13½	13½	13½	13½	13½	19½	19½
List price, regular finish	\$5.00	\$5.00	\$5.00	\$5.00	\$5.50	\$5.50	\$5.50	\$5.50	\$6.00	\$6.00	\$7.00	\$7.00

Dimensions and Capacities of "Dewey" and "Hartford" Racks for Linen and Cotton Hose

ESTIMATES.

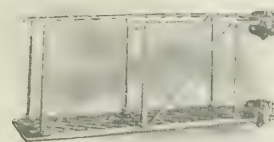
We will gladly give estimates on fire-protection equipment. We are manufacturers of the entire line and can make attractive prices and quick delivery. Our goods can be procured from all leading contractors.



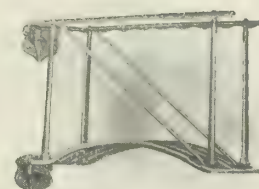
"RYERSON" HOSE
REEL ATTACHED
TO STANDPIPE



"RYERSON" HOSE
REEL ATTACHED TO
WALL



"DEWEY" HOSE RACK
ATTACHED TO WALL
OR STANDPIPE



"HARTFORD" HOSE
RACK ATTACHED TO
WALL OR STANDPIPE

HARRIS FIRE APPARATUS CO.

Modern Fire-Protection Devices and Automatic Ventilators

24 East Twenty-Third Street
NEW YORK, N. Y.

BRANCH OFFICES

ALBANY, N. Y.
BOSTON, MASS.

BUFFALO, N. Y.
CHICAGO, ILL.

INDIANAPOLIS, IND.
MINNEAPOLIS, MINN.

ST. LOUIS, MO.
SAN FRANCISCO, CAL.

PRODUCTS.

We are Engineers, Contractors and Manufacturers of MODERN FIRE-PROTECTION DEVICES, making all styles of FIRE-ESCAPES, FIRE-EXTINGUISHERS and FIRE-ALARMS. We are the Sole Manufacturers of the "HARRIS" STEEL - CABLE FIRE - ESCAPES and the "HARRIS" SYSTEM OF FIRE-ALARMS. We also manufacture the "PALACE" AUTOMATIC WINDOW VENTILATOR; EXHAUST VENTILATOR; SKYLIGHT and ROOF VENTILATORS.

THE "HARRIS" STEEL-CABLE FIRE-ESCAPES.

The "Harris" Steel-Cable Fire-Escapes are the best portable fire-escapes made; they are entirely constructed of steel and can not burn; the cables are made of flexible galvanized wire and will roll up so as to make a reel from six to twelve inches in diameter, according to their lengths; the rungs are placed twelve inches apart and are electroplated.

Each ladder is made to safely sustain 2,000 pounds.

Standard lengths are carried in stock from ten feet to one hundred feet, advancing by five feet; longer lengths can be made at short notice.

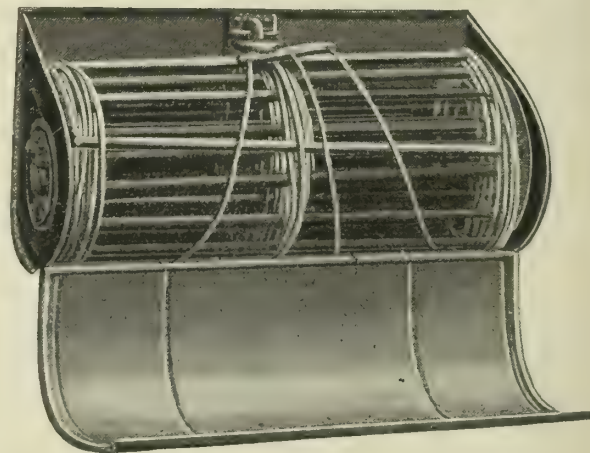
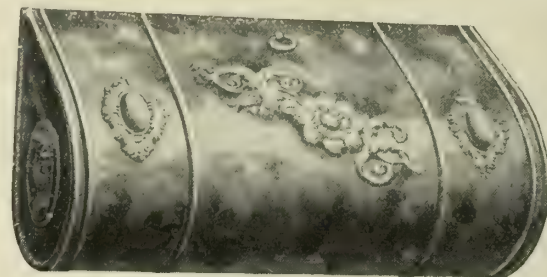
The "Harris" Steel-Cable Fire-Escapes provide the only safe means of escape from fire where outside-stairway fire-escapes could not be considered. For residences, dormitories and auxiliary equipment for hotels, hospitals, institutions and other buildings, they have no equal.

STYLES OF COVERS.

Several styles of Cases or Covers are made for the "Harris" Fire-Escapes—one, in oxidized metallic case, installed at the base-board directly under the window. We also make the "Harris" Built-In Push-Button Cast-Iron Case with the face made to correspond with the trim, built in the flush under the window. This places the fire-escapes entirely out of sight when not in use. It is quickly opened by pressing a button, whereby the ladder is released. Another style is our "Harris" Automatic Mechanical Exterior Built-In Cases placed in the cornice or upper portion of the building and connected with an automatic fusible-link fire-alarm placed to extend through the various floors. This fusible-link device is released by a temperature



"HARRIS" STEEL-CABLE FIRE-ESCAPE IN USE

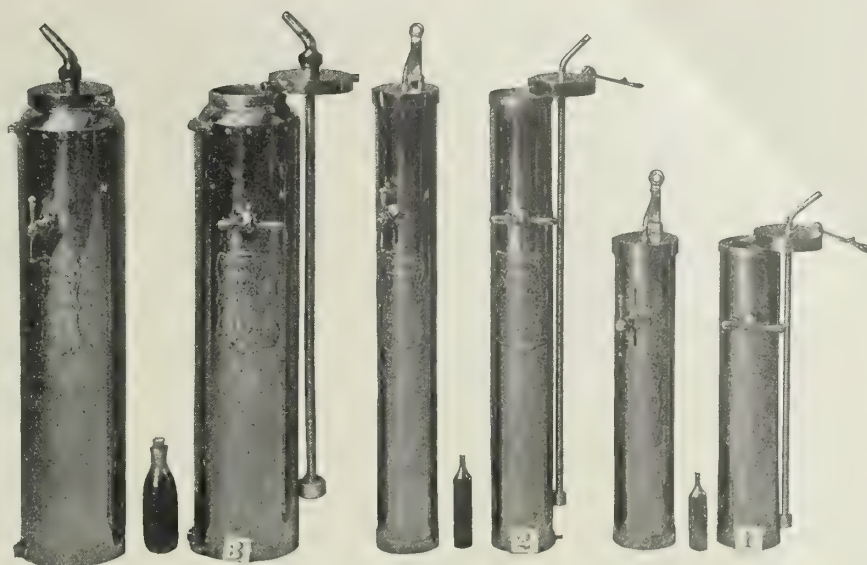


"HARRIS" STEEL-CABLE FIRE-ESCAPES

of 160° Fahr., or by hand, when it instantly sounds the fire-alarm and automatically places the fire-escape in position to be used from each floor. Special Cases to suit any and all conditions can be made at short notice.

THE "HARRIS" SYSTEM OF FIRE-EXTINGUISHERS.

The "Harris" System of Fire-Extinguishers consists of "Harris" Safety Extinguishers (hermetically sealed acid-bottle extinguishers) of one, three, and five gallon sizes; the "Harris Tip Over" and "Acme" Extinguishers (made in all finishes), and the "Pan-American" Chemical Dry-Powder Extinguishers. All of these enjoy the reputation of being the best of their respective styles.



"HARRIS" SAFETY EXTINGUISHER

ADAPTABILITY.

Our structures and appliances are officially approved throughout the country. All work executed by us is constructed and entirely completed to conform to all state and municipal laws for the location in which the work is intended.

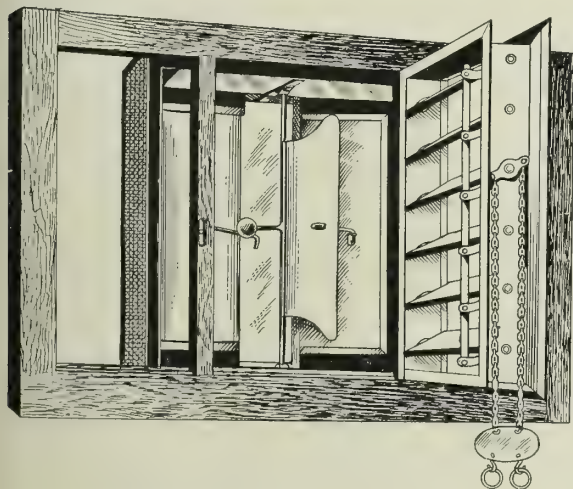
REFERENCES.

Our list of references for "Harris" Steel-Cable Fire-Escapes and Extinguishers contains the names of those most prominent, professionally, politically and socially.

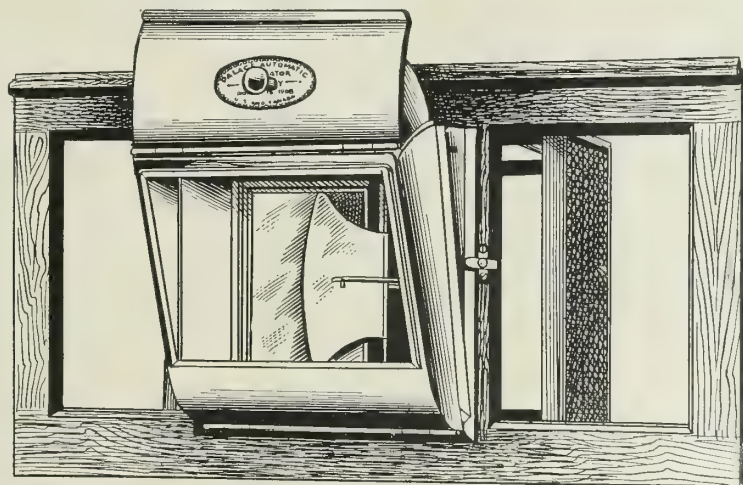
"PALACE" AUTOMATIC VENTILATORS.

The "Palace" Automatic Ventilating System purifies the air because it is constructed entirely of plate and stained glass and does not obstruct the sunlight.

It is dust-proof, because it is so automatically constructed that it prevents dust and filth from entering the crevices. It requires no power or expense to operate, as Nature operates it continuously. It does not create a draft, yet permits the pure air to enter.



SHOWING INTERIOR OF EXHAUST



SHOWING TOP OF VENTILATOR OPEN AND EXPANDED

Can be regulated to any degree

INSTALLATION.

These Ventilators can be installed to meet any and all requirements and conditions. They can be placed in a neat frame to match the balance of the woodwork and can be made removable, or can be placed and made stationary.

SERVICES.

We will furnish, free of cost or obligation, our special catalogues, specifications and estimates for the equipment of any building with Modern Fire-Protection Appliances and "Palace" Automatic Ventilators, or we will submit estimates from plans prepared by architects or builders.

H. J. M. HOWARD MANUFACTURING CO.

MANUFACTURERS OF
Fire-Protection Devices
WASHINGTON, D. C.

FACTORY
146-150 PIERCE STREET, N. W.

PRODUCTS. FIRE-PROTECTION DEVICES, including "HOWARD" SWINGING HOSE RACKS in a variety of styles, "HOWARD" CHEMICAL FIRE EXTINGUISHERS, HAND GRENADES, HOSE COUPLINGS, HOSE PIPES, "NO. 1 HERCULES," "NO. 2 HERCULES," and "PERFECTO" BRANDS of UNLINED LINEN HOSE.

"HOWARD" SWINGING HOSE RACK. In the Fig. 8 style of "Howard" Swinging Hose Rack (see illustration) the rack swings on a nipple below the valve and will lie flush against the wall on either side of the valve. Hose attaches to water supply vertically, avoiding any possibility of kinking the hose at this point. They are the only racks which permit of water being turned on before hose is removed. This is accomplished by the arrangement of the hose on the last three pins nearest to the nozzle.

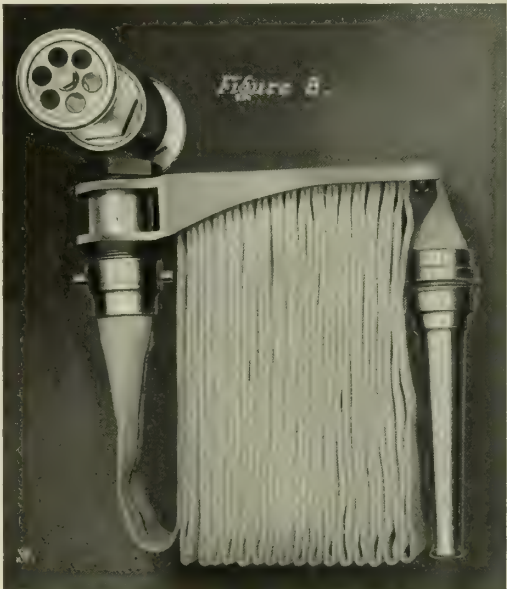
OTHER ADVANTAGES. The loops of hose are supported on wooden pins, avoiding any possibility of injury to the hose. Free circulation of air is maintained through the hose, keeping the hose always dry, thus preventing mildew or rot. It is simple, easy to install, never gets out of order, and can be easily operated.

CAPACITIES OF RACKS AND PRICE-LIST. Unlined Linen Hose—No. 1, 50 ft.; No. 2, 100 ft.; No. 3, 150 ft. Cotton Rubber-Lined Hose—No. 2, 50 ft.; No. 3, 100 feet. These racks are made in widths to conform to the widths of the different sizes of hose; therefore, in ordering be sure to state the kind, size, and lengths of hose which will be placed on each rack.

CO-OPERATIVE SERVICES AND ESTIMATES. Upon application architects will be furnished with drawings made to scale. Estimates will be furnished on complete installations. Upon request new catalogues will be mailed.

REFERENCES. "Howard" Swinging Hose Racks received highest award at the World's Fair at St. Louis. Seventy-five per cent of all the prominent buildings which have been erected in the United States in the last five years have been equipped with them. In Chicago, Ill., they have been installed in the First National Bank Building, Railway Exchange Building, and nearly 100 other buildings. In New York City the "Howard" Swinging Hose Racks are installed in the following well-known buildings, in addition to more than 500 other buildings:

- Trinity Building, 111 Broadway.
- Plaza Hotel, Fifth Avenue and 59th Street.
- R. H. Macy's Department Store, Broadway and 34th Street.
- Hanover National Bank Building, cor. Pine and Nassau Streets.
- United States Express Company's Building, 2 Rector Street.
- Hudson Terminal Building.
- City Investing Company's Building.

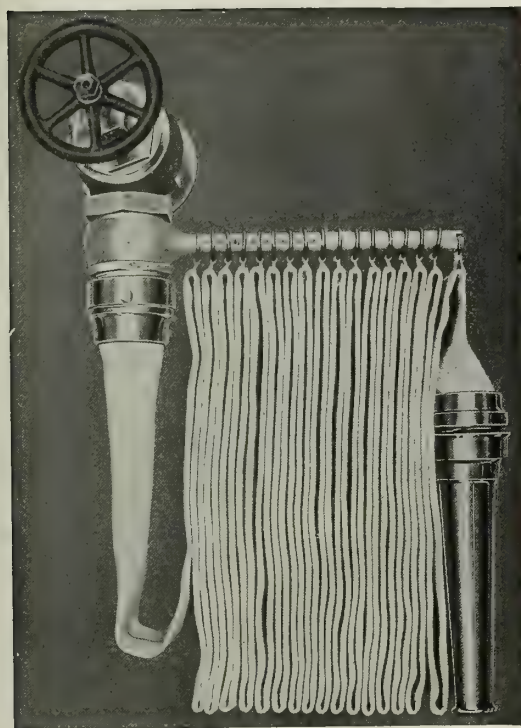


"HOWARD" SWINGING HOSE RACK, FIG. 8
STYLE

STYLE OF FINISH	No. 1	No. 2	No. 3
Japanned Red	\$5.00	\$6.00	\$7.00
Bronzed in Aluminum.....	5.00	6.00	7.00
Bronzed in Gold	5.00	6.00	7.00
Enameled White	6.00	7.00	8.00
Nickel-Plated on Iron	7.00	8.00	9.00
Nickel-Plated on Brass	11.00	13.00	15.00
Solid Brass Polished	10.00	12.00	14.00
Solid Aluminum Polished....	10.00	12.00	14.00
Oxidized on Iron	7.00	8.00	9.00
Oxidized on Brass	11.00	13.00	15.00

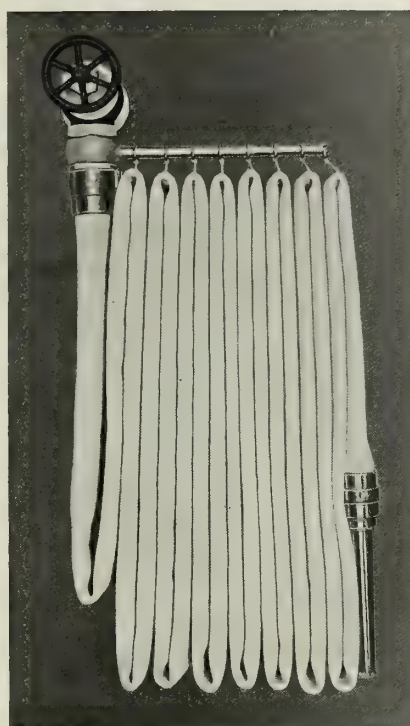
Other styles of finish to order

This list applies to all styles of construction.
..Discounts on application



"PERFECTO" SWINGING HOSE RACK

With 50 ft. of 2½ in. No. 1 Hercules Linen Hose. Supporting arm 12 in. long; loops of hose hang down 18 in.



"PERFECTO" SWINGING HOSE RACK

With 50 ft. of 2½ in. Cotton Rubber-lined Hose. Supporting arm 15 in. long; loops hang down 3 ft.



"IDEAL" SWINGING HOSE RACK

With 50 ft. of 2½ in. No. 1 Hercules Linen Hose. Supporting arms 12 in. long; loops hang down 18 in.

"PERFECTO" AND "IDEAL" SWINGING HOSE RACKS.

The "Perfecto" and the "Ideal" Swinging Hose Racks are two new styles of racks recently placed on the market by the H. J. M. HOWARD MANUFACTURING CO. who are the sole owners of the patents covering the swinging of a hose rack on a nipple or extension below the valve. These Racks are made in all the standard sizes.

CIRCULARS.

Circulars fully illustrating and describing the "Perfecto" and the "Ideal" Swinging Hose Racks will be furnished upon application.

UNLINED LINEN HOSE.

Our Linen Hose (see illustration) is made in three grades under the following registered trademarks:

"No. 1 Hercules," red border and blue center.

"No. 2 Hercules," red border and green center.

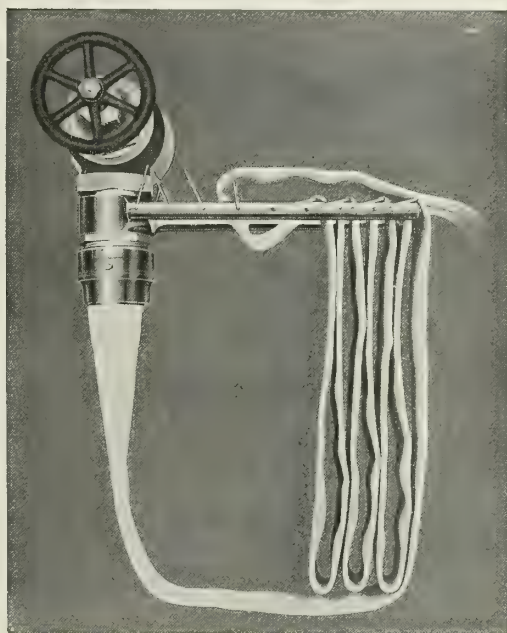
"Perfecto," red border and yellow center.

Prices upon application.

"No. 1 Hercules" is designed and made to meet the requirements of an underwriters' hose.

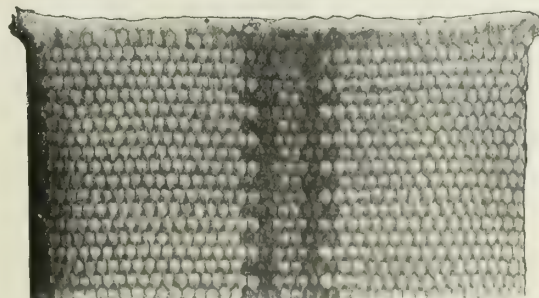
"No. 2 Hercules," though not made in conformity with the underwriters' specifications, is a very serviceable hose and will stand a test of 300 pounds.

"Perfecto" is a guaranteed Underwriters' Linen Hose and will bear the label of the Underwriters' Laboratories of Chicago when required.



SHOWS MOVEMENT OF BAILS WHEN HOSE IS BEING REMOVED FROM "IDEAL" SWINGING HOSE RACK

This movement of the bails provides an opening of about 6 in. out of which to draw the hose



FULL-SIZED SECTION OF PIECE OF OUR 1½ IN. LINEN HOSE

JOHN H. CLAY

GEORGE B. CLAY, PROPRIETOR

Fire-Department and Fire-Protection Supplies

1318-1320 Ridge Avenue
PHILADELPHIA, PA.

PRODUCTS.

We manufacture "CLAY'S" QUICK-OPENING ENGINE-HOUSE APPLIANCES, including "CLAY'S" CANOPY SLIDING-POLE WELL-HOLE RAIL and "CLAY'S" REINFORCED SLIDING POLE, made in two sections; also, BRASS FRONT-DOOR HINGES; "T" STRAP STYLE HINGES, for doors opening in; BUTT STYLE HINGES, for doors opening out; and all kinds of ENGINEERS' and FIRE-PROTECTION SUPPLIES.

SLIDING
POLES.

"Clay's No. 399" Canopy Sliding-Pole Well-Hole Rail eliminates extension of pole to second-floor ceiling.

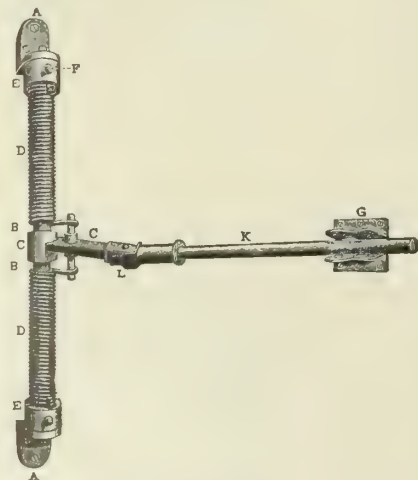
Our Reinforced Sliding Pole is made in two sections for convenience in shipping and erecting. It is as solid as a one-piece pole.

HINGES.

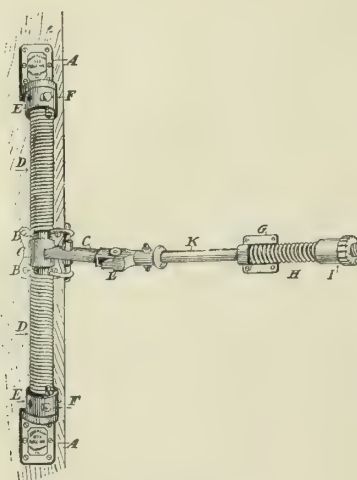
"Clay's" All Cast-Brass Front-Door Hinges, and the "T" Strap Style used on doors opening in, and the Butt Style used on doors opening out, have good points found in no other hinge. They are made for service, require no painting and will never rust out. Knuckles are polished, nickel-plated. All our goods, wherever possible, are made of brass, nickel-plated. They are slightly more expensive, but more durable.

CO-OPERATIVE
SERVICE.

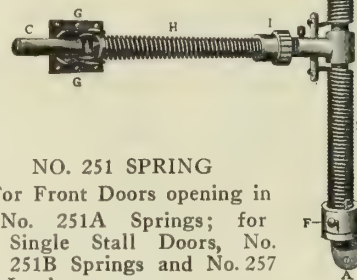
We equip mills and cities complete. We are always glad to send catalogue and information to architects. Fire-house work is not often required and therefore should be well done originally. Our catalogue gives much detailed information.

ILLUSTRATIONS
SHOWING
ENGINE-
HOUSE
EQUIPMENT.

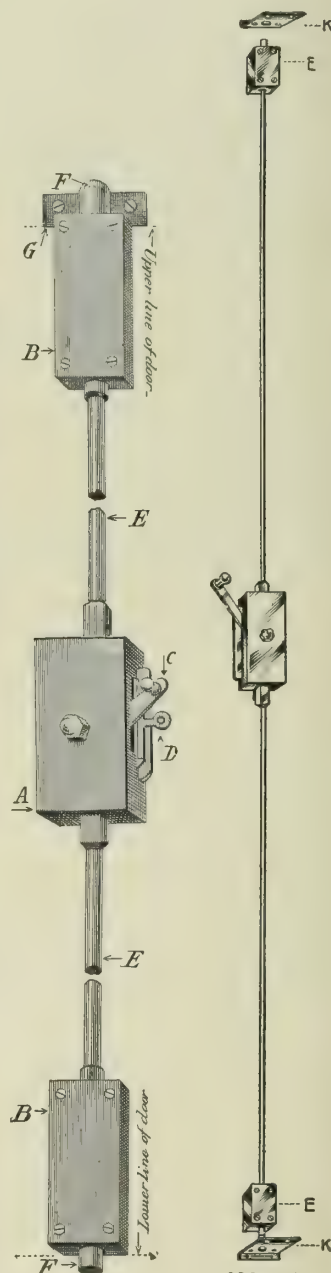
NO. 253 SPRING
For Front Doors opening out



NO. 398 SPRING
For Front Doors opening out, with Check



NO. 251 SPRING
For Front Doors opening in
No. 251A Springs; for
Single Stall Doors, No.
251B Springs and No. 257
Latch
For Double Stall Doors, No.
251C Springs and No. 386
Bolt



NO. 386
AUTOMATIC
STALL DOOR
BOLT FOR
DOUBLE
STALL DOORS



NO. 252
DOUBLE-
ACTING
BOLT
FOR
FRONT
DOORS

CHAS. NIEDNER'S SONS CO.

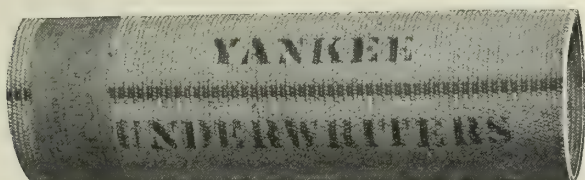
MANUFACTURERS OF

Unlined Linen Fire Hose

10-20 James Street
MALDEN, MASS.

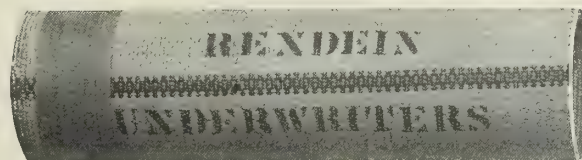
PRODUCT. UNLINED LINEN FIRE HOSE.

EXPERIENCE. We have had the benefit of over thirty-nine years' experience in the manufacture of Linen Fire Hose, and "Niedner's" Linen Hose product is known the world over, as it represents good honest quality and unfailing reliability. We are the leading and largest manufacturers of this product in the world.



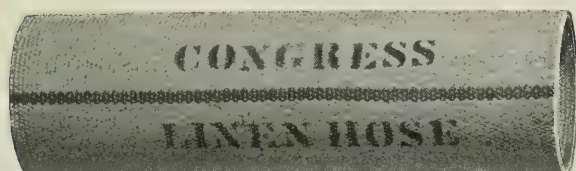
"YANKEE" UNDERWRITERS' LINEN HOSE

Made and labeled strictly in accordance with the requirements and specifications of the Associated Factory Mutual Fire Insurance Companies, and the National Fire Protection Association, as an unlined linen fire hose for inside fire protection



"RENDEIN" UNDERWRITERS' LINEN HOSE

Made and labeled strictly in accordance with the requirements and specifications of the Associated Factory Mutual Fire Insurance Companies and the National Fire Protection Association, as an unlined linen fire hose for inside fire protection.



"CONGRESS" LINEN HOSE

Made in any length and capable of withstanding any pressure up to 400 pounds



"SENATE" LINEN HOSE

Made in any length and capable of withstanding any pressure up to 300 pounds

OFFICIAL
ENDORSE-
MENT.

Our "Yankee" and "Rendein" brands are approved and endorsed by the Associated Factory Mutual Fire Insurance Companies, and the National Fire Protection Association.

GUARANTEE.

We guarantee our Linen Hose to be of standard quality and to be exactly as represented in every way.

INFORMATION.

Full information cheerfully given at all times.

WIRT & KNOX MFG. CO.

MANUFACTURERS OF

Hose Racks and Reels

22 and 24 North Fourth Street

PHILADELPHIA, PA.

PRODUCTS.

We are the only manufacturers of a complete line of HOSE-CARRYING APPLIANCES, including SWINGING and STATIONARY WALL REELS and RACKS, ROTARY or CONNECTED REELS, BRACKET REELS; "ECLIPSE," "CROWN," "ROYAL," "HUMP," "ANGLE," and "SADDLE" HOSE RACKS; PORTABLE REELS and CARTS; GARDEN and LAWN HOSE REELS, etc.

ADAPTABILITY.

Our Hose Reels, Racks and Carts are designed to meet the requirements of factories, mills, warehouses, office buildings, hotels, theaters, railway stations, village fire departments, etc., in varying styles, sizes and capacities.

"ROYAL" HOSE RACK.

In the "Royal" Hose Rack we are offering a rack that contains the very latest improvements.

PROTECTS FROM DUST.

The body of the rack is so constructed that it forms a cover, thus preventing the accumulation of dust on the hose.

PREVENTS MILDEW AND ROT.

The hose hangs vertically with sufficient space between the folds to permit a free circulation of air, preventing mildew and rot.

NON-CORRODIBLE PINS.

The loops of the hose are supported on zinc pins, avoiding any possible injury to the hose due to corrosion.

ATTACHED PINS.

We are the only manufacturers of racks of the vertical fold type which have the pins attached to the rack as shown in sectional view. This is an especially noteworthy feature, as the pins do not drop to the floor when the hose is withdrawn, but remain hanging to the rack ready for immediate use when the hose is returned.

NO BREAKS AT THE FOLDS.

The pins are concavo-convex in form and are of so large a radius that the hose cannot pinch and break at the folds.

NO LOOSE PARTS.

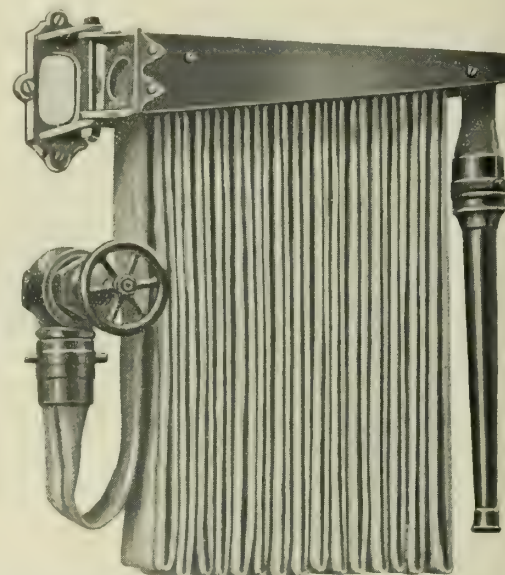
The hose is delivered from the "Royal" Rack absolutely free; there are no loose parts, metal rings, links or strings to catch on furniture or woodwork.

NO TANGLING.

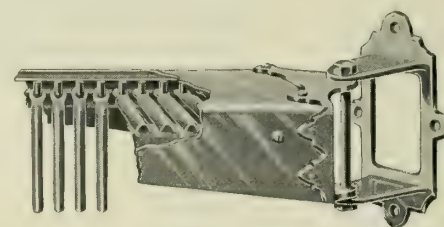
One fold of hose drops from the rack at a time as rapidly as needed, thus preventing a tangled mass on the floor.

BEST MATERIALS.

Only the best materials are used in the "Royal" Rack. It can be furnished in either brass throughout or steel with malleable fittings; no cast-iron is used in its construction.



"ROYAL" RACK ATTACHED TO WALL



"ROYAL" RACK

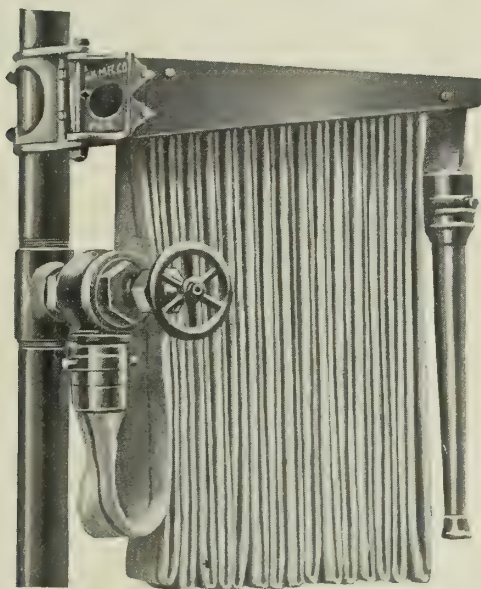
Sectional view showing pin construction and covered top

METHODS OF
ATTACHING.

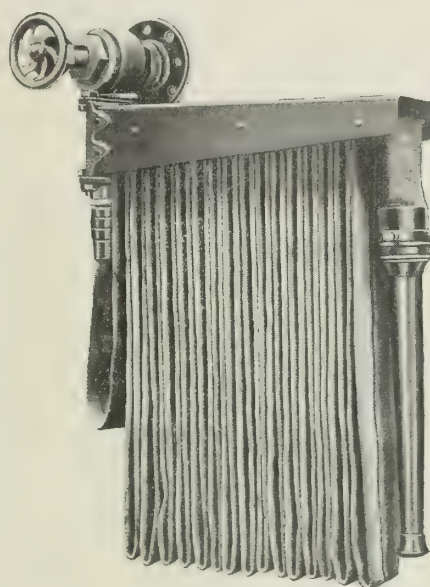
As shown in illustrations, the "Royal" Rack may be attached to the wall, to the stand-pipe, or, by means of a nipple, direct to the valve.

SIZES AND
FINISH.

We will furnish the "Royal" Pressed Metal Rack in regular sizes to hold from 25 to 150 feet of any weight of unlined linen hose and in widths to accommodate 1, $1\frac{1}{4}$, $1\frac{1}{2}$, 2 and $2\frac{1}{2}$ inches, in the following finishes: Solid brass, polished, nickel-plated or verde-antique; and in pressed steel, nickel or copper plated, gold, copper or aluminum bronze, white, black or red enamel, or any other finish desired.



"ROYAL" RACK ATTACHED TO
STAND-PIPE



"ROYAL" RACK ATTACHED TO
VALVE

SPECIFICA-
TIONS.

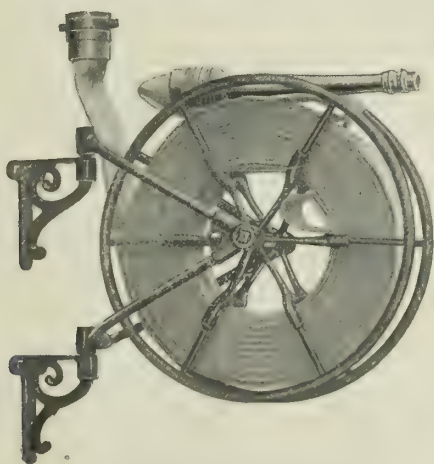
In specifying the "Royal" Rack architects are requested to state the kind, size and length of hose to be placed on each rack; finish required and method of attachment, whether to stand-pipe, wall or valve.

DRAWINGS
AND
CATALOGUES.

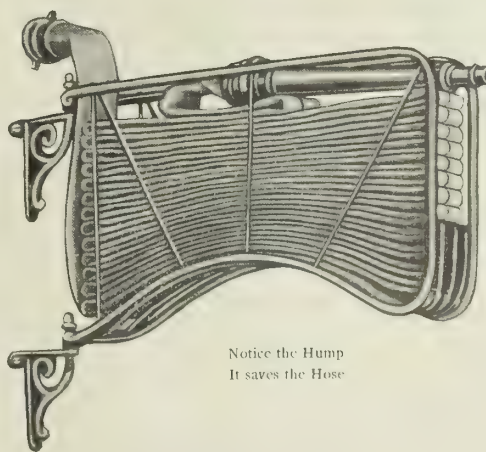
Upon request we will furnish architects with drawings made to scale and catalogues describing our various forms of hose-carrying appliances.

APPLIANCES
FOR COTTON
RUBBER-
LINED HOSE.

The "Royal" Rack will carry cotton rubber-lined hose equally as well as the vertical fold racks of any other manufacturer, but for this purpose we recommend "Wirt's Hump" Rack and "Wirt's" Wall Reel, information regarding which we will gladly furnish.



WIRT'S WALL REEL



Notice the Hump
It saves the Hose

WIRT'S HUMP RACK

AMERICAN MACHINE CO

INCORPORATED

Passenger and Freight Elevators

LOUISVILLE, KY.

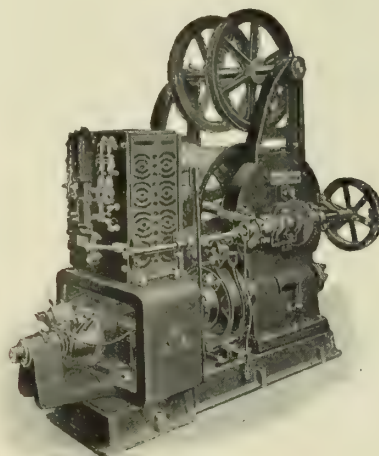
REPRESENTATIVES

AUGUSTA, GA., MOORE-EDENFIELD ELECTRIC & MFG. CO.
BALTIMORE, MD., SOUTHERN ELEVATOR CO.
INDIANAPOLIS, IND., MEIER ELECTRIC & ELEVATOR CO.
KANSAS CITY, MO., U. S. ENGINEERING CO.

KNOXVILLE, TENN., GUARANTY ELECTRIC CO.
NASHVILLE, TENN., J. BOUCHARD & SONS CO.
NEW ORLEANS, LA., AMERICAN ELEVATOR & ELECTRIC CO.
ST. LOUIS, MO., RAMSAY ELEVATOR & MACHINE CO.

PRODUCTS.

Manufacturers of ELECTRIC, HYDRAULIC, BELT, and HAND-POWER ELEVATORS. We also manufacture COMBINATION BELT and HAND-POWER ELEVATORS, which are principally used in Distillery Warehouses and other buildings which do not have steam the year around, and at such times the hand attachment is used.



ELECTRIC ELEVATOR ENGINE

INFORMATION REQUIRED FOR ESTIMATES.

In writing for estimates, give the following information:

FOR EITHER STYLE—State capacity desired, speed, number and height of floors; also, whether building has basement, and whether wood or steel guides are desired. If Passenger, give value of car, and whether and what style of annunciator and light fixtures is desired. If Freight, state whether car shall be wainscoted.

FOR ELECTRIC—State whether current is direct or alternating, and give voltage, phase and cycles. State whether to be operated by magnetic or mechanical control; if the latter, state whether by pilot in car or hand rope. State on which floor engine should be set, or whether above hatch.

FOR HYDRAULIC—State whether vertical or horizontal cylinder, or direct plunger type is desired. Give pressure, and state whether to be operated by street main, gravity or compression tank.

FOR BELT—State whether to be driven by gas engine, electric motor, or line shaft; if latter, give sketch showing location. State from which floor engine can be suspended.

FACILITIES.

We have the largest independent elevator plant south of the Ohio River.

ELEVATOR SUPPLY AND REPAIR COMPANY

MANUFACTURERS OF

Elevator Signals and Accessories and Fireproof Curtains for Theaters

561 West Monroe Street
CHICAGO, ILL.

593 Market Street
SAN FRANCISCO, CAL.

114 Liberty Street
NEW YORK, N. Y.

PRODUCTS.

Manufacturers of "ARMSTRONG" ELECTRIC SIGNALS and MECHANICAL FLOOR INDICATORS for PASSENGER ELEVATORS; AUTOMATIC DOOR OPENING and CLOSING MECHANISM for FREIGHT ELEVATORS; "DESPER" SERVICE RECORDERS and other ACCESSORY DEVICES for ELEVATORS.

STEEL and ASBESTOS FIREPROOF CURTAINS for THEATERS; AUTOMATIC SCENERY HOISTS; RIGGING LOFT EQUIPMENT; and other MECHANICAL APPARATUS for THEATERS. ORNAMENTAL BRONZE and IRON CASTINGS.

The Complete System signals both the operator and the passenger. It tells the operator at which floor to stop and also notifies the waiting passenger which car will arrive first.

A passenger desiring to signal the first car of a bank of elevators pushes either the "up" or "down" button. This sets the signal, and when the first car moving in the direction he wishes to go reaches a point about three floors distant, the lamp in the proper compartment of the "up" and "down" passenger signal lantern on the outside of the elevator enclosure, is automatically illuminated. When the car is within about one floor of the passenger the operator's signal in the car is also flashed, giving him ample time to stop without running past the floor.

The lamps in both the passenger's and operator's signal fixtures remain illuminated until the car reaches the floor from which the signal was given. They are then automatically extinguished.

The mechanism is adjustable and the signals to the waiting passenger and operator may be given at any desired distance in advance of the car's arrival. This permits timing of signals in relation to the speed at which the elevators are operated.

Should the car that receives the signal be fully loaded and therefore unable to take on more passengers the operator may, by pushing a button, transfer the signal to the next car.

This system signals the operator only and is the same as the "Armstrong" Complete Signal except that no waiting passenger signal is used.

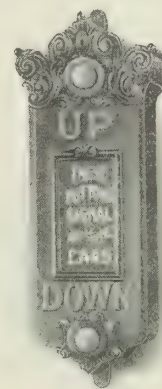
This device consists of push-buttons electrically connected with a buzzer in each car. The push-buttons are mounted in an ornamental plate located on the ground floor at a point most convenient for the starter. Through these buttons he may start the cars from the top and bottom floors and communicate with the operator at will.

THE
"ARM-
STRONG"
COMPLETE
ELECTRIC
SIGNAL.

"ARM-
STRONG'S"
OPERATOR'S
SIGNAL ONLY.
DESPATCHER'S
AND CALL-
BACK
SYSTEM.



Design B.-25

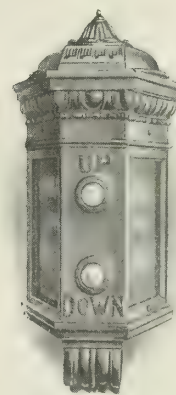


Design B.-15

PUSH-BUTTON PLATES



Design B.-7



Design B.-36

PUSH-BUTTON PLATES

ELECTRIC
SIGNALS FOR
HOTEL
PASSENGER
ELEVATORS.

For the service of hotels or other buildings where elevators do not run on regular schedule we have perfected a signal which serves the duty admirably.

Each car is equipped with an ornamental annunciator box fitted with a double row of miniature lamps corresponding to the number of floors in the building. One row of lamps represents the "up" and the other the "down" signals. When the waiting passenger pushes the "up" or "down" button placed in an ornamental plate on the hatchway enclosure a lamp corresponding to the number of his floor is lighted in the annunciator boxes in all the elevators telling the several operators that a certain floor a passenger waits and also the direction he wishes to go. These lamps remain lighted until one of the cars has answered the call and has automatically extinguished them. The elevators, therefore, make no unnecessary trips and at the same time serve their required duty without delay. No other signal meets the requirements of a building where the cars are not run on regular schedule.

MECHAN-
ICAL INDI-
CATORS AT
GROUND
FLOOR.

In connection with our electric signals, Mechanical Indicators placed on the elevator enclosure at the ground floor are of great value as they show the starter the relative position of each car and so enable him properly to regulate the service.

We make a specialty of supplying artistic dial plates to harmonize in design and finish with the elevator enclosures.

ELECTRIC
POSITION
INDICATORS.

This indicator consists of an ornamental box, usually placed in view of the hall man, having vertical rows of miniature lights, one row for each elevator. As the elevators move up or down the hatchway, the lights in the corresponding rows of the indicator automatically flash and extinguish as the car reaches and passes the floors. The hall man can at a glance therefore tell the position of each elevator.

The position indicator may be located in the hall, engineer's office, or wherever desired.



Design L-6



Design L-2



Design L-8

SIGNAL LAMPS FOR WAITING PASSENGER



Design C-35



Design C-33

FIXTURE IN CAR FOR OPER-
ATOR'S SIGNAL

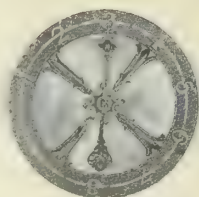


Design S-18

FIXTURE FOR
ELEVATOR
STARTER TO
OPERATE DES-
PATCHERS'
SYSTEM



Design No. 33



Design No. 13

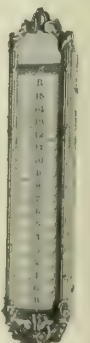


Design No. 14

MECHANICAL SIGNAL DISCS



Design No. 19



Design A-37
SIGNAL FIX-
TURE IN CAR
FOR HOTEL
ELEVATOR

EFFICIENCY AND ECONOMY.

It is a conservative claim that three passenger Elevators equipped with "Armstrong" Electric Signals will render at least as satisfactory service as four elevators without these signals.

With high-speed elevators especially, the "Armstrong" Signals effect a great saving in the cost of repairs. The quick reversals always made by operators when not signaled in advance, are hard on elevator machinery and a frequent cause of accident. This signal makes these reversals unnecessary.

Not only is greater efficiency and economy of repairs effected, but the avoidance of running past and returning to floors effects a decided saving in the cost of power. This point should not be under-estimated, especially where electric elevators are in use, as the saving in power alone will soon cover the entire cost of the signals.

SERVICE RECORDERS.

A Service Recorder attached to the overhead sheave registers the exact number of feet traveled by the elevator, the number of complete trips made, and the number of stops. For hydraulic elevators the readings may be made, if preferred, in pounds or cubic feet of water pumped.

The readings of travel, trips, and stops may be combined in one Recorder or any one of them may be had singly if the others are not required.

We have an electric attachment by which both the daily and ultimate record of travel may be registered on a dial in the engineer's office or wherever required.

ADVANTAGES.

A Service Recorder is the only medium through which an intelligent record may be kept of the amount and cost of the elevator service.

It compares the power consumed from month to month with the actual distance traveled, and since that consumption should be constant it thereby detects leaks in the plant and inaccuracies in the watt or water meter.

It tells in feet of actual service rendered the exact life of cables and packing.

Finally the Service Recorder tells from day to day how many feet each operator has wasted by passing and returning to landings instead of making clean stops.

AUTOMATIC STARTING DEVICE.

The Automatic Starter rings a single-stroke bell at specified intervals at both top and bottom of the elevator hatchway notifying the operator to start. It insures exact regularity of schedule and gives a proper balance to the service. The schedule interval may be changed to accommodate the conditions by shifting a switch, thus as the traffic becomes lighter or an elevator is shut down the schedule can be changed accordingly.

This ability to change the interval of headway is the unique feature of the device.

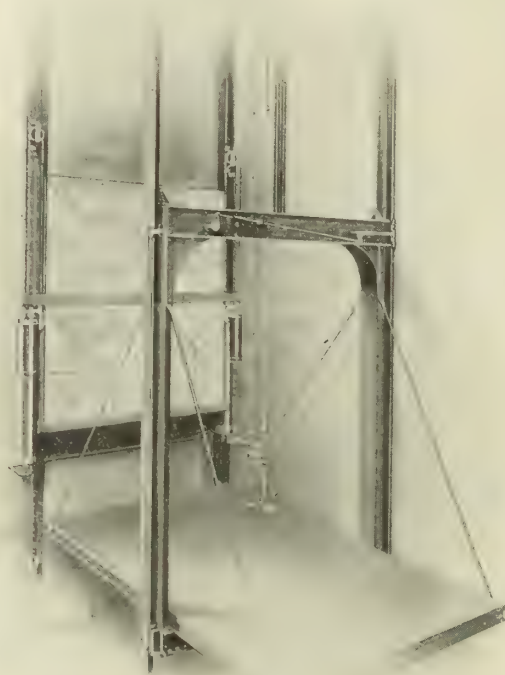
We equip rigging lofts complete with sheaves, head blocks, spar blocks, and counterweights; design and install paint frames with hoisting apparatus, automatic scenery hoists, freight and baggage lifts, etc. Estimates will be furnished for the complete mechanical equipment of the stage, or any separate item.



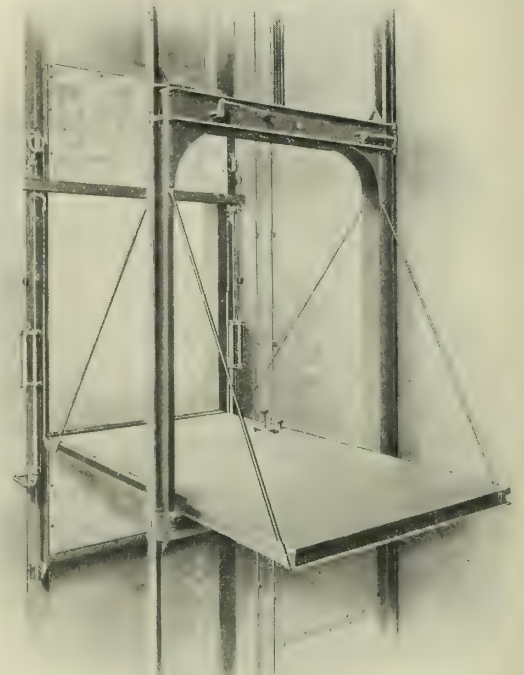
SERVICE RECORDER SHOWING
LINEAL FEET OF ELEVATOR
TRAVEL

AUTOMATIC
FREIGHT
DOOR OPEN-
ING AND
CLOSING
MECHANISM.

This is a pneumatically operated mechanism for automatically opening and closing freight elevator safety gates and doors and is particularly adapted to the "Meeker" type. The compressed air is controlled by the elevator operator through a foot treadle so located on the elevator platform that he can open or close the doors without leaving his operating lever or hand rope. It is impossible for the operator to leave the doors open, as they close automatically immediately as the car leaves the floor level and they cannot be opened from the outside. The device can be used for elevators of all speeds.



Showing relative position of the several parts when the car is either approaching or leaving the floor



Showing the car platform at the floor and the doors open

AUTOMATICALLY OPERATED DOORS FOR FREIGHT ELEVATORS

ADVANTAGES.

Doors of any weight or size may be handled with equal ease and the mechanism insures safety by preventing employees or others from falling into the hatchway through open doors. It doubles the ordinary efficiency because the doors can be opened as the elevator is stopped at the floor level without the operator leaving his position at the operating lever. It affords perfect fire protection because the doors are always closed except at the floor from which the elevator is taking on or unloading freight. The mechanism being independent of the elevator is therefore the only device that can be used for high-speed cars.

WHERE USED.

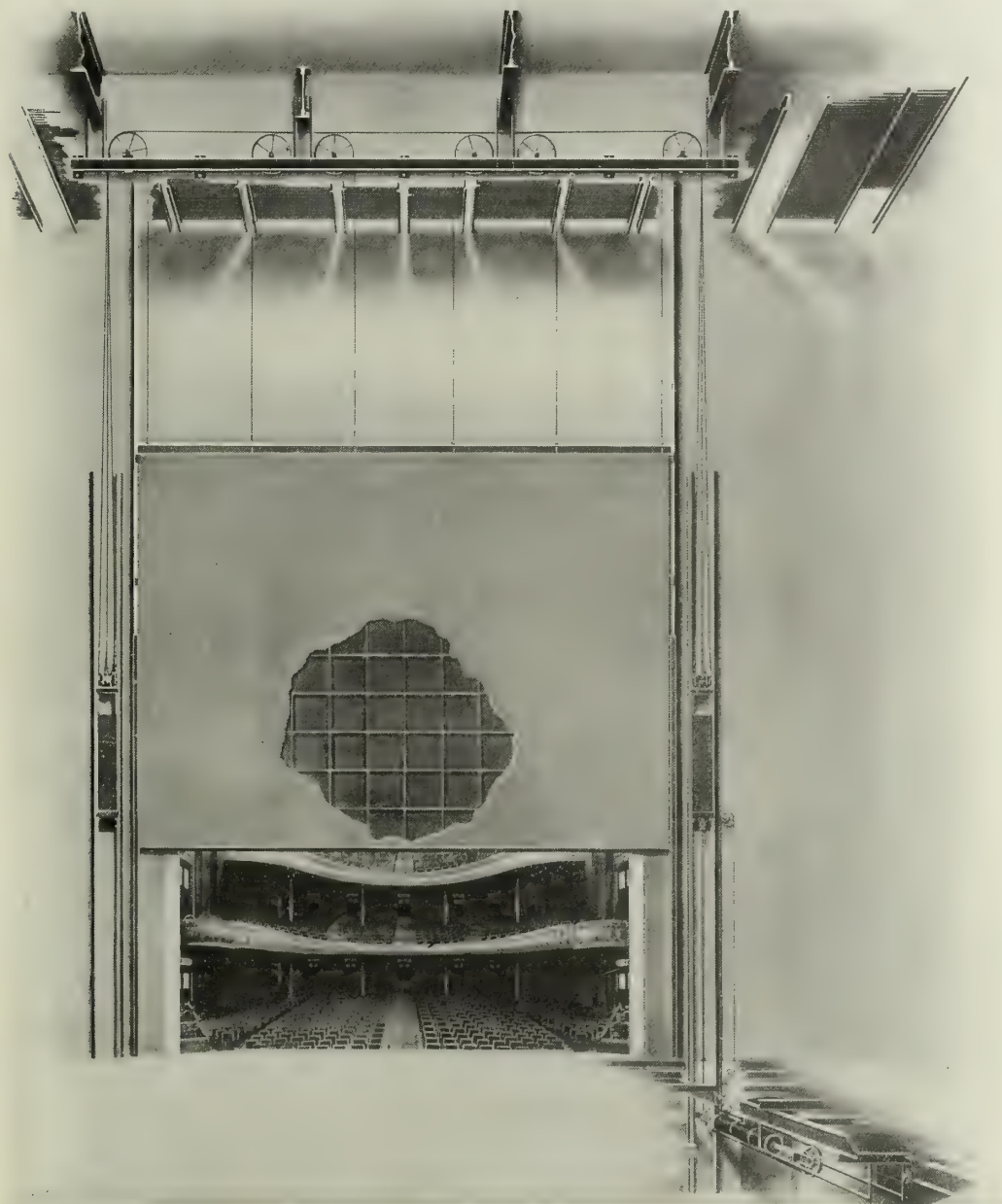
All freight elevators in the Wanamaker Stores in New York and Philadelphia, Grand Central Terminal, Automobile Club of America, and other buildings are equipped with these doors.

Other references will be furnished upon request.

STEEL FIRE
CURTAIN
AND HOISTING
APPARATUS
FOR THEATERS

The frame of the Curtain is made of structural steel cross braced to prevent buckling under heat or wind pressure, faced on the back with vitrified asbestos and constructed to conform with the requirements of the Chicago Fire Ordinances and the rules of the National Board of Fire Underwriters.

This Curtain presents a positive fireproof barrier between the stage and the auditorium. It can be lowered automatically from several points on the stage or in the auditorium, and can also be lowered instantly by gravity should the operative power fail. The Curtain is operated by either hydraulic or electric power.



A TYPICAL INSTALLATION OF STEEL FIRE CURTAINS FOR THEATERS

REFERENCES.

Among the theaters in which we have installed Steel Curtains and other apparatus are the following:

Academy of Music, Chicago, Ill.
 Academy of Music, Brooklyn, N. Y.
 American Theater, Chicago, Ill.
 American Theater, St. Louis, Mo.
 College Theater, Chicago, Ill.
 Colonial Theater, Chicago, Ill.
 Cort Theater, Chicago, Ill.
 Crown Theater, Chicago, Ill.
 Davenport Theater, New York, N. Y.
 Empire Theater, Chicago, Ill.
 Forrest Theater, Philadelphia, Pa.
 Garrick Theater, Chicago, Ill.
 Gayety Theater, New York, N. Y.

Grand Opera House, Chicago, Ill.
 Lyric Theater, Newark, N. J.
 Lyric Theater, Philadelphia, Pa.
 Majestic Theater, Chicago, Ill.
 Majestic Theater, Des Moines, Iowa
 Majestic Theater, Milwaukee, Wis.
 McVicker's Theater, Chicago, Ill.
 National Theater, Chicago, Ill.
 New Theater, New York, N. Y.
 San Souci Theater, Chicago, Ill.
 Star Theater, Chicago, Ill.
 Star and Garter Theater, Chicago, Ill.
 Whitney Opera House, Chicago, Ill.

ESTABLISHED 1887

ENERGY ELEVATOR COMPANY

PHILADELPHIA, PA.

PRODUCTS.

"LITTLE BEAUTY," "RAPID TRANSIT," "ENERGY," and "LITTLE GIANT" DUMB-WAITERS, HAND ELEVATORS, AUTOMOBILE LIFTS, BASEMENT LIFTS, and BELT-DRIVEN FREIGHT ELEVATORS.

"LITTLE
BEAUTY"
DUMB-
WAITER,
25 POUNDS'
CAPACITY.

Operating gear of iron wheels mounted in guarded iron stands, revolving on steel roller bearings. Car of highly finished hardwood trays with polished brass fittings and adjustable guide shoes. Car to run on polished brass pipes, one to contain the counterweight and the other to be used as a speaking-tube. To be controlled from any floor by a self-holding band-brake.

PRICE.

Price for complete dumb-waiter, including the box at top in which the wheel and brake are set ready for use, but not the closet at the bottom nor the enclosure around the opening of the upper floor: for run not exceeding 10 feet, and car not over 20 x 16 inches, \$60.00. \$2.00 extra for each additional foot of travel.

"ENERGY"
OR RESIDENCE
DUMB-
WAITERS,
100 POUNDS'
CAPACITY.

Operating gear free of noise and easy running, of 100 pounds' capacity, equipped with automatic lock to sustain the car at any point without the use of a line or clamp of any kind, and fitted with antifriction roller bearings. Car of first quality well-seasoned hard ash of neat design, filled and varnished; brass-riveted, and adjustable brass guide shoes. Ropes of hemp. Counterweight to travel in guides.

PRICE.

Price for one-story travel, \$34.00. \$3.00 for each additional story. Double fixtures, \$4.00 extra.

"LITTLE
GIANT"
DUMB-
WAITERS
OR TRUNK-
LIFTS,
300 POUNDS'
CAPACITY.

Operating gear of the automatic self-retaining type, of 300 pounds' capacity, mounted in an iron frame with the wheels and brake permanently fixed, the shafts revolving on steel roller bearings. Car of hardwood enclosed with lining on the back and sides (made any size up to 2 ft. 6 in. wide by 3 ft. 6 in. deep by 4 ft. 6 in. high; this will receive large trunks). Car suspended by one Swedes iron hoist cable; weight to run in a closed box or open guides as preferred.

PRICE.

Price for one-story travel, \$60.00. \$5.00 for each additional story. Car can be the same as "Energy" and weight run in guides if preferred.

HAND-POWER
PASSENGER
ELEVATOR,
500 POUNDS'
CAPACITY.

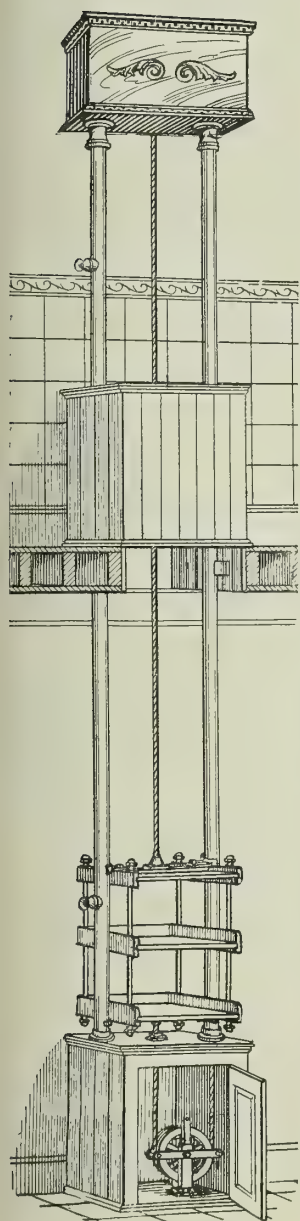
Operating gear of the automatic self-retaining type, of 500 pounds' capacity, spur wheel machine-cut, all bearings antifriction steel rollers. Car of hardwood panels 4 feet high on sides and back, with wire work above this and overhead, car equipped with spring-grip safety device and suspended by two Swedes iron hoist cables. Pull rope of hemp. Counterweight sufficient to balance one passenger.

PRICE.

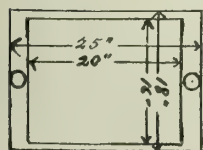
Price, to run one story, \$200.00.

PLANS.

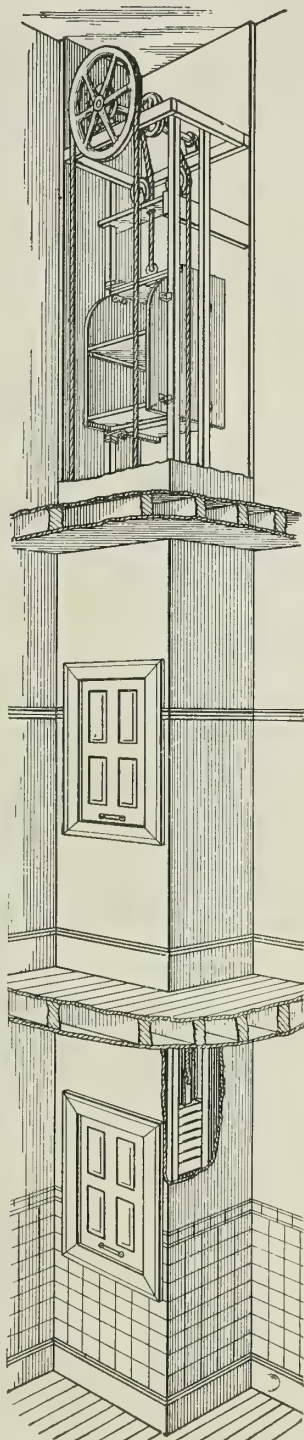
Working plans are furnished for installing these lifts. Special plans will be supplied for special sizes, if stock sizes do not suit.



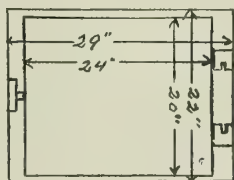
"LITTLE BEAUTY"
DUMB-WAITER



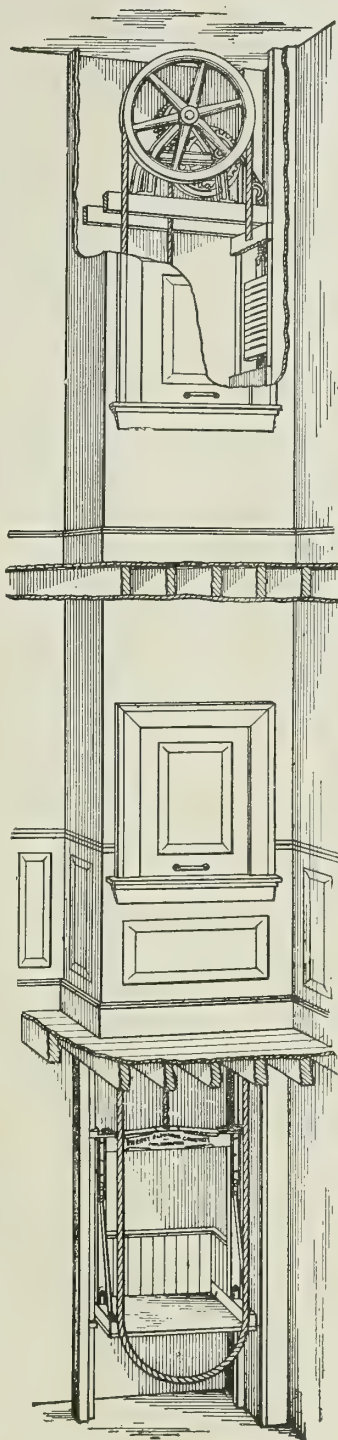
For Car 20 x 16 in.



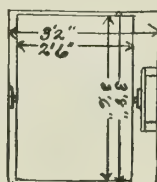
"ENERGY" OR RESIDENCE
DUMB-WAITER



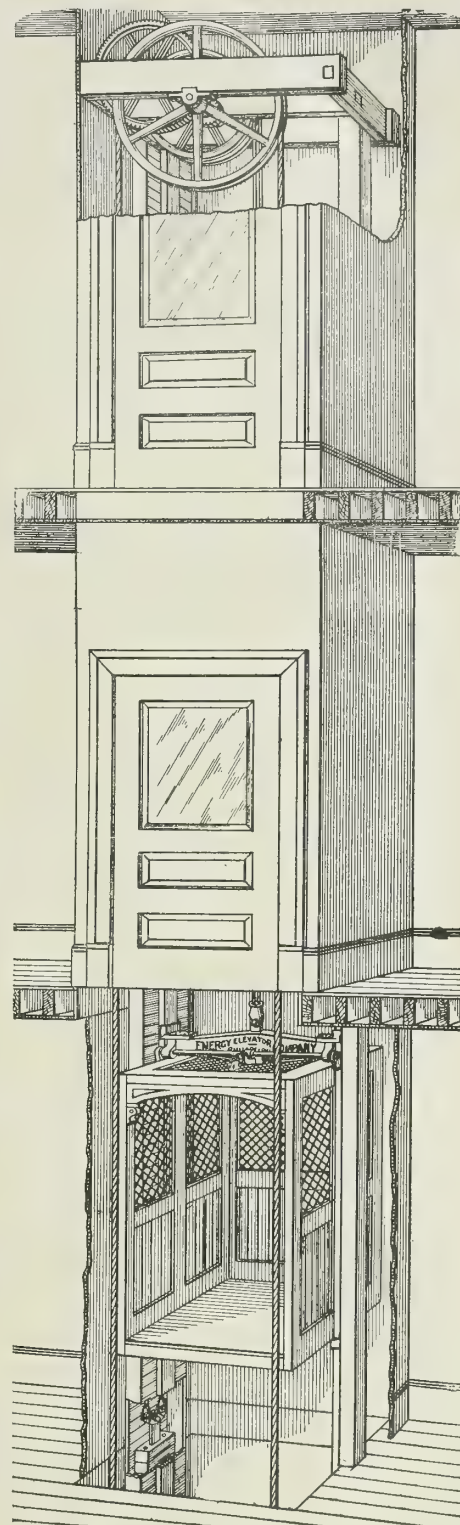
For Car 24 x 20 in.



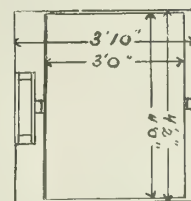
"LITTLE GIANT"
DUMB-WAITER OR
TRUNK-LIFT



For Car 2 ft. 6 in.
x 3 ft. 6 in.



HAND-POWER PASSENGER
ELEVATOR



For Car 3 x 4 ft.

PLANS OF SHAFTS SHOWING POSITION OF WEIGHTS

FAUNT LE ROY ELEVATOR COMPANY

HOME OFFICES AND WORKS

BALTIMORE, MD.

BRANCHES IN ALL PRINCIPAL CITIES

PRODUCTS.

Manufacturers and erectors of HIGH-SPEED ELECTRIC PASSENGER ELEVATORS, for direct and alternating current; ELECTRIC, BELT and HAND-POWER FREIGHT ELEVATORS; RESIDENCE ELEVATORS; ELECTRIC DUMB-WAITERS; HYDRAULIC PLUNGER LIFTS; MINE and CONTRACTORS' ELECTRIC HOISTS; ELECTRIC MOTOR CONTROLLERS; also, ORNAMENTAL IRON and WIRE WORK, as described elsewhere in this Catalogue, for which see our name in General Index.

SPECIAL FEATURES.

We call attention to the following special features in our elevators: The elimination of all electrical sliding contacts, dash-pots and sprocket chain connections is undoubtedly one of the most noteworthy achievements in electric elevators accomplished in years, preventing about 90 per cent of the troubles common to the average electric elevator.

Our special safety features thoroughly safeguard passengers, and our elevators are particularly desirable in stores, office buildings, hotels, and places where crowds are handled.

Our work appeals most strongly to professional men and those conversant with principles of mechanics and metal values, because of our correct method of construction, especially appreciated in these times when so much good work is sacrificed in order to reduce prices.

FACILITIES.

Our long experience and engineering ability enable us to handle important work intelligently, and our special two-year guarantee shows that we have confidence in what we are producing. We build in our own factory every machine we sell.

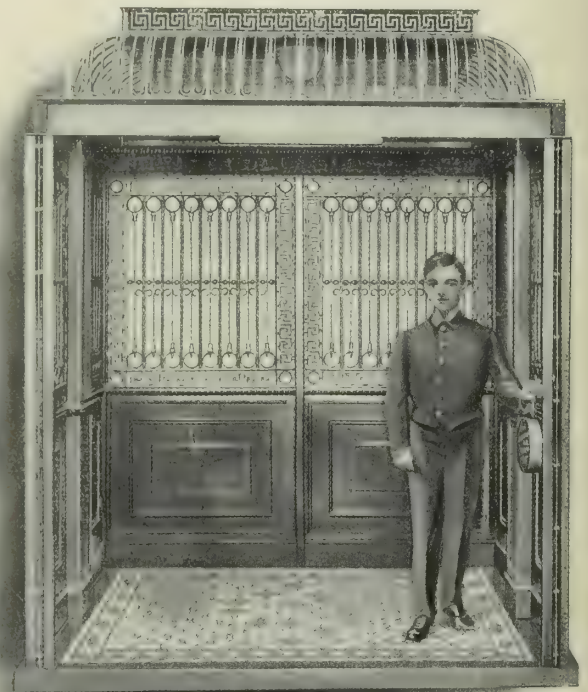
ESTIMATES AND CO-OPERATIVE SERVICE.

Estimates will be given upon application. Our Engineering department makes a specialty of assisting architects in forming specifications, and our printed matter shows spaces required and illustrates our machines and many car and enclosure designs.

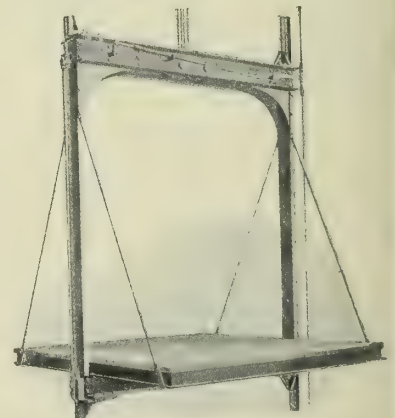
Having our own factory for ornamental iron and wire enclosures, we are able to take elevator and enclosure under one contract, thus eliminating the troubles incident to letting them separately.

REFERENCES.

We have made many notable installations, a list of which will be furnished upon request.



ELECTRIC PASSENGER ELEVATOR CAR
Showing latest Switch Control



STEEL PLATFORM FOR
FREIGHT ELEVATOR
SERVICE

MARINE ENGINE AND MACHINE CO.

Elevator Department

230-232 West Thirteenth Street

NEW YORK, N. Y.

SALES OFFICE TELEPHONE, 4730 CHELSEA
WORKS TELEPHONE, 2133 HARRISON

WORKS
HARRISON (EAST NEWARK), N. J.

BRANCH OFFICES

CHICAGO, ILL., Marquette Building

RIO JANEIRO, BRAZIL

BUENOS AYRES, ARGENTINE REPUBLIC

PRODUCTS.

Makers of HYDRAULIC ELEVATORS of the VERTICAL CYLINDER, HORIZONTAL CYLINDER and PLUNGER TYPES; ELECTRIC ELEVATORS of the following types: DIRECT-DRIVE TRACTION, WORM-GEAR REDUCTION TRACTION, WORM-GEAR DRUM; AUTOMATIC ELEVATORS; DUMB-WAITERS; SIDEWALK ELEVATORS.

ADVANTAGES.

The distinguishing advantages of our elevators consist in the substantial character of construction and design; safety, both as to machine and independent safety on platform; marked economy in the cost of operating high-grade machinery over that of machines of cheaper design and construction. The work of installation is done by the most up-to-date and superior methods.

SPECIFICATIONS AND ESTIMATES.

Complete specifications for any type of machine are available, on application from architects and engineers, and estimates and drawings will be cheerfully furnished.

The purchasing public is cordially invited to communicate with this Company on the subject of any of their products, to visit the shops, and make thorough inspection.

DATA REQUIRED FOR ESTIMATE FOR ELEVATOR.

The following list of data is required on which to base an estimate:

FOR ELECTRIC ELEVATORS

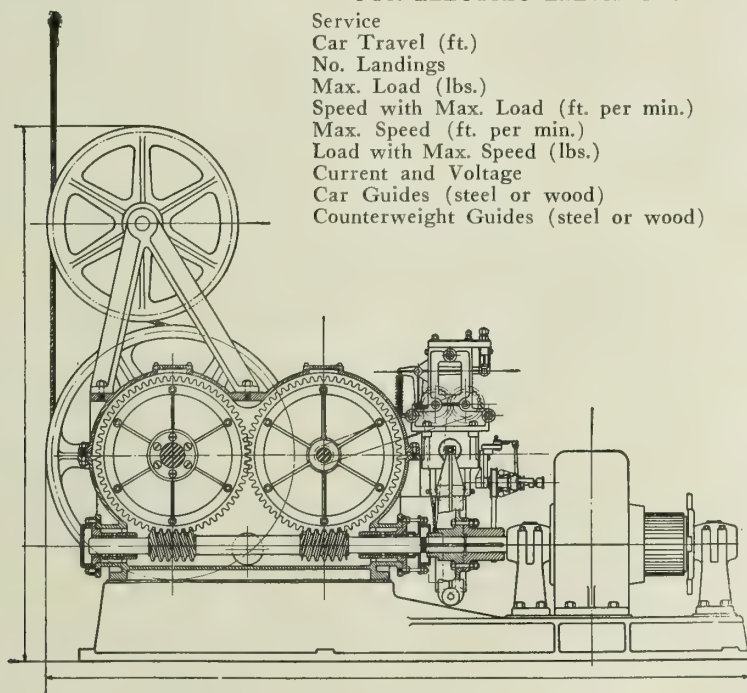
Service
Car Travel (ft.)
No. Landings
Max. Load (lbs.)
Speed with Max. Load (ft. per min.)
Max. Speed (ft. per min.)
Load with Max. Speed (lbs.)
Current and Voltage
Car Guides (steel or wood)
Counterweight Guides (steel or wood)

FOR ELECTRIC ELEVATORS—Continued

Car finish value \$
Electrolier (styles and No. lights)
Signal System, type
Indicators
Sheave Beams by (owner or contractor)
Supports for Sheave Beams by
Pit by
Counterweight Screen by
Foundation by
Painting by
Wiring for Current Supply by
Grating under Sheaves by
Drawings, Plan and Elevation
Type of Machine
Type of Control

FOR HYDRAULIC ELEVATORS

The same as for Electric and the following:
System (Plunger, Horizontal, or Vertical Cylinder)
Control (Hand, Rope, Lever or Wheel)
Schedule of round trips per hour
Water Pressure (lbs.)
Water Pumps (type, No. and by whom)
Air Pumps (type, No. and by whom)
Steam Piping by
Water Piping by
Air Piping by
Drip Piping by
Pressure Tanks (size and number)
Discharge Tanks (size and number)
Drilling (if plunger) by
Kind of soil
Casing by



TYPE "A" TANDEM SPIRAL GEAR ELEVATOR

THE HAUGHTON ELEVATOR AND MACHINE COMPANY

Passenger and Freight Elevators

Huron and Lafayette Streets

TOLEDO, OHIO

PRODUCTS.

We manufacture, sell and erect ELEVATORS for both FREIGHT and PASSENGER service.

TYPES.

ELECTRIC—In the following types: Direct-Connected, Chain-Connected, Belt-Connected, Single Worm-Gear, Tandem Worm-Gear, Combination Worm and Spur Gear, Combination Worm and Internal Gear, Drum and Traction Type, Control, Mechanical, Semi-Magnet, Full-Magnet and Automatic.

HYDRAULIC—In the following types: Horizontal-Multiple, Direct-Plunger, for moderate speeds only.

BELT POWER—In the following types: Shifting-Belt, for shaft drive; Direct-Belt, to motor drive.

HAND—Various styles and sizes to suit conditions.

ACCESSORIES—Only in connection with our elevators do we furnish and install Safety Gates, Fire Doors, Cabs, Enclosures, Indicators, Annunciators, Signal Systems, and other equipment.

DATA REQUIRED.

Number of elevators, and whether for passenger or freight service.

Type of elevator (electric, hydraulic, belt or hand), maximum load to be lifted, average load, car speed desired, distance of travel, size of car, or of hatchway.

If electric, whether direct or alternating current. Give phase, voltage and cycles, if alternating; voltage, if direct. Type of control desired. Type of machine, location of machinery (basement or overhead).

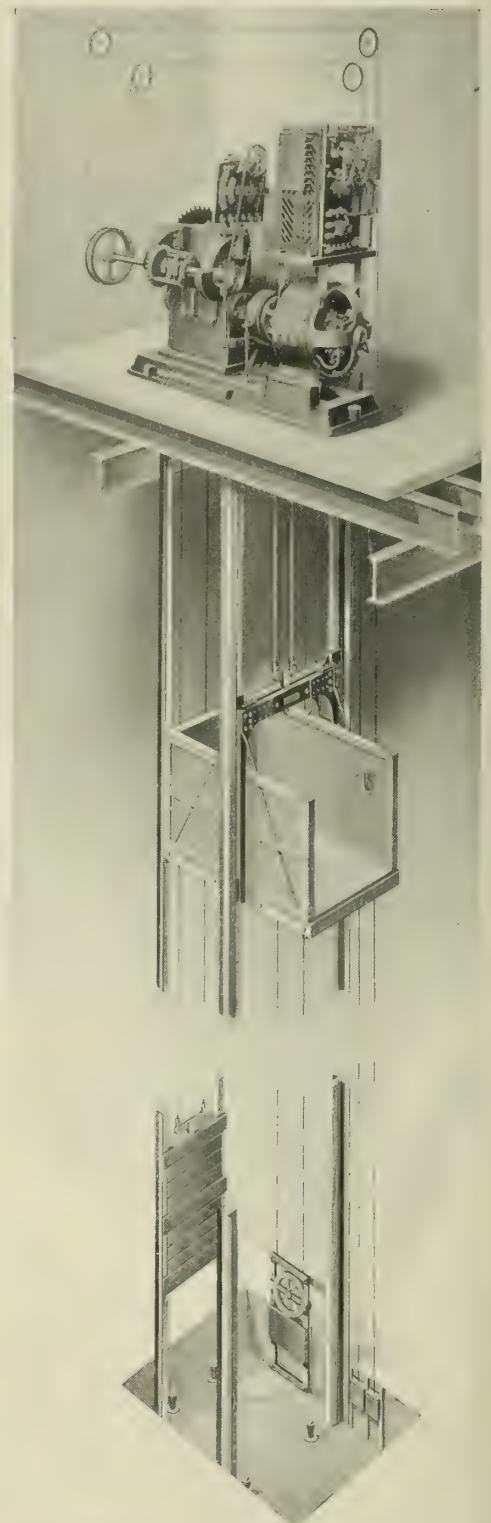
If hydraulic, whether multiple or plunger type; how operated (whether from street main, roof tank or basement tank), and available water pressure.

If Belt, give the driving power; also, whether you desire elevator of steel, semi-steel or wood construction?

Construction of building and purpose for which same will be used and any special information as to requirements, will be of assistance to us in determining what is best suited.

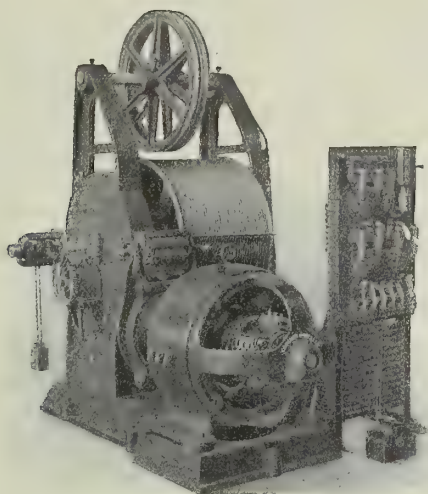
State accessories to be included in proposal.

If a passenger cab is wanted give approximate value.



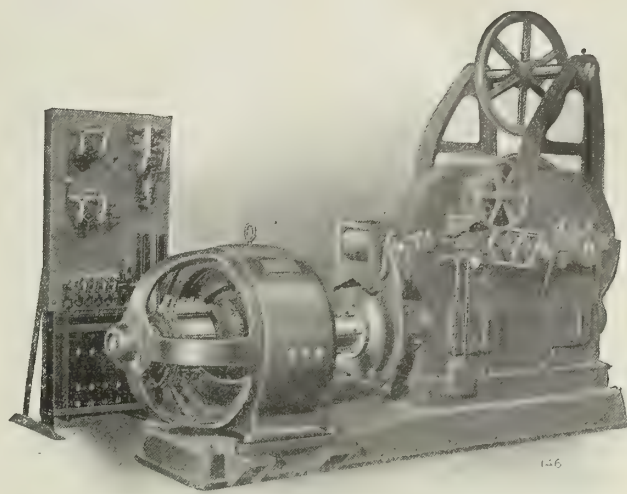
OVERHEAD FREIGHT EQUIPMENT

Semi-magnet control; semi-steel construction; also, furnished for passenger service



NO. 9. ENGINE A, FULL-MAGNET
CONTROL

Direct-Current; for Passenger or Freight
Service; Single or Variable Speed



NO. 20. ENGINE BB, HEAVY-DUTY TANDEM GEAR

25 to 60 horse-power; 2,000 to 20,000 pounds lift; 100 to
400 feet per minute; with four optional speeds, any
current and any control

GUARANTEE.

Absolute guarantee is given against any damage
for infringement of any patents. We guarantee
against any defects in workmanship or material in
the building and erecting.

ASSISTANCE TO ARCHI- TECTS AND OWNERS.

Our Engineering Department is at the service of
any one interested in way of preparing plans and esti-
mates, specifications, approximate prices and for any
information relative to elevators. We shall be glad
to answer all inquiries and to furnish information at
any and all times. Catalogues on request.

INDEPENDENT

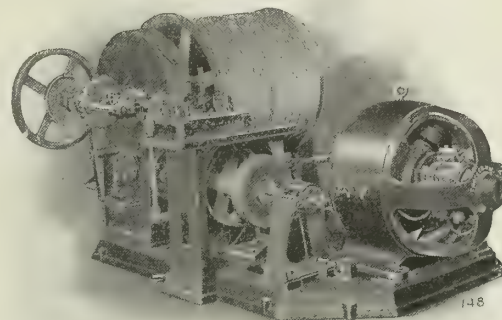
THE HAUGHTON ELEVATOR AND MACHINE
COMPANY is not in any combination.

REFERENCES.

We have over 3,000 Elevators in operation.
Among those operating our elevators are the fol-
lowing:

COMPANY

The Bostwick-Braun Company
The Feilbach Company
The Ohio Building Company
The Boody House
Lasalle & Koch
The H. M. & R. Shoe Company
The Sterling & Welch Company
The National Acme Manufacturing Company
The National Malleable Casting Company
St. Luke's Hospital
Burrough's Adding Machine Company
Burnham, Stoepel & Company
B. F. Goodrich Company
Goodyear Tire & Rubber Company
A. H. Pugh Printing Company
State School for Blind
Jeffrey Manufacturing Company
Swank Hardware Company
Penn Hotel
J. D. Williams & Brother Company
Hotel Nash
D. K. Harris & Company
Home Guards of America
State Hospital for the Insane
International Harvester Company
City Hall
M. Rumely Company
Wood County Court House
Lima Hospital



NO. 16. ENGINE 7, CHAIN-DRIVE TYPE

All contained on one bed-plate. For heavy
capacities and slow speeds. This con-
struction maintains large diameter of
drum, high pitch of gearing and
slow speed of worm shaft

LOCATION

Toledo, Ohio
Toledo, Ohio
Toledo, Ohio
Toledo, Ohio
Toledo, Ohio
Toledo, Ohio
Cleveland, Ohio
Cleveland, Ohio
Cleveland, Ohio
Cleveland, Ohio
Cleveland, Ohio
Detroit, Mich.
Detroit, Mich.
Akron, Ohio
Akron, Ohio
Cincinnati, Ohio
Columbus, Ohio
Columbus, Ohio
Johnstown, Pa.
Allentown, Pa.
Scranton, Pa.
Scranton, Pa.
Scranton, Pa.
Van Wert, Ohio
Madison, Wis.
Chicago, Ill.
Youngstown, Ohio
La Porte, Ind.
Bowling Green, Ohio
Lima, Ohio

CHARLES W. HOFFMAN CO.

Builders of Passenger and Freight Elevators
223 West Twenty-Eighth Street
NEW YORK, N. Y.

PRODUCTS. ELECTRIC, BELT-DRIVEN or HAND-POWER ELEVATORS and DUMB-WAITERS.

ELEVATOR ENGINES. We have embodied to the highest degree in all our engines the great basic principles of machine construction, viz., safety, durability, and simplicity.

CONSTRUCTION. Only the best materials obtainable are used in these engines. Each part is designed with a factor of safety far exceeding that used in ordinary practice, thereby practically eliminating the possibility of fracture or undue wear.

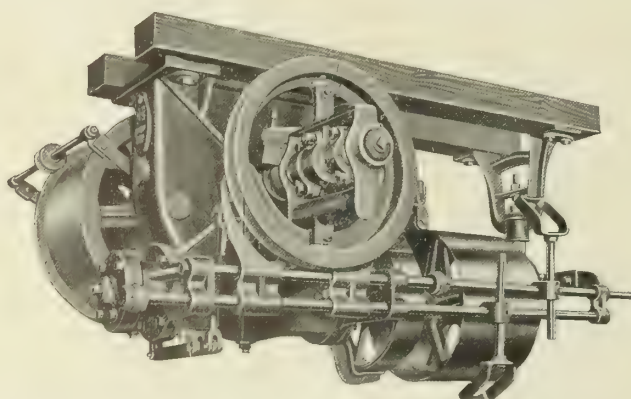
SIMPLICITY. We have reduced the number of parts to a minimum, and have designed each piece to perform the greatest number of functions consistent with sound mechanical principles. This reduction makes all parts readily accessible.

SAFETY STOPS. There are three safety stops on each direct-connected electric engine, which, with that on the car, make four direct means of stopping the car in case of or to avoid accident. Those on the engine are the limit stop, auxiliary-limit stop, and slack-cable stop. The first of these is set so that the car can travel only between certain fixed limits. The auxiliary-limit stop acts in case the limit stop should for any reason fail to operate. The slack-cable stop acts if the car should become obstructed in its descent. Apart from these stops there is also a speed governor, which acts upon the safeties placed under the car and operates them whenever the car attains excessive speed.

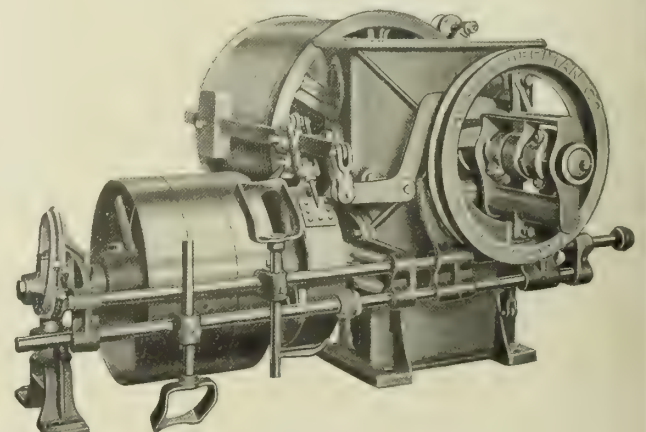
ADAPTABILITY. Our complete line of Elevator Machinery covers the whole range of elevator requirements from the slow-speed sidewalk lift to the massive freight and high-speed passenger elevators. Each type of machine is constructed according to the field of usefulness for which it is intended. This assures operation with the greatest economy and efficiency.

GENERAL INFORMATION. This company is not owned by, controlled by, or affiliated with, any other Elevator Company.

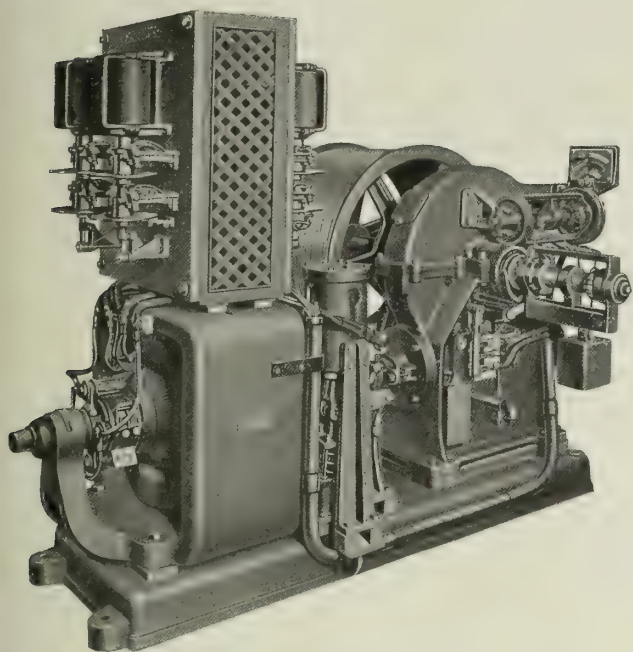
Our experience of 35 years in the elevator business is at the service of our customers. Correspondence solicited and detailed catalogues furnished on request.



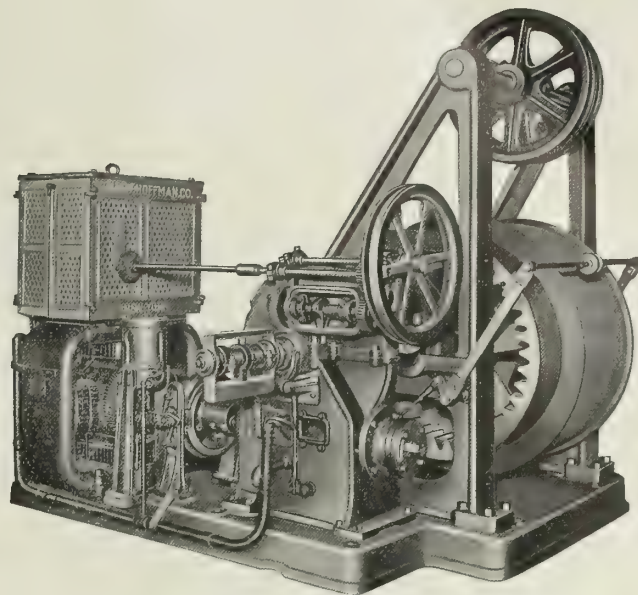
BELT-POWER WORM-GEAR ELEVATOR ENGINE
FOR CEILING SUSPENSION



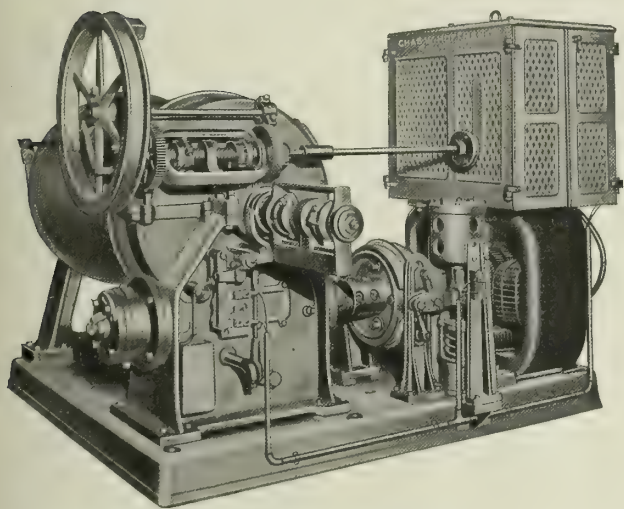
BELT-POWER WORM-GEAR ELEVATOR ENGINE
FOR FLOOR MOUNTING



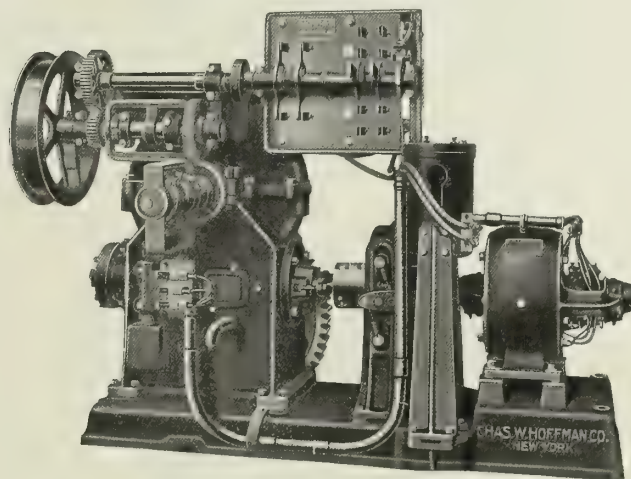
DIRECT-CURRENT ELEVATOR ENGINE,
ELECTRIC CONTROL



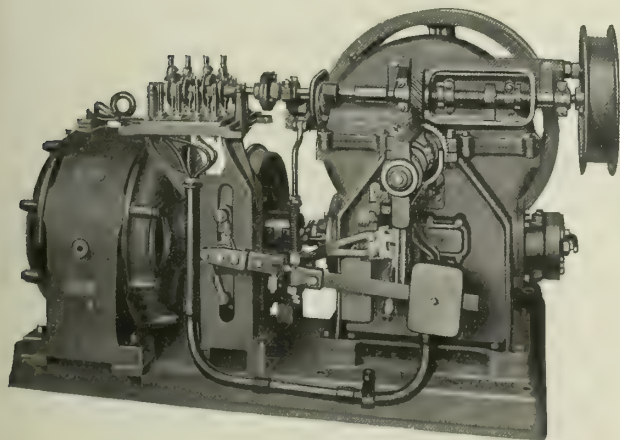
DIRECT-CURRENT ELEVATOR ENGINE,
FOR HEAVY DUTY



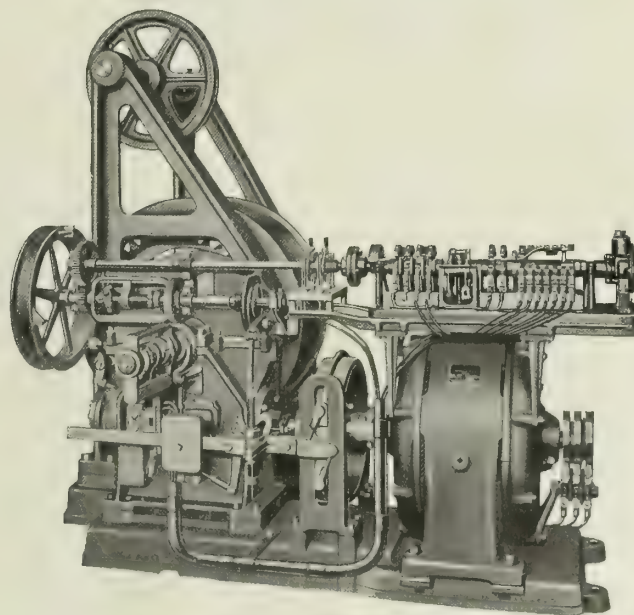
DIRECT-CURRENT ELEVATOR ENGINE,
MECHANICAL CONTROL



DIRECT-CURRENT SIDEWALK
ELEVATOR ENGINE



ALTERNATING-CURRENT ELEVATOR ENGINE,
SQUIRREL-CAGE TYPE MOTOR



ALTERNATING-CURRENT ELEVATOR ENGINE,
SLIP-RING TYPE MOTOR

THE JEFFREY MANUFACTURING COMPANY

Elevating, Conveying and Mining Machinery

COLUMBUS, OHIO

CABLE ADDRESS, "JEFFREY, COLUMBUS"

BRANCHES

NEW YORK, N. Y., 77 Warren Street
BOSTON, MASS., 836-837 Oliver Building
BUFFALO, N. Y.

PITTSBURG, PA., Farmers Bank Building
CHICAGO, ILL., 1016-1017 Fisher Building
ST. LOUIS, MO., 924-925 Pierce Building

DENVER, COL., 1711 Tremont Place
CHARLESTON, W. VA.
KNOXVILLE, TENN., 612 Empire Building

CANADIAN OFFICES AND WORKS: MONTREAL

PRODUCTS.

Manufacturers and builders of ELEVATING and CONVEYING MACHINERY of all kinds for handling any kind of material either in bulk or package, wet or dry, hot or cold; "JEFFREY" HOISTING MACHINERY, "JEFFREY" POWER TRANSMISSION MACHINERY, "JEFFREY" PULVERIZERS and CRUSHERS, "JEFFREY" SCREENS and SCREENING PLANTS, "JEFFREY" ELECTRIC LOCOMOTIVES, "JEFFREY" STANDARD CARS for Contractors, Mines and Quarries, "JEFFREY" COAL and ROCK DRILLS, "JEFFREY" CONCRETE MIXERS, "JEFFREY" SPROCKET WHEELS, "JEFFREY" STANDARD and SPECIAL CHAINS, "JEFFREY" DREDGING MACHINERY, "JEFFREY" COAL-WASHING SYSTEMS, "JEFFREY" PORTABLE EXCAVATOR and LOADER, "JEFFREY" COMPLETE MINE EQUIPMENTS, "JEFFREY" VENTILATING FANS, "JEFFREY" COAL POCKETS, "JEFFREY" TELESCOPING SIDEWALK ASH ELEVATORS.

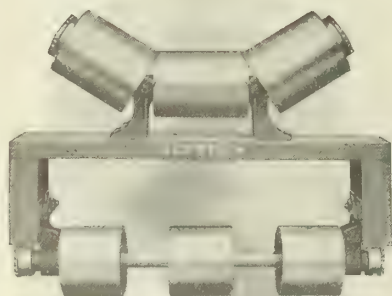
CONVEYING AND ELEVATING EQUIPMENTS.

We design, build and install complete modern equipments for economically handling, conveying and elevating bulk and package materials of all kinds, such as coal, stone, ores, cement, gravel, chips, logs, lumber pulp, refuse, ashes, grain, clay, phosphates, fertilizer, etc., barrels, boxes, crates, baskets, cans, bottles, bales, bags, and miscellaneous freight of all kinds.

RUBBER BELT CONVEYERS.

"Jeffrey" Rubber Belt Conveyors are the type most frequently favored by architects and building engineers on account of their low first cost, economy of operation, large capacities, smoothness and silence of running, speed, ease of installation, and their adaptability to almost any conditions. The compactness of construction of the "Jeffrey" Belt Carriers permits of a wider conveying belt being used where space is limited than does any other make of carrier. Large grease cups lubricate all rolls, so that minimum attention is required to keep in good order.

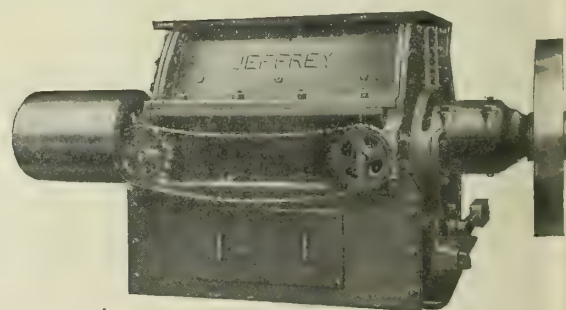
"Jeffrey Century" Rubber Belting is made of the very best materials and in such a way as to withstand the abrasion of the material handled. The carrying surface is reinforced with an extra thickness of rubber, varying from $\frac{1}{16}$ " to $\frac{1}{4}$ " according to the material to be conveyed. "Century" is regularly carried in 3, 4, 5 and 6 ply, in widths from 10" to 36", but special plies and widths can be furnished to order. Write for Bulletin No. 67-E.



THREE-ROLL BELT CARRIER
AND RETURN ROLLS



RUBBER-BELT PARCEL ELEVATOR IN
THE CHICAGO POST OFFICE



"JEFFREY" SWING-HAMMER PULVERIZER

LABOR-
SAVING
MACHINERY.

We build equipments and labor-saving machinery for Power Houses, Coal Mines, Industrial Plants, Office Buildings, Warehouses, Wharves, etc.

CRUSHERS
AND
PULVERIZERS.

We build Crushing and Pulverizing Machinery for reducing and pulverizing asbestos, asphalt rock, bones, borax, brick, baking-powder, clay, coal, coke, cement, cement rock, carbon, chalk, cobs, culm, cotton seed, drugs, fire clay, fertilizer, glass, grain, guano, granite, limestone, marl, mica, macadam, ores (all kinds), phosphate rock, slag, slate, shale, shell, silica, spices, sugar, tankage, tan bark, terra cotta, tobacco, wood fibers, quartz, zinc, etc.

SCREENING
EQUIPMENTS.

We manufacture screening machinery for treating all materials which require separation into uniform sizings.

"JEFFREY"
TELESCOPING
SIDEWALK
ASHES
ELEVATOR.

This is an improved device for office buildings having their own boiler room, and provides an easy solution to a sometimes difficult problem. Ashes may be stored in a bin under the sidewalk, and when this is full the doors are opened, the elevator head is raised by its own power and the ashes are dumped into wagons, as shown.



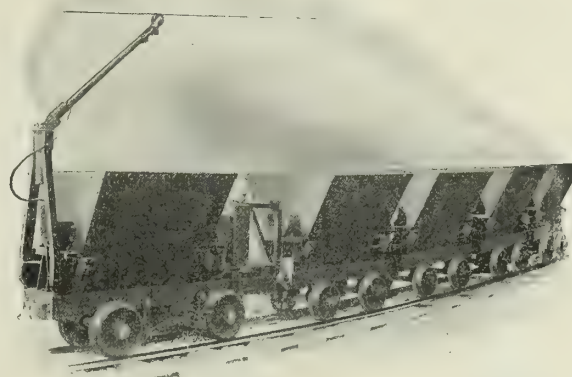
"JEFFREY" TELESCOPING SIDEWALK
ASHES ELEVATOR

"JEFFREY"
CHAINS.

"Jeffrey" Standard and Special Chains are carried in stock, or made to order in any size or style, with any desired attachments. We make chains for every power transmission, conveying or elevating purpose.

"JEFFREY"
CARS AND
LARRIES.

The "Jeffrey" line of cars and larries is complete, and includes the most approved styles for contractors, mines, quarries, coke ovens, lime-kilns, etc. Furthermore we are prepared to furnish almost any style of car with motors, controller, trolley, etc., making it an electric locomotive by which other cars may be hauled.



CONTRACTORS' CARS

Showing Method of Transforming one of them into a
Locomotive

CO-OPERATIVE
SERVICE.

Our Engineering Corps will be glad at any time to advise with architects and engineers in regard to our products, and to aid them in getting the most efficient and economical equipment which will serve their purpose.

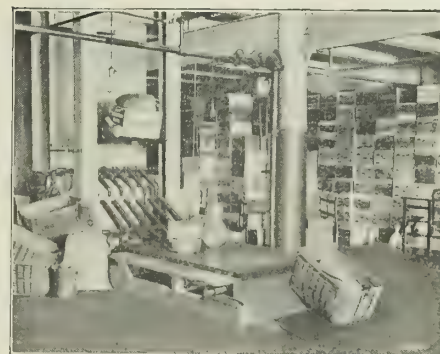
PRICES AND
ESTIMATES.

Estimates and full information will be furnished to interested parties, of any installation or equipment manufactured by us.

We will furnish full specifications for our specially designed systems or machinery.

INFORMA-
TION.

Descriptive booklets of any "Jeffrey" products will be mailed on request.



HANDLING PACKAGES IN WHOLESALE
HOUSE

THE OHIO ELEVATOR AND MACHINE CO.

MANUFACTURERS OF

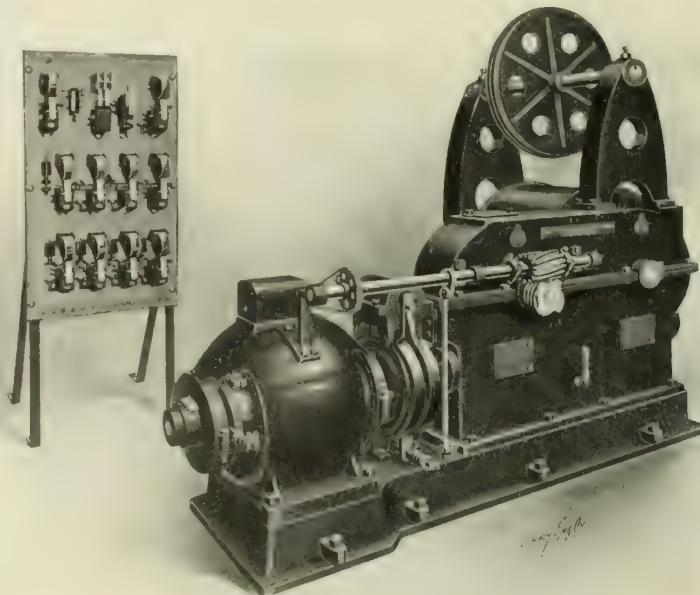
Passenger and Freight Elevators
COLUMBUS, OHIO

PRODUCTS.

ELECTRIC, HYDRAULIC, BELT-POWER and HAND-POWER ELEVATORS; DUMB-WAITERS; SIDEWALK HOISTS; ELEVATOR ENCLOSURES and CABS.

ALTERNATING OR DIRECT- CURRENT ELECTRIC ELEVATORS.

Our high-speed passenger elevator magnet is controlled by a hand switch in the car, while the slow-speed freight or passenger elevator is provided with lever, pilot wheel, or hand-cable control. Push-button control (full automatic) is employed for residences, etc. It requires no operator. Back-gearred freight elevators for capacities up to 50,000 pounds.



TANDEM-GEARED ELECTRIC ELEVATOR ENGINE WITH FULL MAGNET CONTROLLER

HYDRAULIC ELEVATORS.

Horizontal cylinder, vertical cylinder, direct plunger, and inverted geared plunger are used for passenger or freight service. High-speed equipment has full automatic operating and limit valves, controlled by pilot valve with lever or pilot wheel in car. Where proper city water pressure is available hydraulic elevators give excellent satisfaction and are efficient, economical and safe. If desired, we are prepared to estimate on complete pumping plants, including engines, motors, pumps, tanks, etc.

BELT- POWER ELEVATORS.

These elevators are simple and make an inexpensive equipment where power can be taken from line on countershaft. They are made in capacities up to 8,000 pounds.

HAND- POWER ELEVATORS.

These hand-power elevators are simple in construction and very easy to operate.

DUMB-
WAITERS AND
SIDEWALK
HOISTS.

Our line of Dumb-Waiters and Sidewalk Hoists is complete, including electric, hydraulic or hand-power machines.

SAFETY
DEVICES.

All our elevators are equipped with the most modern safety devices, including safety catches, governor, automatic limit stops, slack cable stops and over-travel hatch switches. They also embody other safety features, assuring to the user absolute safety in every detail.

ENCLOSURES
AND CABS.

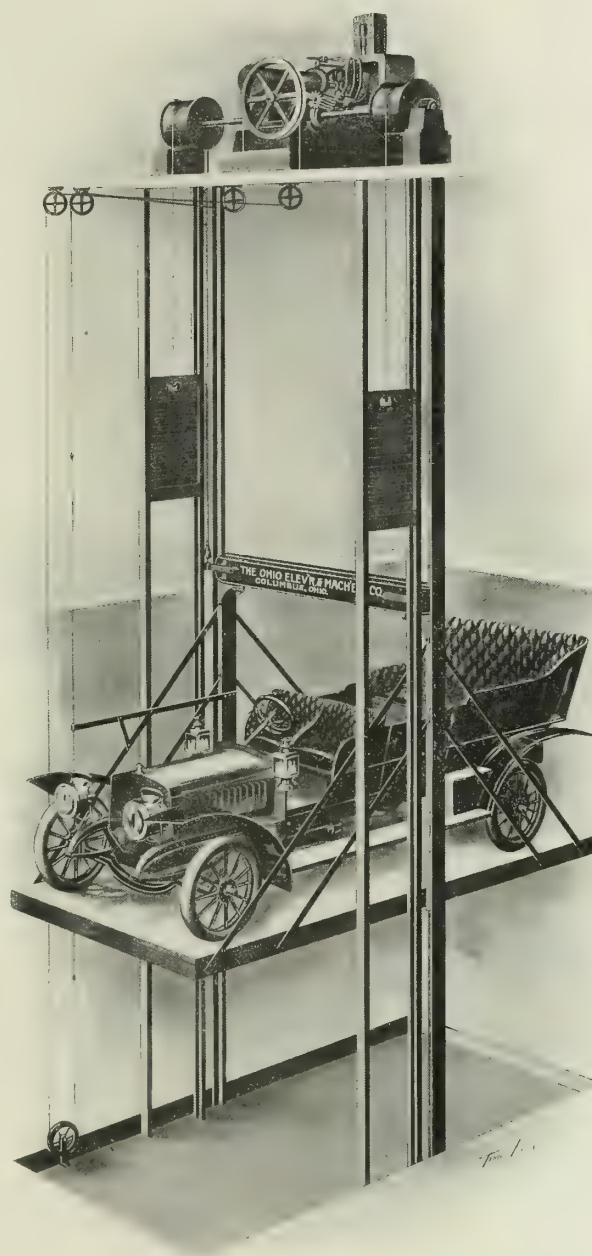
We have a thoroughly equipped ornamental iron department and make our own cabs and enclosures, giving special attention to design and detail, insuring perfect harmony in this very important part of the elevator installation.

CO-OPERATIVE
SERVICE.

Our engineering department is prepared to advise with prospective purchasers as to apparatus best suited to their needs, and will cheerfully submit preliminary plans or give expert advice on matters connected with the installation of elevators.

IMPORTANT
TO ARCHI-
TECTS.

At bottom of elevator shaft provide a pit same size as shaft and not less than three feet deep for freight elevators, or four feet for passenger elevators. Hatchways should be plumb over each other and about one foot wider than car on post sides and two inches longer than car from front to back. For passenger elevators provide not less than fifteen feet of clearance from top landing to ceiling of pent house if machinery is in basement. If machinery is over hatchway make this distance twenty feet. For freight elevators this can be reduced about two feet. At a point about ten feet above top landing make provision for supports for overhead beams or machinery. Make pent house two feet wider than hatch on post sides. If walls are of brick or concrete, fastenings for posts should be built in as the building is erected.



ELECTRIC SLOW-SPEED FREIGHT ELEVATOR MACHINE

OTIS ELEVATOR COMPANY

Elevators, Dumb-Waiters, Accumulators, Escalators

17 Battery Place
NEW YORK, N. Y.

OTIS OFFICES IN ALL PRINCIPAL CITIES OF THE WORLD

PRODUCTS.

Manufacturers of PASSENGER and FREIGHT ELEVATORS and DUMB-WAITERS operated by ELECTRIC, HYDRAULIC, STEAM, BELT or HAND POWER; SIDEWALK ELEVATORS; ELECTRIC and HYDRAULIC ELEVATOR CONTROLLING APPARATUS; HAND-POWER ELEVATOR EQUIPMENT and SAFETY DEVICES; ELEVATOR CARS and ENCLOSURES; ELEVATOR SHAFTS, SHEAVES and MACHINERY; ESCALATORS; HYDRAULIC ACCUMULATORS; AUTOMOBILE and CARRIAGE HOISTS.

INTRODUCTORY.

All apparatus is built to preserve a reputation of over half a century's standing.

HAND-POWER APPARATUS.

Elevators and Dumb-Waiters—For light loads and slow speed. Capacity is dependent upon the operators. For use where occasional service only is required.

BELT-POWER ELEVATORS.

For freight service, principally, for slow speed and moderate loads, in buildings where service does not require or warrant higher grade apparatus. There are three types: double-belts, run from shafting; single-belt, and silent chain-drive, both run from reversible motor. Worm and gear transmission is used and all machines are self-retaining with brake released.

ELECTRIC DRUM-TYPE ELEVATORS.

Our Electric Drum-Type Elevators and Dumbwaiters are for high-grade service, passenger and freight. They are positive in control and of absolute safety. Any speed up to 350 feet per minute.

ELECTRIC TRACTION ELEVATORS.

These are designed especially for modern high-class office buildings, the cars running to the tops of the tallest buildings, and embodying all of the safety features known to elevator practice, including special safety features inherent in this type of machine. The elimination of all gearing between the driving and driven members results in remarkably high efficiency, and maintenance cost is low.

ELECTRIC CONTROLLING APPARATUS. HYDRAULIC ELEVATORS AND DUMB-WAITERS, INCLUDING PLUNGER TYPE.

There are three types: Hand rope, operated by a cable passing through the car; hand-operated switch in car; and push-buttons in car and at landings for calling and sending.

The standard vertical type and the horizontal types (both for low and high pressure service) use cylinders placed as indicated by titles, according to available space. The piston travels but a portion of the distance the car does, the cables passing over multiplying sheaves. The plunger or direct-lift type employs a cylinder placed directly under car, the latter being carried on a steel plunger actuated by water pressure in the cylinder sunk in the earth.

HYDRO-STEAM ELEVATORS. AERO-HYDRO-ELEVATORS. CONTROL. ESCALATORS.

These are the Hydraulic type, driven from closed hydraulic tank from which water is forced by steam admitted direct from boilers.

These operate as the Hydro-Steam type, with compressed air substituted for steam.

Hydraulic Type Controlling Apparatus comprises hand rope and lever in car.

Escalators (moving stairways) are electrically driven, for service either up or down, or one escalator may combine both services.

HYDRAULIC ACCUMULATORS. STEAM ELEVATORS.

Weighted accumulators for high-pressure systems include valves and regulating apparatus.

In the Steam Elevators, direct-driven and belted, the winding machine is driven from steam-engine mounted on the same base with it. Speeds up to 250 feet per minute. Steam pressure from 60 pounds up. Used principally for freight service.

INFORMATION

Information cheerfully given.

THE H. J. REEDY CO.

Elevators

11-15 West Second Street
CINCINNATI, OHIO

BRANCH OFFICES
ST. LOUIS, MO.

NEW YORK, N. Y.

PITTSBURG, PA.

COLUMBUS, OHIO

FT. SMITH, ARK.

PRODUCTS.

Manufacturers of ELEVATORS: ELECTRIC, HYDRAULIC (Horizontal and Plunger), BELT-POWER, HAND-POWER, PASSENGER, FREIGHT, CARRIAGE, FOUNDRY; CELLAR and ASH HOISTS, BASEMENT LIFTS, and DUMB-WAITERS.

Also HOISTING and TILLER CABLES, SAFETY DEVICES for Elevator Service and ELECTRIC BRAKE MECHANISMS.

DISTINGUISHING FEATURES.

Our elevators are distinguished by their solidity, simplicity and absolute safety. We install them with guarantee of material and workmanship for one year. In large buildings where high speed is required and steam pressure of from 100 to 125 pounds available, the Climax Engine (Fig. 1) is the best. Where power from outside is used the Electric Elevator (Fig. 2) is best adapted; it is of slower speed and requires somewhat more care, but the modern machine as shown reduces this to a minimum. The Plunger Elevator (Fig. 3) requires less space to operate in, and is fast but not as economical as the Steam or Electric.

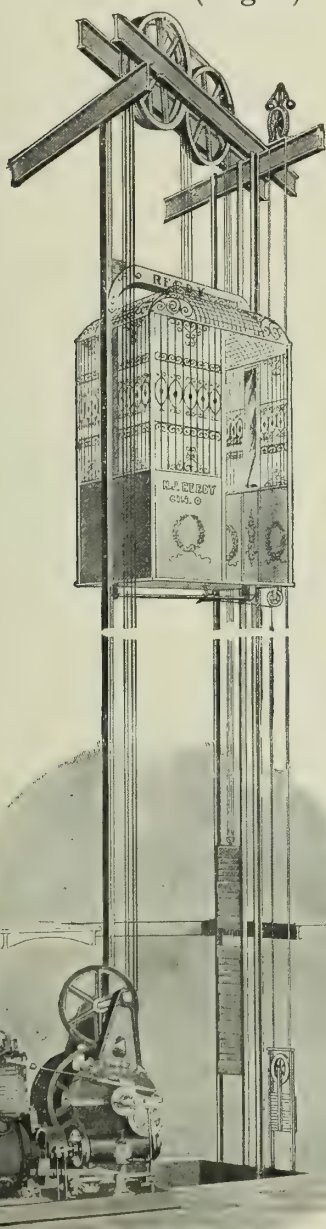


FIG. 2. ELECTRIC ELEVATOR

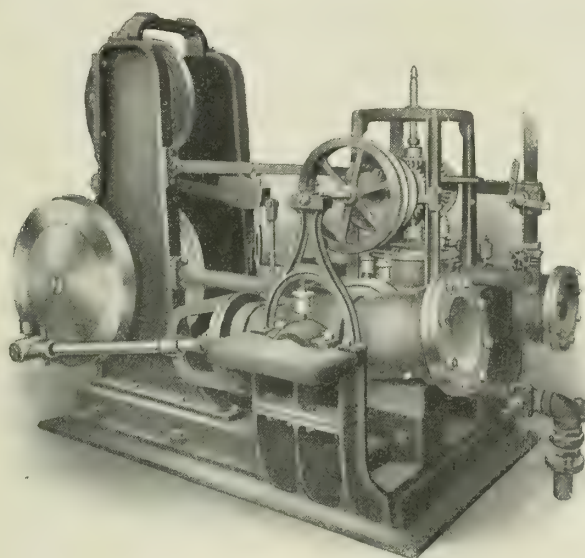


FIG. 1. CLIMAX STEAM ELEVATOR ENGINE

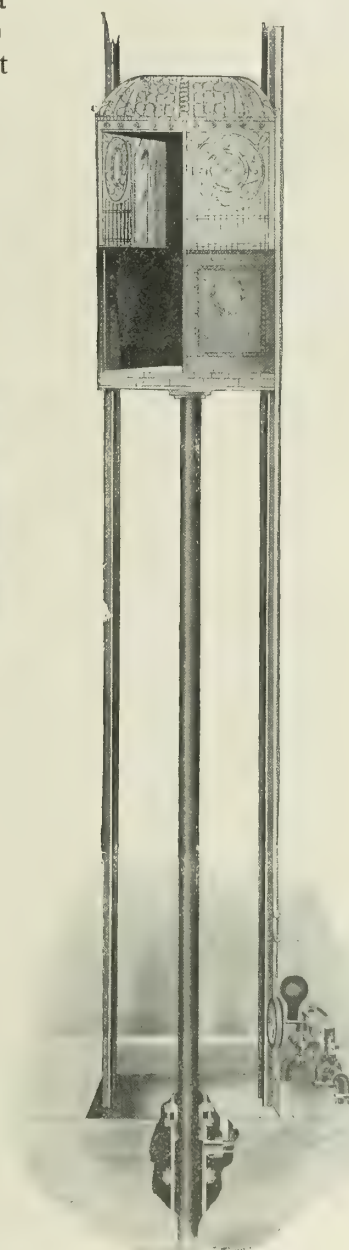


FIG. 3. PLUNGER ELEVATOR

THE CRAIG RIDGWAY & SON CO.

MANUFACTURERS OF

Steam-Hydraulic Elevators

COATESVILLE, PA.

PRODUCT.

HYDRAULIC ELEVATORS operated without any pump and at virtually no cost.

DESCRIPTION.

These elevators are operated by the ordinary steam supply of the plant at pressures from twenty pounds to two hundred. They are made in all the usual hydraulic styles for all heights of lift.



TRADE-MARK

With each elevator goes a cylinder made of steel. This cylinder is of a capacity a little larger than that of the cylinder or ram of the elevator. It is called the water cylinder. Pipes lead from this cylinder to the boiler and to the lifting cylinder. Suitable valves of a peculiar design control these pipes.

When steam from the boiler is admitted to the water cylinder the water immediately takes the same pressure as the steam. The water passes to the lifting cylinder and raises the cage. When the steam is exhausted the water flows back to the water cylinder and the cage descends. The same water is used over and over.

No counterbalance is used on the Steam-Hydraulic Elevators, since the water used to operate them obviates the necessity of a counter balance acting for it.

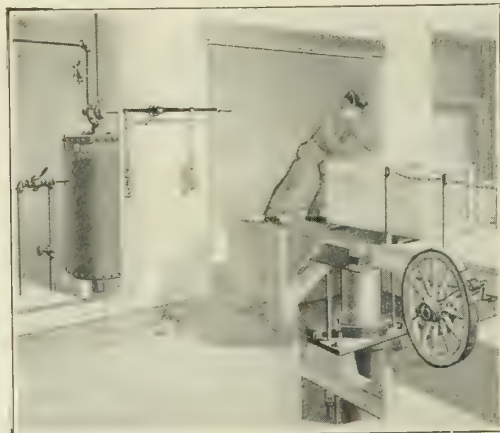
ADVANTAGES.

The success of the machine is due to the fact that by our patented system and devices we prevent the steam from condensing when it comes in contact with the water, and thus we produce a most remarkable economy.

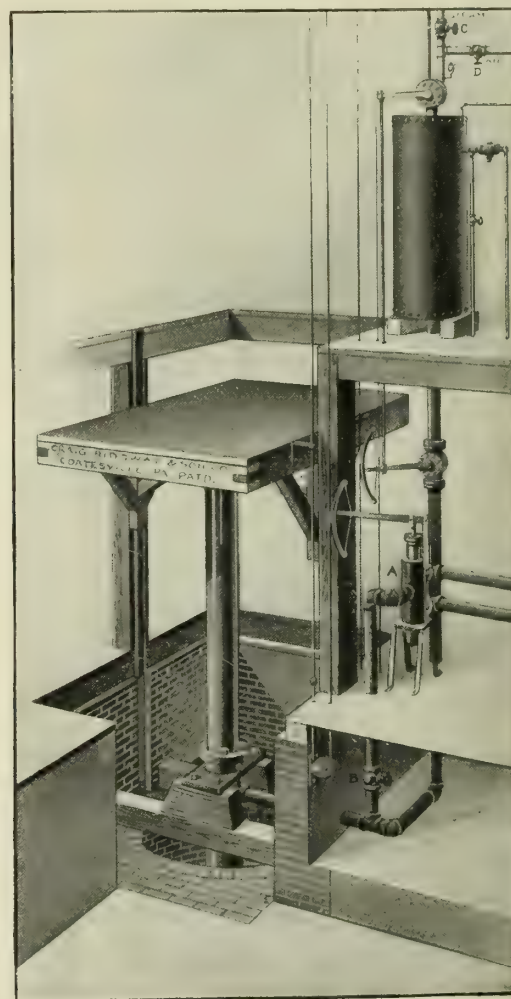
The General Electric Company, whose plant has these elevators, tested one of them for economy. The tests of their engineers show that with coal at \$4.00 per ton and one pound of coal evaporating ten pounds of water, it cost, to put one hundred tons up to a floor fourteen feet high, the insignificant sum of six cents for the whole one hundred tons. This is virtually nothing. It cost more than that amount for the oil with which the elevator was lubricated.

ECONOMY IN LIFTING.

With all other hydraulic elevators it takes as much power to raise the empty cage as the full load. In the Steam-Hydraulic the power required is in proportion to the load; that is to say, the valves work the steam expansively. We



STEAM-HYDRAULIC ELEVATOR IN PRACTICAL USE



STEAM-HYDRAULIC ELEVATOR

have seen the elevator, when lightly loaded, take so little steam that it condensed in the exhaust pipe and showed nothing at the discharge.

VARIED STYLES.

The Steam-Hydraulic Elevators are made in a large variety of styles and sizes. A very few of these are shown in these pages. We make them of any desired capacity and of any height of lift.

It is impossible in this limited space to do more than call attention to this remarkable elevator. Our circular gives full particulars.

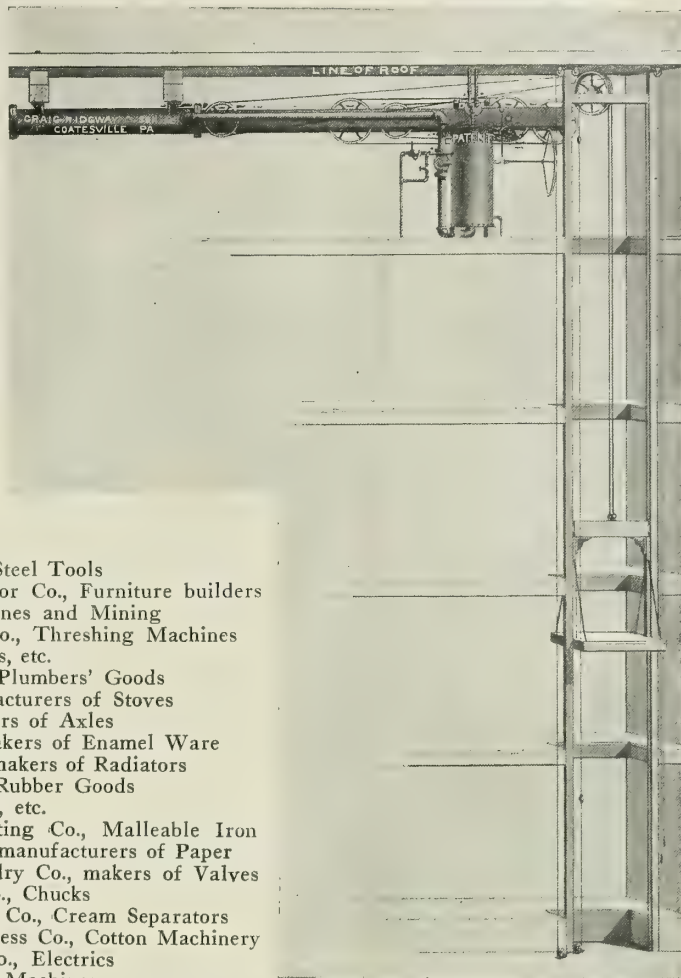
AMONG THE USERS OF OUR STEAM- HYDRAULIC ELEVATORS.

The fact that we are supplying Ridgway Steam-Hydraulic Elevators to the greatest and most discriminating concerns all over the land is the best evidence of their merit. We name below a few well-known establishments. These concerns are owned by millionaires and financial leaders. We have only room to give one to a trade, although the list might be greatly extended.

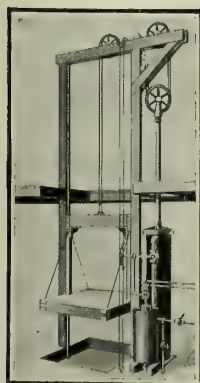
NAME AND BUSINESS

United States Government, generally used
United States Steel Co., Steel manufacturers
Denny-Renton Clay Co., Tiles
United States Gas Improvement Co., Gas
National Box Board Co., Box Board
Paul A. Sorg Co., Paper Specialties
American Car Foundry Co., builders of Cars
Midvale Steel Co., manufacturers of Armor
Thomas A. Edison, maker of Phonographs
American Spectacle Co., Optical Goods
Hammermill Paper Co., Pulp
The Henry Disston & Sons Co., makers of Saws
The Standard Oil Co., producers of Coal Oil
United States Leather Co., Leather Goods
Packard Motor Car Co., Automobiles
The Eaton, Cole & Burnham Co., Brass Goods
Bullard Machine Tool Co., Boring Mills
Western Tube Co., Pipe products
Bethlehem Steel Co., builders of Guns
Hazard Manufacturing Co., makers of Wire Rope
Crucible Steel Co. of America, Steel for Tools
The Rome Brass and Copper Co., Copper Sheets
N. Drucher & Co., Trunks
Pennsylvania Steel Co., makers of Steel Rails
Reading Iron Co., Tube products
International Harvester Co., Mowing Machines
Grand Rapids Refrigerator Co.
Murphy Varnish Co., Varnish manufacturers
Ajax Metal Co., Babbitt Metals
Public Service Corporation of N. J., Utilities
Bryden Horse-Shoe Co., producers of Horse-Shoes
J. R. Keim & Co., Worsted Textiles
Proctor & Gamble Co., Ivory Soap

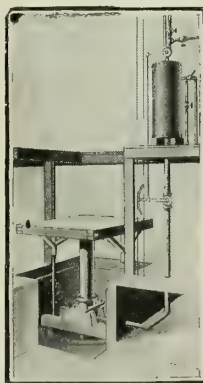
Kelley Axe Co., Edged Steel Tools
Grand Rapids Refrigerator Co., Furniture builders
Cleveland Cliffs Co., Mines and Mining
Geiser Manufacturing Co., Threshing Machines
The Fairbanks Co., Scales, etc.
N. O. Nelson Mfg. Co., Plumbers' Goods
The Wehrle Co., manufacturers of Stoves
Sheldon Axle Co., builders of Axles
National Enamel Co., makers of Enamel Ware
American Radiator Co., makers of Radiators
Vulcanized Rubber Co., Rubber Goods
Dodge Mfg. Co., Pulleys, etc.
National Malleable Casting Co., Malleable Iron
International Paper Co., manufacturers of Paper
Pittsburg Valve & Foundry Co., makers of Valves
Union Manufacturing Co., Chucks
The Sharpless Separator Co., Cream Separators
Monsocket Machine & Press Co., Cotton Machinery
The General Electric Co., Electrics
The York Mfg. Co., Ice Machines
The Lowell Machine Shops, Textile Machinery
The National Cash Register Co., Cash Registers
The H. J. Heinz Co., "57 Varieties"
The Gera Co., Worsted Yarns
The Holbrook Mfg. Co., Soap
The Crane Ice Cream Co., Ice Cream
Louis Burke, general dealer in Meats



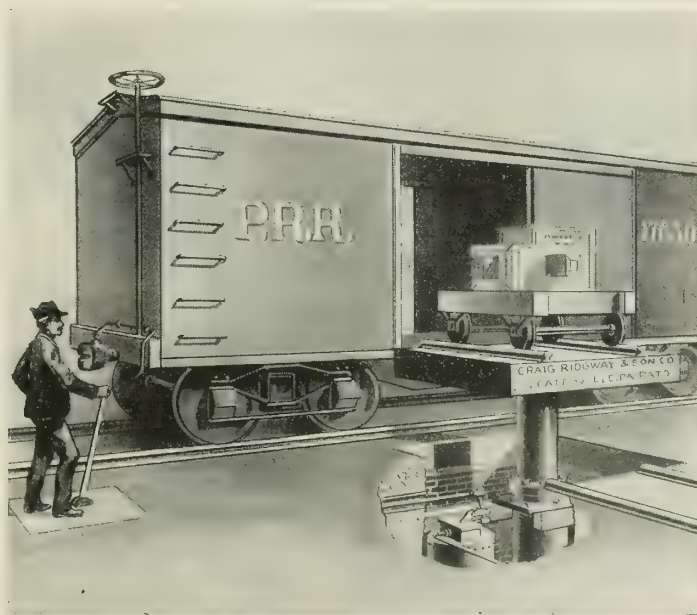
STEAM-HYDRAULIC ELEVATOR
WITH APPARATUS NEAR
ROOF LINE



DOUBLE-
GEARED
ELEVATOR



DIRECT-
ACTING
ELEVATOR



STEAM-HYDRAULIC ELEVATOR
Showing Operator at Lever

C. W. SMITH ELEVATOR COMPANY

MANUFACTURERS OF

Passenger and Freight Elevators

BUFFALO, N. Y.

CLEVELAND, OHIO

PRODUCTS.

ELECTRIC ELEVATORS for PASSENGER and FREIGHT Service; SEMI-AUTOMATIC ELEVATOR SAFETY-GATE FIXTURES and EQUIPMENT for Factory Elevators (patented); also, FULL-MAGNET PASSENGER ELEVATOR MACHINE (see cut), which we build in any size desired.

GENERAL INFORMATION.

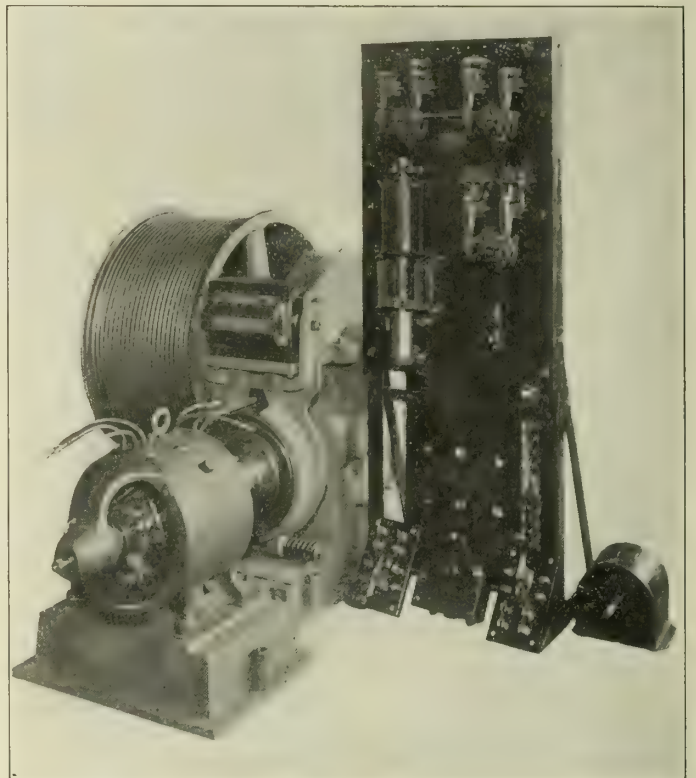
The C. W. Smith Elevators were designed to meet a growing demand for a first-class elevator, free from trust relations or trade agreements. We give attention to special apparatus for heavy duty, such as warehouses, garages, heavy factory work, etc. We also build high-grade passenger elevators, either direct or alternating current, and are prepared to give our customers the benefit of years of experience in working out apparatus for special conditions.

ESTIMATES AND CO-OPERATIVE SERVICE.

The architect will be rendered all desired assistance to enable him to specify our elevators. Illustrations will be furnished and estimates submitted on application, accompanied with necessary data.

REFERENCES.

The following is a list of a few of the users of our elevators, which will furnish an idea as to the character of our work:



FULL-MAGNET PASSENGER ELEVATOR MACHINE

BUILDING AND LOCATION

Larkin Company (seven), Buffalo, N. Y.
 Wm. Edwards Wholesale Grocery Co. (six), Cleveland, Ohio
 Adam Meldrum & Anderson (two), Buffalo, N. Y.
 George N. Peirce Co. (two), Buffalo, N. Y.
 Alling & Cory (three), Rochester, N. Y.
 Brown Lipe Gear Co., Syracuse, N. Y.
 Buffalo Storage & Cartage Co., Buffalo, N. Y.
 Standard Brewing Co., Cleveland, Ohio
 Kemy Square Trust Company (three), Boston, Mass.
 Irving Street Garage, Boston, Mass.
 A. P. W. Paper Company, Albany, N. Y.
 Frank Wattles (two), Buffalo, N. Y.
 National Casket Co., Rochester, N. Y.
 Providence Retreat, Buffalo, N. Y.

George Laub Sons, Buffalo, N. Y.
 American Steel & Wire Co. (two), Cleveland, Ohio
 Denton Cottier & Daniels (two), Buffalo, N. Y.
 Burrows Amusement Co. (two), Coney Island, N. Y.
 Brooklyn Fire Department, Brooklyn, N. Y.
 New York Fire Department, New York, N. Y.
 Craig Building (twelve), Pittsburg, Pa.
 Bowman Brothers Drug Co., Canton, Ohio
 The Roycrofters, East Aurora, N. Y.
 Hospital for Incurables, Montreal, Can.
 Standard Chair Co., Union City, Pa.
 G. M. Wattles & Son, Buffalo, N. Y.
 Oneida Hosiery Co., Oneida, N. Y.
 Goodson Brothers, Glens Falls, N. Y.
 Strauss Brothers (three), Cleveland, Ohio

SEDGWICK MACHINE WORKS

Elevators and Dumb-Waiters

NEW YORK OFFICE
128 Liberty Street

FACTORY AND GENERAL OFFICE
POUGHKEEPSIE, N. Y.

PRODUCTS.

We manufacture and install DUMB-WAITERS, of all types and for any purpose; TRUNK, ASH, and INVALID LIFTS; FREIGHT, SIDEWALK, HOSPITAL, CARRIAGE and AUTOMOBILE ELEVATORS; AUTOMATIC or SELF-CLOSING GATES and DOORS; POWER ATTACHMENTS, etc.

SPECIAL FEATURES.

As specialists in this line we have been able to incorporate improvements in principle, design, construction, material and finish not to be obtained elsewhere.

Our machines are self-contained with strong iron frames securely braced. We use the best steel shafting accurately finished, and anti-friction steel roller bearings. Our improved noiseless and oilless bearings will be furnished where very quiet outfits are required.

Our Elevator and Dumb-Waiter cars are regularly built of selected ash and seasoned for three years and kiln dried before being used. All ropes are made especially for us of selected long fiber hemp. We use exclusively Swedish iron hoisting cables of best quality and BB Chain tested and well-finished.

INSTALLATION.

We furnish blue-prints and full directions with each outfit, or will send our own expert mechanics to erect.

In all cases we recommend the purchase of the complete outfit.

CONSULTATION.

Our experience of nearly fifty years in this line is at your service. Consult us when making preliminary sketches, as we may be able to save you trouble and money. We solve difficult problems.

FACILITIES.

We manufacture with special tools in large quantities, securing great accuracy in our machine work, and at the same time we are able to quote prices that are consistently low.

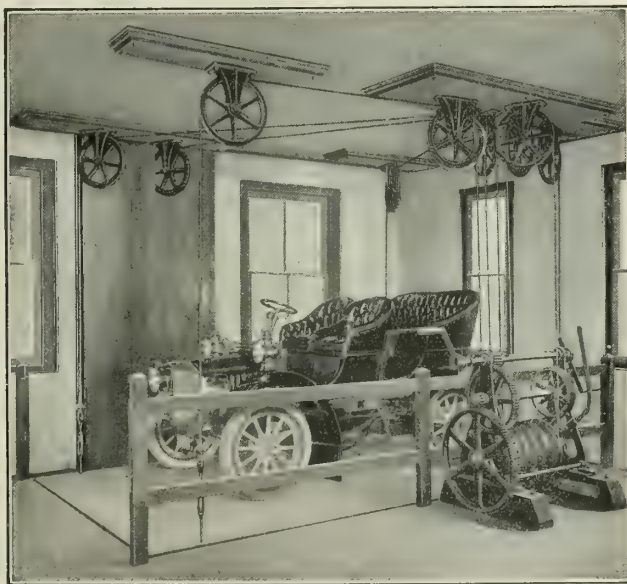


FIG. 1S. "SEDGWICK" AUTOMOBILE ELEVATOR

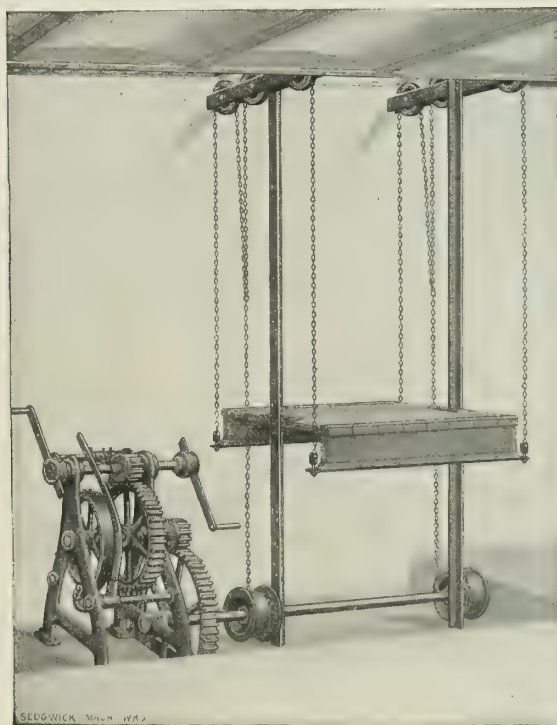


FIG. 2S. "SEDGWICK" SIDEWALK ELEVATOR

CARRIAGE AND AUTOMOBILE ELEVATORS.

"Sedgwick" Carriage and Automobile Elevators (Fig. 1S), Cellar or Sidewalk Hoists (Fig. 2S), Ash Lifts and Hatchway Hoists all have improvements in principle, design, material, construction and finish which make them strong and durable and render them convenient, safe and easy to operate. Prices depend on size, capacity and height and will be quoted on receipt of details.

“SEDGWICK”
AUTOMATIC
BRAKE
DUMB-
WAITER
MACHINES.

These machines have been so satisfactory for so many years that they have induced many imitations. Now as always, as a result of our experience, experiments and inventions, our machines are superior to any which can be obtained elsewhere.

The Improved “Sedgwick” Automatic Brake is constructed on an entirely new principle which overcomes the jumping, jarring and other defects common to other Self-Retaining Machines. The friction surface in the Automatic Brake is of phosphor bronze against cast-iron, the most durable and satisfactory combination known.

These Dumb-Waiter Machines are fitted either with steel anti-friction roller bearings, or with our special noiseless, oilless bearings, as may be specified by the purchaser.

These Machines are especially designed for private house work or wherever a safe, easy running, quiet and durable Dumb-Waiter is desired.

“SEDGWICK”
BAND
BRAKE
DUMB-
WAITERS.

These Waiters are especially designed for factories, flats, etc., for use in high wells or wherever a strong, reliable and easy running Dumb-Waiter for hard service is wanted.

The Band Brake is of an improved type and is fitted with a self-locking device so that a slight pressure on the brake line controls the speed in lowering, while a final pull locks the brake and it remains locked until the operator releases same by an upward pull upon the brake line. The brake wheel is of best machinery iron accurately fitted, the brake band is of steel lined with vulcanized fiber, giving both strength and durability. This machine is regularly fitted with steel anti-friction roller bearings, but will be furnished with our special noiseless and oilless bearings if desired.

“SIMPLEX”
DUMB-
WAITER.
OTHER TYPES
OF DUMB-
WAITERS.

The “Simplex” is a good serviceable Dumb-Waiter sold at a very moderate price and the machines are simple, strong and easy running and are suitable for any height.

We build Dumb-Waiters having wire guides, also Brass Tube Dumb-Waiters, Pulley Geared Dumb-Waiters and in fact can furnish Dumb-Waiters adapted to any special requirements.

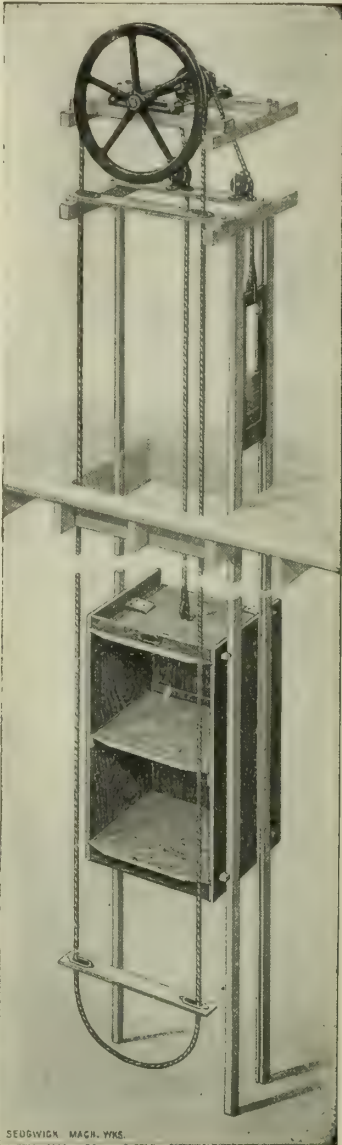


FIG. 3S. “SEDGWICK” DUMB-WAITER ERECTED
Enclosure removed

DATA “SEDGWICK” IMPROVED DUMB-WAITER OUTFITS

No.	Size of Car	Size of ceiled shaft	Capacity, lbs.	Shipping Weight, lbs.	Single-Face Outfits			Double-Face Outfits	
					Price of “Auto-matic Brake”	Price of “Simplex”	Price of “Band Brake”	Add for extra height, per foot	Add for extra height per ft.
1	20" x 16"	23" x 19"	50	215	\$36.00	\$24.25	\$43.50	\$0.30	\$6.00
2	24" x 20"	27" x 23"	75	285	44.00	30.00	52.00	.35	6.00
3	28" x 24"	31" x 27"	100	360	53.00	35.00	62.50	.40	7.00
4	34" x 30"	38" x 33"	150	470	62.00	40.00	71.50	40	7.00

Complete outfits include machine on platform, car, adjustable counterweight, guide runs for car and weight and ropes for total of 20 feet over all, f. o. b. Poughkeepsie, N. Y.

No extra charge for outfits of different sizes and smaller dimensions.

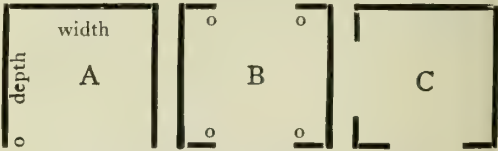
IMPROVED
“SEDGWICK”
INVALID
LIFT.

This lift (Fig. 4S) is the result of many years of experience and experiment. Believing that no other type of Hand-Power Lift is of greater importance we have given the problem extensive and careful attention. Our machines are strong, durable, quiet, easy and smooth running. They are under perfect control at all times and above all else are safe.

“SEDGWICK”
AUTOMATIC
BRAKE
INVALID LIFT.

The “Sedgwick” Automatic Brake Invalid Lift is the highest development in the line of Hand-Power Elevators, and we guarantee that accidents are impossible.

In size we build cars to fit the special requirements of each purchaser. Sometimes where the passenger can stand in the car and space is limited we have installed these elevators with



FLOOR PLANS DUMB-WAITERS

- A—Open at front on all floors; the best arrangement where it can be used.
- B—Requires a Double-Face Fixture if operated from both sides; but for two floors, a Single-Face Fixture, operated from one floor, with Double-Face Car, is often all that is necessary.
- C—Open at Front and R or L, say which. This arrangement is to be avoided, if possible.

cars as small as two feet square. For hospital service cars four feet by six feet or even larger are desirable so as to accommodate a cot or stretcher, attendants, etc.



FIG. 4S. "SEDGWICK" INVALID LIFT

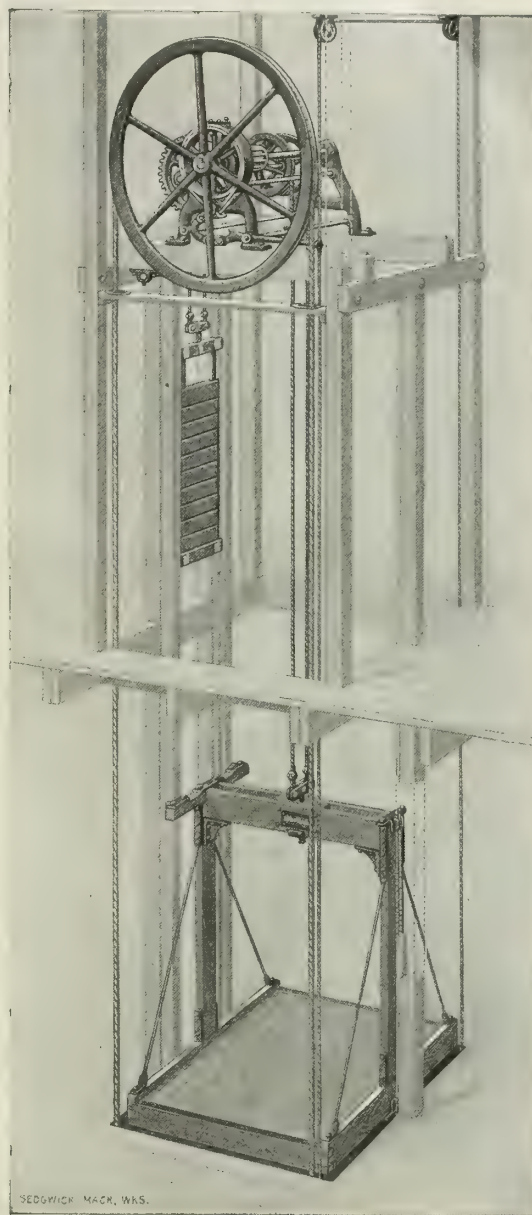


FIG. 5S. "SEDGWICK" FREIGHT ELEVATOR

"SEDGWICK"
HAND-POWER
FREIGHT
ELEVATORS.

These Elevators (Fig. 5S) are built for strength, durability and ease of operation. They are suitable for private houses as Trunk Lifts, etc., for use in schools, hotels, stores, factories, warehouses, etc. They are all fitted with steel anti-friction roller bearings, have strong, rigidly braced iron frames, both to keep the gears properly in mesh and the bearings in line under all circumstances. Fitted with the Improved "Sedgwick" Self-Locking Indestructible Band Brake, and we recommend the use of double cables independently attached both to car and counter-weight.

DATA "SEDGWICK" IMPROVED HAND-POWER FREIGHT ELEVATORS

Capacity lbs.	Size of Car	Size of Well	Price of Outfit	Add per foot of height extra	Shipping Weight
500	3 ft. x 3 ft.	3' 4" wide x 3' 3" deep	\$89.00	\$0.55	750 lbs.
600	3 ft. x 3 ft.	3' 5" wide x 3' 3" deep	102.50	.70	950 lbs.
800	3½ ft. x 3½ ft.	3' 11" wide x 3' 9" deep	140.50	1.00	1175 lbs.
1000	4 ft. x 4 ft.	4' 6" wide x 4' 3" deep	158.50	1.05	1260 lbs.
1200	4½ ft. x 4½ ft.	5' 0" wide x 4' 9" deep	180.00	1.10	1665 lbs.
1500	5 ft. x 5 ft.	5' 6" wide x 5' 4" deep	198.00	1.20	1800 lbs.
2000	6 ft. x 6 ft.	6' 10" wide x 6' 4" deep	224.00	1.50	2200 lbs.
2500	6 ft. x 6 ft.	6' 10" wide x 6' 4" deep	238.00	1.60	2500 lbs.

Complete outfits include machine, side post freight car 6 feet 6 inches high in clear; guide runs for car and weight, requisite ropes and cables for total of 20 ft. over all, and adjustable counterweight, f. o. b. Poughkeepsie, N. Y.
Price on outfits of greater size or capacity quoted upon request.

THE STORM MANUFACTURING CO.

Dumb-Waiters and Elevators

48 Vesey Street

NEWARK, N. J.

LONG DISTANCE TELEPHONE CONNECTION

PRODUCTS.

Manufacturers of DUMB-WAITERS and HAND ELEVATORS of all descriptions, for all kinds of work, including AUTOMOBILE, CARRIAGE and SIDEWALK ELEVATORS. Also ELEVATOR DOORS, GATES and MACHINERY; BOOK, INVALID and TRUNK LIFTS.

INSTALLATION.

Our machines are so constructed that any good mechanic, assisted by the directions which we send, can install them.

We will, if desired, send experienced men to any part of the country to do the erecting.

NEW YORK SAFETY DUMB-WAITER.

The New York Safety Dumb-Waiter (Fig. 1) is the simplest, most durable and economical dumb-waiter ever made. It will lift from fifty to seventy-five pounds with ease. The fixtures are one size only, but are suitable for all well-holes less than twenty-four inches square. Diagrams for installation accompany each set of fixtures.

The wheels E E are placed on top of the car so that the weight of the car is lifted from the center in all cases. They can be placed diagonally if necessary to accomplish this. The counterweight should weigh about the same as the combined weight of the car and the two wheels E E, not less.

Flat counterweights which can be run in guides or box should be used.

For stringing, $\frac{1}{2}$ inch pliable cotton rope is used, and for safety rope, $\frac{3}{8}$ inch cotton rope.

Samples of rope are sent with each set.

Guide runs should be $\frac{7}{8}$ inch by $1\frac{1}{8}$ inch, and should be coated with black lead.

PARAGON SELF-RETAINING AUTOMATIC DUMB-WAITER.

The Paragon is constructed so that it will hold the car stationary at any point, without the use of a brake or rope clamp. It works easily and with perfect safety; the moment the operator ceases pulling the hand rope, either in raising or lowering, the clutch will hold the car stationary.

Nos. 1 and 2 are sheave machines and are arranged for weight to come at right (Fig. 2), unless otherwise ordered.

The pulley wheels are placed three to six inches below the weight rope.

Machines Nos. 5, 6, and 8 are geared machines. The car is lifted by a wire cable, and they are especially adapted for trunk-lifts in private houses.

MANHATTAN DUMB-WAITER.

The Manhattan Dumb-Waiter has a capacity of two hundred pounds. The shafts of the fixtures run on Babbitt metal bearings; they are frictionless and noiseless, handsomely bronzed, perfectly made, and warranted in all particulars. We make the hoist wheels in three sizes,

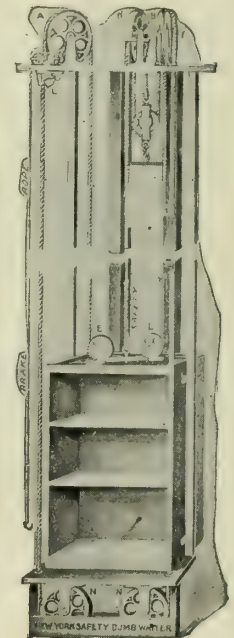


FIG. 1. NEW YORK SAFETY DUMB-WAITER

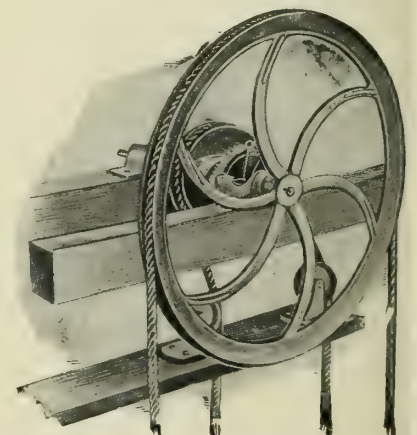


FIG. 2. PULLEY WHEELS OF PARAGON SELF-RETAINING AUTOMATIC DUMB-WAITER

20 inch, 24 inch and 30 inch. The counterpoise weight can run on either side or at the back. These fixtures should not be used in well holes or openings more than 36 inches square. We also make this as a double-faced fixture, with hoist wheels on both ends of the shaft, so that it can be operated from either side on any floor. These fixtures are adjusted to a $1\frac{1}{4}$ inch shelf, ready to place over well-hole.

HUMPHREY HAND ELEVATOR.

This style is especially adapted for store and factory work, hospitals and public buildings, also for trunk and invalid lifts. It is so simple and low-priced that it can be used in many places instead of a dumb-waiter. The machinery is handsomely bronzed, the shafts which run in babbitted bearings are perfectly fitted and guaranteed in every respect. A large ball weight is attached to the brake rope, and raising or pulling on this rope relieves or applies the brake.

The counterweight can run on either the right or left hand side. We always send them for the weight to run on right side, unless otherwise ordered.

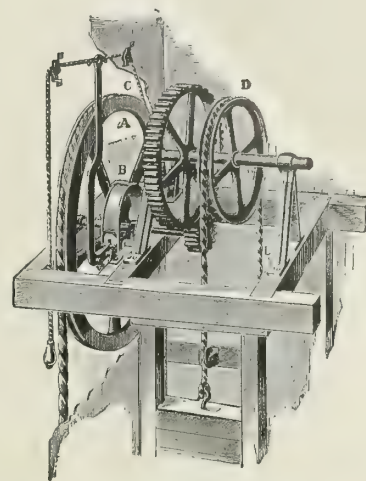


FIG. 3. FIXTURES OF HUMPHREY
HAND ELEVATOR

INSTRUC- TIONS AS TO ORDERING.

In ordering, the total height of the well-hole and the size of the finished well-hole inside should be stated. Send sketch if possible. State kind of material of which well-hole is built, and whether plastered or wood lined. Give position of counterweight looking into a well-hole, and whether inside or outside.

DUMB-WAITERS

	Capacity	Suitable for Well-holes	Overhead Fixtures only		*Complete with Car, first 10 feet of Travel		Each additional foot of Travel	
			Single Face	Double Face	Single Face	Double Face	Single Face	Double Face
New York Safety	75 lbs.	24" x 24"	\$16.00		\$57.00		\$.40	
Paragon, No. 2	100 lbs.	28" x 28"	21.00	\$27.00	60.00	\$67.50	.50	\$.60
Paragon, No. 1	200 lbs.	32" x 32"	30.00	36.00	78.00	86.00	.50	.60
Manhattan	225 lbs.	36" x 36"	30.00	36.00	85.00	93.00	.60	.70

For any of the above, weights can run at right, left or back.

*Includes Counterweight, Guide Runs, Weight Runs, and all Ropes and Cable ready for erection.

HAND ELEVATORS

	Capacity	Suitable for Well-holes	Overhead Fixtures only		*Complete with Car, first 10 feet of Travel		Each additional foot of Travel	
			Single Face	Double Face	Single Face	Double Face	Single Face	Double Face
Paragon, No. 5	225 lbs.	36" x 36"	\$34.00	\$40.00	\$87.00	\$97.00	\$.60	\$.75
Paragon, No. 6	300 lbs.	42" x 42"	39.00	48.00	90.00	100.00	.60	.75
Paragon, No. 8	500 lbs.	54" x 54"	54.00	64.00	117.00	130.00	.65	.85
Humphrey, No. 1	500 lbs.	54" x 54"	54.00		114.00		.60	
Humphrey, No. 2	750 lbs.	60" x 60"	78.00		140.00		.65	
Humphrey, No. 3	1,200 lbs.	66" x 66"	99.00		210.00		1.00	
Invalid Lift, No. 10	500 lbs.	54" x 54"			270.00		1.00	

Weights for above machines run at right or left, and not at back.

*Includes Counterweight, Guide Runs, Weight Runs, and all Ropes and Cable ready for erection.

AUTOMOBILE AND CARRIAGE ELEVATORS.

Our complete line of Hand Elevators includes Automobile and Carriage Elevators, capacities from 1,500 to 5,000 pounds; also, Sidewalk Elevators up to 1,500 pounds' capacity. Prices, which vary according to the size of well-hole and travel, will be mailed upon application.

WARSAW ELEVATOR COMPANY

MANUFACTURERS OF

Passenger and Freight Elevators

WARSAW, N. Y.

BRANCH OFFICES

BUFFALO, N. Y., Erie Co. Bank Building
BALTIMORE, MD., 111 Mercer Street

PHILADELPHIA, PA., 212 Dock Street

ROCHESTER, N. Y., 242 State Street
NEW YORK, N. Y., 216 Fulton Street

PRODUCTS.

PASSENGER and FREIGHT ELECTRIC and HYDRAULIC ELEVATORS; SIDEWALK HOISTS; DUMB-WAITERS; HAND-POWER INVALID LIFTS; AUTOMOBILE and CARRIAGE ELEVATORS, and AUTOMATIC DOORS, GATES, and POWER ATTACHMENTS for HAND ELEVATORS.

PASSENGER ELEVATOR.

Fig. 1 shows an electric Passenger Elevator erected ready for use, with a wheel control. We also make the same with a full magnet or electric control, which is operated by an electric switch conveniently located in the car, the latter being the very latest improved type of passenger and freight elevator. We also make a cheaper type of control having a single cable passing through the car. This cut also shows winding machine in basement. If preferred, this machine may be placed directly over well-hole on steel I-beams.

PROVISION IN PLANS.

In most cases the well-hole for a passenger or freight elevator should be from 12 to 18 inches wider postway, or side to side, than car required, and about 3 inches deeper front to back; and in the case of a passenger elevator the height in clear in upper story should be not less than 16 to 18 feet, and for a freight elevator without automatic hatch doors not less than 12 feet, and where automatic hatch doors are used allow about 15 feet. If you have not this height in clear in upper floor it will be necessary to provide a penthouse on roof, which should be about two feet larger on all sides than size of well-hole. Sometimes it is desirable to place winding machine directly over well-hole where you have a brick or steel hatchway. Also, a pit should be provided underneath elevator to allow car to land level with lowest floor. This pit should be from 20 to 36 inches deep, depending upon the kind of elevator.

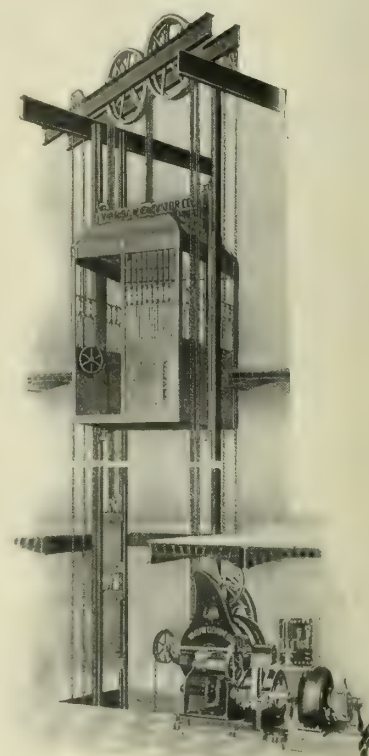


FIG. 1. PASSENGER ELEVATOR, COMPLETE ERECTED
Winding Machine in Basement

AUTOMATIC HATCH DOORS.

Fig. 2 shows our latest improved Automatic Opening and Closing Doors for freight elevators; these doors being very desirable where you have an open hatchway, as they prevent all dust and draft passing up through building also protect from accident, and in case of fire are indispensable. Fire Underwriters will pass these doors anywhere. In some cases the doors are tinned on the under side and the tin turned over upper edge, all being lock-jointed. These doors are not recommended for a car speed of more than 50 feet per minute.

AUTOMATIC GATES.

Fig. 3 shows our new type Half Automatic Gate which closes automatically as car leaves landing. These gates may be placed on one or both sides of car as desired. If pre-

ferred, we can furnish a full automatic gate which is automatically opened and closed by car. Gates are made of best oak and are very durable.

INSTALLATION.

We furnish special blue-prints for installing where customers desire to erect their own elevators; or, if preferred, we will furnish an expert, at a reasonable price, to do this work.

ESTIMATES.

It is impossible to quote regular prices without first having some data as a basis to estimate on, but if architects and customers will furnish the following information it will enable us to quote intelligently:

For Passenger Elevators—Kind of elevator required, viz., electric, hydraulic, or hand-power. If electric, is current direct or alternating? Give voltage, phase, and cycles. Give capacity, or state number of people you wish to carry. If well-hole is prepared, state size of same. Car speed (approximate). What is cost of cab? Is elevator hatchway closed or open? Height of each floor of building and height of upper floor in clear. Guides, steel or wood.

For Freight Elevators—Capacity required. Is it electric, hydraulic, or hand-power? What class of goods will be carried? What is size of car? What is height of each floor of building and how many floors are there? What is height of upper floor in clear? Are guides steel or wood? If electric freight machine is desired, state whether current is direct or alternating, and give voltage, phase, and cycles.

EXPERIENCE.

We have had sixteen years' experience in the elevator business, building all kinds of elevators, and can show some of the finest passenger and freight work installed. We manufacture our elevator motors, also all of our castings, in our own plant, and are equipped with the very latest improved machinery for this work, so that we are prepared to furnish an elevator at the lowest possible cost of manufacture.

CO-OPERATIVE SERVICE.

We furnish blue-prints and specifications on receipt of inquiry, or we will gladly have a competent engineer from one of our nearest offices call upon receipt of request.

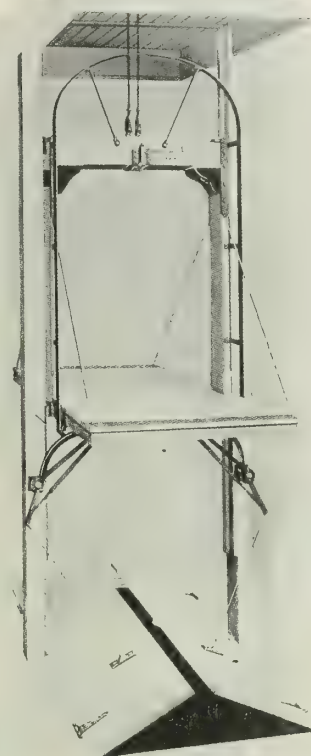


FIG. 2. AUTOMATIC HATCH DOOR

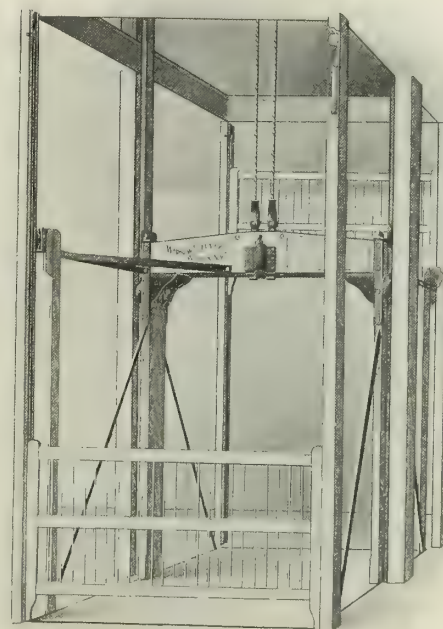


FIG. 3. HALF AUTOMATIC GATE

BOYNTON FURNACE CO.

MANUFACTURERS OF

Boilers, Furnaces and Ranges

147-149 Lake Street
CHICAGO, ILL.106 West 37th Street
NEW YORK, N. Y.230 Pacific Avenue
JERSEY CITY, N. J.

PRODUCTS.

"BOYNTON" STEAM and HOT-WATER HEATERS for all fuels; Patented SQUARE-POT WARM-AIR FURNACES; RANGES, brick set and portable form.

QUALITY
AND
UTILITY.

In the world of house-heating apparatus the word "Boynton" is synonymous with reliability, effectiveness and economy. The heating apparatus illustrated on these pages represents types which have been on the market for years and in which all defects have been corrected, so that to-day they are the criteria of heating-apparatus construction.

The fact that these goods are manufactured by the oldest and most responsible company in the house-heating line is a guarantee that the goods will live up to the claims made for them.

The class of houses in which heating apparatus may be used to advantage is varied and extensive, but all varieties are equally well served by the "Boynton" products.

"Boynton" Boilers and Square-Pot Furnaces represent different and distinct types of construction, so that the most exacting may be satisfied.



"NEW GAS TIGHT" FURNACE
Made in five sizes

Size	Height Less Casing, inches	Diameter of Casing, inches	Diameter of Pot, ins.
43-3	59	46	21
47-3	62	50	25
55-3	69	58	29
58-3	69	58	31
64-3	73	64	34



"ADMIRAL" FURNACE
Made in five sizes

Size	Height Less Casing, inches	Diam. Upper Casing, inches	Diam. Lower Casing, inches	Diameter of Pot, inches	Size of Feed Door Open- ing, inches
39	48	39	32	19	12 x 16
43	48	43	36	21	12 x 16
47	50	47	40	25	12 x 16
51	51	51	44	27	12 x 16
55	52	55	48	29	12 x 16



"CRUSADER" FURNACE
Made in eight sizes

Size	Height Less Casing, inches	Diameter Upper Casing, inches	Diameter Lower Casing, inches	Diameter of Pot, inches
35-1	54	35	29	17
39-1	55	39	32	19
43-1	56	43	36	21
47-1	58	47	40	25
51-1	59	51	44	27
55-1	60	55	48	29
58-1	60	55	48	31
64-1	68	64	64	34

SQUARE-POT
WARM-AIR
FURNACES.

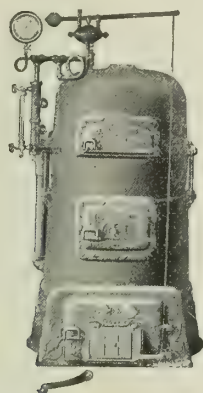
Our patented square-pot warm-air furnaces include the "New Gas Tight," "Crusader" and "Admiral" Furnaces, as shown in the illustrations on the preceding page.

All furnaces are fitted with "Boynton" draft regulators. Any furnace may be equipped with coil or generator for heating water for domestic purposes.

All furnaces have square pots, square grates and square ash-pits, insuring economy in fuel, quick radiation and ease in removal of ashes.

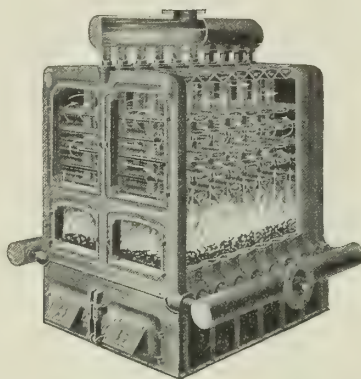
"BOYNTON"
BOILERS.

"Boynton" Steam and Hot-Water Heaters are made for hard or soft coal, wood, or natural gas.



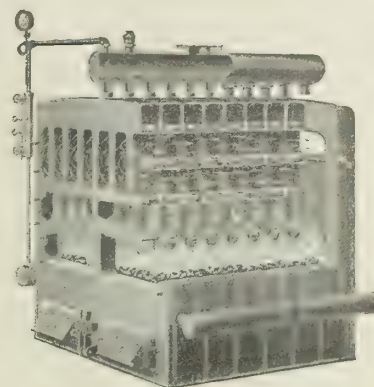
"ADMIRAL" STEAM BOILER

Made in six sizes
400 to 900 feet steam capacity
650 to 1,500 feet water capacity



SECTIONAL HOT-WATER HEATER

Made in fourteen sizes of capacity
from 500 square feet to 5,500 square feet
of radiation



SECTIONAL STEAM BOILER

Made in 26 sizes, for steam or hot water
18, 22, 27 and 42-inch fire boxes
4, 5, 6 and 8 flues in width
Capacities, 300 to 4,500 square feet direct
steam radiation
Capacities, 500 to 7,425 square feet direct
water radiation

"BOYNTON"
RANGES.

The "Boynton" Ranges shown in the accompanying illustrations are made for brick-set and in portable form.

"LAKEWOOD" DOUBLE-OVEN
RANGE

Made in five sizes with skeleton or full closet
No. 82. Width 3 ft. 6 in. Six 8-in. holes
No. 83. Width 3 ft. 6 in. Eight 8-in. holes
No. 92. Width 4 ft. 0 in. Six 9-in. holes
No. 93. Width 4 ft. 0 in. Eight 9-in. holes
No. 20. Width 4 ft. 6 in. Eight 9-in. holes

"NIAGARA" SINGLE-OVEN
RANGE

Made in three sizes
No. 28. Six 8-in. holes
No. 38. Six 8-in. holes
No. 39. Six 9-in. holes

"NEWPORT" SINGLE-OVEN
RANGE

Made in four sizes
No. 67. With skeleton closet, five 7-in. holes
No. 68. With skeleton closet, five 8-in. holes
No. 87. With lower hot closet, five 7-in. holes
No. 88. With lower hot closet, five 8-in. holes

THE COLUMBIAN HARDWARE COMPANY

MANUFACTURERS OF

Hot-Air and Ventilating Registers, Spring Hinges, and Joist, Wall and Timber Hangers

CLEVELAND, OHIO

BRANCH OFFICES

CHICAGO, ILL., 26 East Lake Street

NEW YORK, N. Y., 168 Church Street

PRODUCTS.

Manufacturers of "TU-BO" HOT-AIR and VENTILATING REGISTERS, "COLUMBIAN" WROUGHT-STEEL SPRING HINGES, "COLUMBIAN" BALL-BEARING SPRING HINGES, "COLUMBIAN" FLOOR SPRING HINGES, "GEM" and "AMERICAN" SPRING HINGES, and many other styles of Spring Hinges for Lavatories, Screen Doors, etc.; also, "CLEVELAND" and "BUCKEYE" JOIST, WALL and TIMBER HANGERS.

"TU-BO" FACES.

Cast-iron registers were apt to break, were cumbersome, unnecessarily heavy, and of limited air capacity. "Tu-Bo" Register Faces are of tubular construction (see Fig. 2); can not possibly break or bend. Although fifty per cent lighter than a cast-iron register, they will, without extra crosspieces and braces, carry much more weight, and, being lighter, consequently are much easier to handle.

CONSTRUCTION.

"Tu-Bo" Faces are made of two sheets of steel so closed over each other as to brace the face and give a tubular construction—an exclusive feature and a desirable one. "Tu-Bo" Faces are two-ply and either ply or sheet resists the weight and strains brought to bear upon the other.

EFFICIENCY.

The "Tu-Bo" Faces are stronger than a face made of a single sheet of steel equivalent in thickness to the two sheets. They are stronger than any faces either steel or cast, and are much more rigid. They will sustain a greater weight, have a much greater air capacity, and they are the only faces which will withstand a sudden and severe blow or strain without warping or cracking. It is even possible to walk upon or use both sides, as one side is nearly like the other.

DESCRIPTION.

"Tu-Bo" Registers and Borders are made of high-grade steel throughout. The register box is extremely shallow. One end is secured by a set-screw so that the register may be taken apart and put together again easily. The fans operate smoothly and fit snugly. The borders are beveled and dovetailed at the corners so that they fit perfectly. The slots for tin-box loops are made the same as the standard cast-iron border.

FINISH.

The smooth steel of the "Tu-Bo" and the substantial, heavily reinforced border take a fine finish, whether japanned, plated, or solid bronze or brass.

DESIGN.

The Grecian design shown in illustrations is simple and artistic, and harmonizes with all different styles of interior decoration; the beveled effect gives life to it, in contrast with the monotonous flatness of single-plate faces, and the steel surface takes a fine finish.

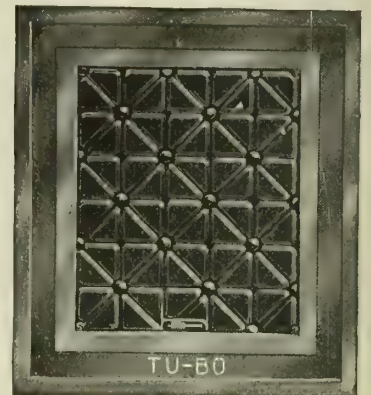


FIG. 1. "TU-BO" REGISTER
Patented Jan. 5, 1904

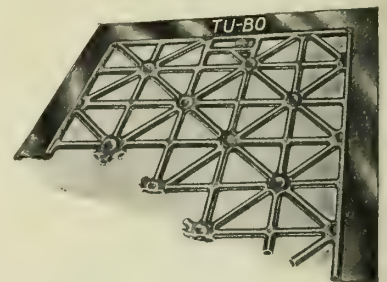


FIG. 2. "TU-BO" FACE
Showing Tubular Construction



FIG. 3. "TU-BO" BORDER
Piece in center is an enlarged section
which shows how the corners
are joined

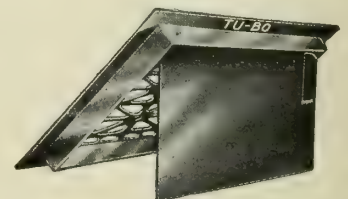


FIG. 4. "ZEPHYR" SIDE-WALL
REGISTER

THE HART & COOLEY COMPANY

MANUFACTURERS OF
Wrought-Steel Registers
NEW BRITAIN, CONN.

BRANCH OFFICES
NEW YORK, N. Y., 79 Chambers Street

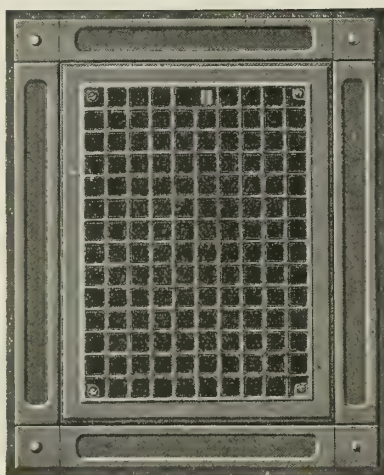
CHICAGO, ILL., 15 Lake Street

PRODUCTS.

WROUGHT-STEEL REGISTERS, a complete line for Floor, Wall and Ceiling use; SPECIAL ONE-PIECE SCREENS, finished to match any hardware; also, WROUGHT-STEEL LOCKERS—as described elsewhere in this Catalogue, for which see our name in General Index.



CLASS 100, SIDEWALL REGISTER



CLASS 200, FLOOR REGISTER
CLASS 275, FLOOR BORDER

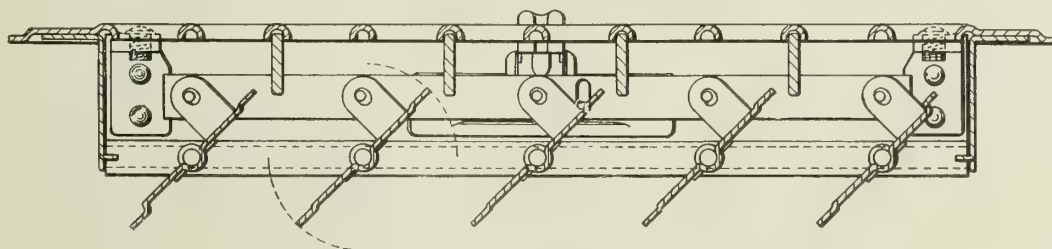


CLASS 300, SIDEWALL REGISTER

ADVANTAGES.

The finely rounded fret work, large air capacity, completeness in preventing the passing of air when in closed position, smoothness of the metal, insuring a better finish than can be obtained with any other, and the fact that they are finished to match any hardware or color scheme, are factors which from an artistic and practical standpoint should prompt architects to specify the "H. & C." Wrought-Steel Register.

They are nearly six times as strong as cast-iron and are absolutely unbreakable. Valves work on solid trunnion. Face is easily removed, making register readily accessible for cleaning. They are specially treated to prevent rust. The operating bar controlling valves has solid round stumps passing through upturned ear of valve. Operating slide engages with operating bar by a solid round stump and is all wrought-steel, inconspicuous and positive in its motion.



CROSS-SECTION OF WROUGHT-STEEL REGISTER

SIZES.

Made in all sizes, widths 4 to 30 inches (inclusive), and to 42 inches in length.

SPECIFICATION.

All Registers throughout to be of Wrought-Steel, manufactured and furnished by THE HART & COOLEY COMPANY.
All to be of the number and size shown on plans, and to be finished to match the hardware. Registers to have valves working on solid trunnions, and face of register to be of corrugated design.

THE H. W. COVERT COMPANY

Fireplace Appliances

168 Duane Street

NEW YORK, N. Y.

TELEPHONE CONNECTION

BRANCH OFFICES

WASHINGTON, D. C., JOHN H. CORNING, 520 13th Street, N. W.

NEW ORLEANS, LA., BOWLUS & FAIRCHILD, 840 Baronne Street

DES MOINES, IOWA, CENTURY LUMBER Co.

ST. PAUL, MINN., NORTHERN BRICK & SUPPLY Co.

DENVER, COLO., DENVER MANTEL & TILE Co.

WILMINGTON, DEL., JOSEPH S. HAMILTON

SEATTLE, WASH., THE POTTER MANUFACTURING Co., agents for
Washington, Oregon and California

DETROIT, MICH., DETROIT MANTEL & TILE Co.

PRODUCTS.

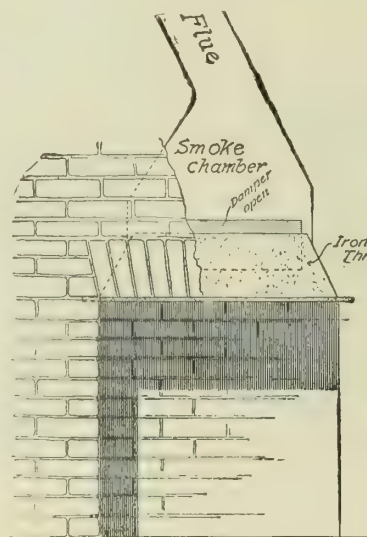
Manufacturers of "COVERT'S" PATENT IRON FIREPLACE THROAT AND DAMPER; ASHPIT DOORS; HEARTH DUMPS; IRON COAL WINDOWS; SMOKE-CHAMBERS, etc.

"COVERT" FIREPLACE THROAT AND DAMPER.

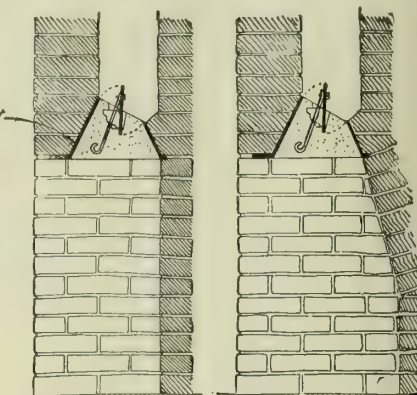
Our Fireplace Throat is now specified by a large number of the leading architects of the country, who have found that it relieves them from the many annoyances caused by ill-working fireplaces.

ADVANTAGES AND ECONOMY.

It is difficult to make a proper and smooth throat formation in masonry, but our Cast-Iron Throat built into chimney construction completely overcomes this difficulty, while the cost is so small an item that the saving of time of the bricklayers will in most cases fully offset it. It forms a strong lintel, presents smooth surfaces at an easy angle to lead the gases into the smoke-chamber, and protects the woodwork of the mantel from extreme heat. It has a high dome and an easily adjustable damper, so simple in its construction that it can not get out of order.



"COVERT" FIREPLACE THROAT AND DAMPER
Front elevation of fireplace



"COVERT" FIREPLACE THROAT AND DAMPER
As used with a plumb back and a sloping back fireplace

SATISFIED CUSTOMERS.

Among the ever-growing list of architects who now specify our products are:

McKim, Mead & White
Clinton & Russell
Warren & Wetmore
Rossiter & Wright

Rutan & Russell
Bragdon & Hillman
Cope & Stewardson
Frank Miles Day & Bros.

Wilson Eyre
Wilson Bros. & Co.
J. Foster Warner
William Warren Sabin

SPECIFICATIONS.

Specifications should read: "Each fireplace to be covered with a 'Covert' Patent Iron Throat and Damper of proper size (made by THE H. W. COVERT COMPANY, 168 Duane Street, New York, N. Y.), built in when the chimney is constructed, same serving as an arch bar. Connection from Throat to flue to be made with a 'Covert' Reinforced Concrete Smoke-Chamber." (See next page.)

SIZES AND PRICES.

The "Covert" Patent Iron Fireplace Throat and Damper is made in three depths, and for various widths of fireplaces up to six feet.

SERIES A				SERIES B			
Number	Width of Fireplace	Depth of Fireplace	Price	Number	Width of Fireplace	Depth of Fireplace	Price
230	2' 6"	16"	\$4.25	36½	3' 0"	20"	\$6.75
236	3' 0"	16"	4.75	42½	3' 6"	20"	7.25
242	3' 6"	16"	5.50	48½	4' 0"	20"	8.50
248	4' 0"	16"	6.50	60½	5' 0"	20"	10.00
				72½	6' 0"	20"	15.00
For fireplaces between the above widths use next larger size—as, for fireplace 2 feet 8 inches wide, use No. 236.				For fireplaces between the above widths, use next larger size.			
SERIES C							
Number	Width of Fireplace	Depth of Fireplace	Price	Number	Width of Fireplace	Depth of Fireplace	Price
30	2' 6"	12" or 14"	\$4.25	42	3' 6"	12" or 14"	\$5.50
36	3' 0"	12" or 14"	4.75	48	4' 0"	12" or 14"	6.50

All prices are f. o. b. cars or boat, Troy, N. Y., where we keep a large stock ready for immediate shipment.

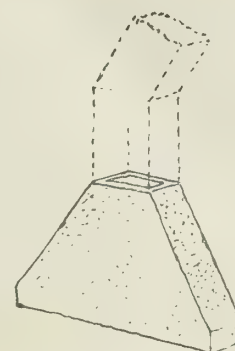
BOOKLET.

Our "Hints on Fireplace Construction" sent free upon application.

SMOKE-CHAMBER FOR FIREPLACE.

Our Reinforced Cement Smoke-Chamber completely overcomes fireplace difficulties by making a smooth, well-shaped connection between our iron throat and the tile flue. It is almost impossible to make a smooth connection from throat to flue in brick work, and the masons are often very careless in this part of the work. As it is something that is completely hidden from view they do not appreciate the importance of a smooth, well-shaped smoke-chamber, and their failure at this point is the cause of a large proportion of the fireplace troubles.

The Cement Smoke-Chamber is placed directly above our iron throat, the sizes are made to correspond with the size of the smoke openings of our throats, are deep enough at the bottom to form a smoke shelf, and the aperture at the top is made for the proper size tile. The use of the Cement Smoke-Chamber simplifies the mason's work, as he builds right up to it and has no forming to do. They are very strong, being reinforced with heavy wire mesh.



SMOKE-CHAMBER

SIZES AND PRICES OF SMOKE-CHAMBERS

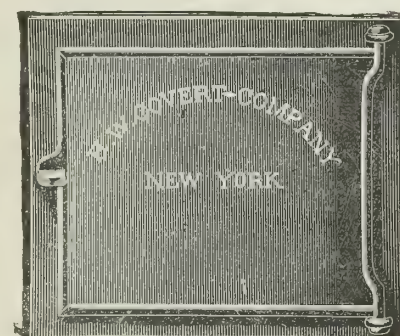
Width of Fireplace	Size of Tile Flue	Code Word	Price
2' 6"	8' x 8"	Sutro	\$4.00
3' 0"	8' x 12"	Suter	4.50
3' 6"	8' x 12"	Supine	5.00
4' 0"	12' x 12"	Saline	6.00

CAST-IRON CLEAN-OUT DOORS.

These doors have frames $1\frac{3}{4}$ inches wide with flanges 1 inch deep. The sizes given below are the actual openings, exclusive of the frame, and the price includes iron anchors.

SIZES AND PRICES OF CLEAN-OUT DOORS

Width	Height	Code Word	Price
8"	8"	Deck	\$.75
12"	10"	Deer	1.25
16"	12"	Deep	2.00
20"	16"	Dial	3.00
24" x 24" with heavy brass pin hinges and latch		Dark	7.00

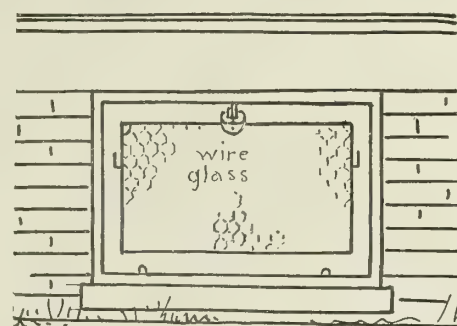


CAST-IRON CLEAN-OUT DOORS

IRON COAL WINDOW.

This window sets into the masonry like an ordinary wood frame and sash but can not become battered and broken like wood. It consists of a cast-iron frame and sash glazed with $\frac{1}{4}$ -inch wire-glass and secured by a brass padlock opening from outside.

Size outside of frame $24\frac{1}{2}$ inches wide, 19 inches high; size of opening 21 x 16 inches. Price complete, glazed with wire-glass and provided with brass padlock, crated for shipment, \$7.00.



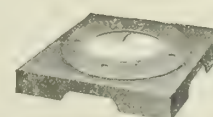
IRON COAL WINDOW

IRON PLINTH FOR COLUMN BASES.

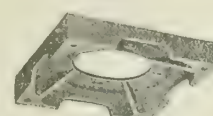
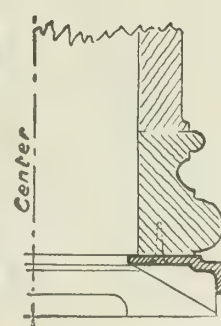
Iron Plinth for Column Bases prevents rotting of the column at the base and decay of flooring by allowing the water to run off the porch floors without wetting the base of the column. Free ventilation is provided for the inside of the column by an opening in the sides of the plinth. Fastened to column and floor by screws.

SIZES AND PRICES OF IRON PLINTHS

8" x 8" x $1\frac{1}{8}$ "	\$.65	14" x 14" x $2\frac{1}{4}$ "	\$1.80
9" x 9" x $1\frac{1}{8}$ "	.75	16" x 16" x $2\frac{1}{2}$ "	2.45
10" x 10" x 2"	.90	18" x 18" x $2\frac{1}{2}$ "	2.70
11" x 11" x $2\frac{1}{8}$ "	1.10	20" x 20" x $2\frac{3}{4}$ "	3.60
12" x 12" x $2\frac{1}{8}$ "	1.40	22" x 22" x 3"	4.00
13" x 13" x $2\frac{1}{8}$ "	1.60	24" x 24" x $3\frac{1}{8}$ "	6.50



IRON PLINTH


VIEW OF UNDER
SIDE OF PLINTH

SECTIONAL VIEW
OF PLINTH

ABRAM COX STOVE CO.

American and Dauphin Streets
PHILADELPHIA, PA.

BRANCH OFFICE
CHICAGO, ILL., 427-431 West Lake Street

PRODUCTS.

"NOVELTY" WARM-AIR FURNACES; "NOVELTY" BOILERS; "NOVELTY" RANGES;
"FRENCH NOVELTY" DOUBLE-OVEN RANGES; "NOVELTY" HEATING STOVES.

"NOVELTY" SYSTEM OF HEATING AND VENTILATING.

The "Novelty" Warm-Air System is not open to the objections encountered in the use of steam and hot-water systems. Under the rules and data in our "Novelty" Furnace Handbook, the furnace installed in any given house must be of sufficient capacity to furnish a very large volume of warm air without forcing the fire. Under this system, therefore, the furnace will not be damaged or injured in use so as to cause it to emit gas or dust into the heat chamber.

Heretofore, one objection among architects to warm-air furnace heating has been that in many cases it did not seem to be as cleanly and free from dust as direct steam or hot-water heating. With the "Novelty" Warm-Air System this objection is entirely obviated.

We build furnaces which are absolutely gas- and dust-proof. In fact, if any of our "Novelty" Furnaces are installed in accordance with the simple rules laid down in our Handbook, there will be no dust or gas whatever sent up from the furnace through the registers.

There is as great liability of dust being carried up into rooms through the cold-air intakes of an indirect hot-water or steam plant as there is of dust coming in from the like source through a warm-air furnace system of heating; and, as a matter of fact, when dust is carried into rooms through warm-air registers, whatever the system of heating, it is almost always through the cold-air intake that it enters. Yet we can not heat healthfully without pouring into the rooms air which is brought from outside the building.

With the "Novelty" Warm-Air System, the cold-air cleansing-box will insure the elimination of dust or smoke from the fresh-air supply.

ADVANTAGES.

The advantages of the "Novelty" Warm-Air System are as follows:

It provides a practical and healthful system of ventilation, as well as an efficient system of heating.

The warm-air and ventilating registers used in connection with it do not take up valuable space in the rooms, and can be furnished in designs, metals, and finishes that harmonize admirably with any scheme of decoration or color. Many registers now made by the leading manufacturers are genuine designs of art, adorning instead of disfiguring a room.

The cost of the "Novelty" Warm-Air System, *including* complete and systematic ventilation, is less than the cost of even the inferior direct steam or hot-water system *without* any provision for ventilation.

Indirect steam or hot-water heating will cost, on the average, nearly three times as much to install, without any formal provision for systematic ventilation, as the "Novelty" Warm-Air System will cost with a complete system of ventilation.

Our Handbook places you in a position of certainty regarding Warm-Air Furnace Heating and Ventilation which you have never before occupied regarding any system of heating. Specifications under the "Novelty" Warm-Air System can include every item of the heating and ventilating plant, and you can have the absolute assurance that you are right and safe.

It is not difficult for any furnace-man who is a fair mechanic properly to install the "Novelty" Warm-Air System of heating and ventilation in accordance with specifications founded upon the rules in our Handbook.

GUARANTEE.

This we know and guarantee absolutely:

If "Novelty" Furnaces of the sizes recommended in our rules are put in, and if the piping plans and other simple rules of installation are carried out substantially as prescribed

by the said rules, then the houses to which the "Novelty" Warm-Air System is applied will be properly heated and healthfully ventilated.

The steam or hot-water radiator, however it may be designed or ornamented, is an unsightly feature in any room. Always ugly, usually in the way, the radiator is the nightmare of the interior decorator; and the exposed radiator in sight is the visible sign of a lack of healthful ventilation. One of the many points in favor of the "Novelty" Warm-Air System is that it abolishes the radiator as a feature of interior mal-decoration.

Relying upon their desire to promote the better heating and ventilation of homes, and upon their knowledge that this in the past has usually been the most imperfect part of house construction, we confidently count on the co-operation of intelligent architects in popularizing the "Novelty" Warm-Air System of heating and ventilation.

"SPECIAL NOVELTY"
ALL CAST
WARM-AIR
FURNACES.

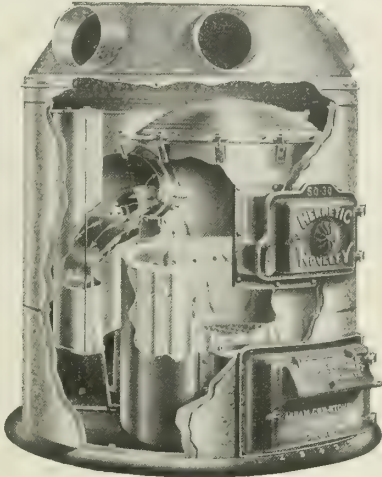
The area of the heating surface in this Furnace is much greater than in any other cast radiator construction. In many the area of heating surface is inadequate for the proper heating of the required volume of air, resulting in a deficiency of heating power and causing a lack of durability in construction.

A special patented feature not found in any other construction contributes materially to the unique and remarkable results attained by the "Special Novelty" Furnace.

All joints are asbestos gasket-joints, and the surfaces are so perfectly machined that there is a true contact over a large surface. Pure asbestos fibre felt is used, and this is cemented to the castings at the factory in such manner as to prevent any danger of its being detached in shipment. We guarantee every joint of the "Special Novelty" to be permanently air-tight and gas-proof.



"SPECIAL NOVELTY" FURNACE



"HERMETIC NOVELTY"
FURNACE

DIMENSIONS
AND
CAPACITY
RATING IN
EQUIVALENT
CUBIC FEET.

PRICE-LIST AND TABLE OF DIMENSIONS

Number	LIST PRICES		Capacity in "Equivalent Cubic Feet" furnace will heat, on the basis of maintaining a temperature of 70 degrees above zero in the building when the outside temperature is zero	Height of furnace cased complete, inches	Diameter of fire-pot, inches	Diameter of casings, inches	Height to top of radiator, inches	Diameter of smoke-pipe, inches	Weight, less casings, lbs.	Size of cold air duct required, inches
	Less Casings	With Casings								
732	\$ 93.80	\$114.10	32000	62	19	32	50	7	820	10 x 20
736	114.80	137.55	41000	64	21	36	52	8	1060	12 x 20
740	135.80	161.00	50000	65	23	40	53	8	1280	12 x 26
744	163.80	191.45	61000	66	26	44	56	9	1675	12 x 32
748	198.80	229.25	73000	67	28	48	57	9	2125	14 x 32
752	240.80	273.70	76000	68	28	52	58	9	2270	14 x 33
756	324.80	360.15	105000	70	32	56	60	9	2850	14 x 48

Architects are beginning to realize the importance of ventilation, but indirect steam and water plants are too costly for most residences, and so the unhealthful, unsanitary method of heating by direct radiation continues to be installed in many residences.

The "Novelty" System solves the problem. It has every advantage of indirect steam or water heating, and systematic, adequate ventilation in addition. It costs no more than direct steam if the building is properly planned for its installation. It is cleanly and efficient. No case of failure has ever attended its operation.

Our "Novelty" Furnace Handbook is the text-book of the "Novelty" System of Heating and Ventilation. This is the only treatise ever published that gives architects definite, positive, authoritative rules and directions for planning and specifying a correct warm-air system of heating and ventilation.

We make "Novelty" Furnaces that are absolutely and permanently gas-tight. We make them in greater variety of sizes and in larger capacities than any line produced elsewhere.

We invite architects to study the merits of the "Novelty" System for the promotion of perfect heating and healthful ventilation.

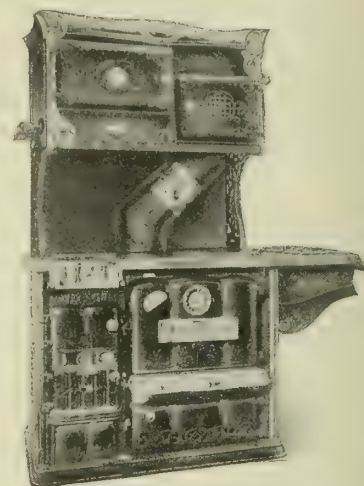
"HERMETIC
NOVELTY"
FURNACE.

The "Hermetic Novelty" Furnace is constructed specially for use of bituminous coal, but will also produce most excellent results with anthracite coal. The joints are few, but they are all securely packed with pure asbestos fibre and are absolutely and permanently tight. It is extremely durable, has great heating power, and will not leak smoke or gas. This is the best soft-coal furnace we make to exemplify the advantages of the "Novelty" Warm-Air System of Heating and Ventilating.

PRICES AND
CAPACITIES
IN
EQUIVALENT
CUBIC FEET.

HERMETIC NOVELTY FURNACE FOR COAL—CAPACITIES AND DIMENSIONS

No.	Capacity in equivalent cubic feet	Diameter of fire-pot, inches	Diameter of castings, inches	Height to top of radiator, inches	Diameter of smoke-pipe, inches	Size of cold-air duct required, inches	Net price, less casings	Net price, with casings
40-18	41,000	18	40	35	8	12 x 29	\$126.00	\$151.20
44-20	51,000	20	44	56	9	12 x 32	150.00	177.00
48-23	67,000	23	48	57	9	14 x 32	178.00	208.00
52-26	86,000	26	52	58	9	14 x 36	210.00	243.00
60-30	115,000	30	60	60	10	16 x 42	274.00	312.00



"NOVELTY KITCHENER"
GAS AND COAL RANGE

For Prices and Dimensions
see next page

"NOVELTY
KITCHENER"
RANGE, 818,
820, ALSO,
117, 118, 208,
209 SERIES.

These ranges embody special features which keep them in the lead of all competitors and make them the most desirable ranges of their class.

When ordering, state form number and style of base, and if without waterfront, deduct \$4.20 from list prices quoted.

"NOVELTY KITCHENER" RANGE—DIMENSIONS

	818	820
Number of range	818	820
Height of range, plain, (no shelf)	31 1/2	32
Height of range, with splash plate	37 1/2	38
Height of range, with top shelf	54 1/2	55
Height of range, with high closet	65 1/2	65 1/2
Height of range, with 12-in. boiler closet	74 1/2	74 1/2
Height of range, with 14-in. boiler closet	77 1/2	77 1/2
Size of smoke-pipe	7 1/4	7 1/4
Size of hot-air pipe	6	6
Dimensions of top	27 x 37 1/2	28 x 40
Dimensions of oven	18 x 18 x 12 1/2	20 x 20 x 13

"NOVELTY KITCHENER" RANGE Nos. 117, 168, 118, 208, 209
Plain base, plain grate and waterfront

Form	Style	No. 117	No. 168	No. 118	No. 208	No. 209
1	Range, plain, no shelf	\$33.60	\$34.65	\$39.90	\$46.20	\$47.25
2	Range with splash plate	34.65	35.70	40.95	47.25	48.30
3	Range with high shelf	39.90	40.95	46.20	52.50	53.55
3 1/2	Range with Princess high shelf including smoke-pipe			49.65	55.95	57.00
4	Range with high closet	47.25	48.30	53.55	59.85	60.90
4 1/2	Range with Princess high shelf including smoke-pipe			56.65	62.95	64.00
14	Range with boiler closet and 12-in. galvanized boiler and connections	80.50	81.55	86.80	93.10	94.15
	For duplex grate, add	.70	.70	.70	.70	.70
	For door base, add	2.10	2.10	2.10	2.10	2.10
	If smoke-pipe, to top of mantel, including check register, is furnished, add	1.05	1.05	1.05	1.05	1.05

"NOVELTY KITCHENER"		RANGE No. 818		RANGE No. 820	
With Waterfront and Duplex Grate		LIST PRICE		LIST PRICE	
Form	Style	With plain base	With door base	With plain base	With door base
1	Range, plain, no shelf	\$44.10	\$46.20	\$50.40	\$52.50
2	Range with splash plate	45.85	47.95	52.15	54.25
3	Range with high shelf	50.40	52.50	56.70	58.80
4	Range with high closet	57.75	59.85	64.05	66.15
5	Range with 12 or 14 in. boiler closet, less boiler and connections	61.95	64.05	68.25	70.35
6	Range with boiler closet and 12-in. galvanized boiler and connections	92.05	94.15	98.35	100.45
7	Range with boiler closet and 14-in. galvanized boiler and connections	98.35	100.45	104.65	106.75
	If bottom in low closet is desired, add to list price	2.10	2.10	2.10	2.10
	If sifter grate and ash pan are desired, add to list price	2.10	2.10	2.10	2.10
	If smoke-pipe, to top of mantel, including check register, is desired, add to list price	1.05	1.05	1.05	1.05
	If plain grate is desired instead of duplex, deduct from list price	.70	.70	.70	.70
	If nickel-top band is desired, add to list price	1.40	1.40	1.40	1.40

DIMENSIONS

Number of range	Height of range, plain — no shelf	Height of range with splash plate	Height of range with high shelf	Height of range with high closet	Height of range with 12-inch boiler closet	Height of range with 12-inch boiler closet	Size of smoke-pipe	Size of hot-air pipe	Top measurement	Oven
117	29 1/4	34	49 1/2	54 1/2	66	66 1/2	6 1/2	5	24x33	16x16
168	29 1/4	34	49 1/2	54 1/2	66	66 1/2	6 1/2	5	24x33	16x16
118	29 1/4	34	49 1/2	54 1/2	66	66 1/2	6 1/2	5	26x36	18x18
208	29 1/4	34	49 1/2	54 1/2	66	66 1/2	6 1/2	5	26x38	20x20
209	29 1/4	34	49 1/2	54 1/2	66	66 1/2	6 1/2	5	26x38	20x20

All ranges have six covers: 7-in. on No. 117; 8-in. on Nos. 168, 118, and 208; 9-in. on No. 209.

"NOVELTY
KITCHENER"
COMBINA-
TION GAS AND
COAL RANGE.

With this range, coal alone, or gas alone, can be used; or both coal and gas can be used at the same time without any change or interference whatever. This range has more than double the capacity of either a coal or a gas range alone.

PRICE-LIST

DIMENSIONS, INCHES

	No. 118	No. 208	No. 209	Number of range	Oven of coal range	Gas baking oven	Gas broiling oven	Fire-box for coal	Height of range to main top	Total height to top of gas closet	Height between main top and gas closet	Top of range including gas shelf	Floor-space occupied by range
For manufactured gas, for either anthracite or bituminous coal, with duplex grate, with door base, with waterfront.....	\$88.00	\$94.30	\$95.35										
Add for bottom in low closet.....	2.10	2.10	2.10										
Add for natural gas.....	1.00	1.00	1.00										
Add for two thermometers.....	4.00	4.00	4.00										
Add for nickel-plated front edge of top.....	1.40	1.40	1.40										
Deduct for plain grate.....	.70	.70	.70	118	18 x 18	16 x 16	12 x 12	17 x 7 1/2	29 1/4	63	17	26 x 49	24 x 39
Deduct for plain base.....	2.10	2.10	2.10	208	20 x 20	18 x 18	13 x 13	17 x 7 1/2	29 1/4	63	17	26 x 51	24 x 38
Deduct when waterfront is not furnished.....	4.20	4.20	4.20	209	20 x 20	18 x 18	13 x 13	17 x 7 1/2	29 1/4	63	17	26 x 51	24 x 38

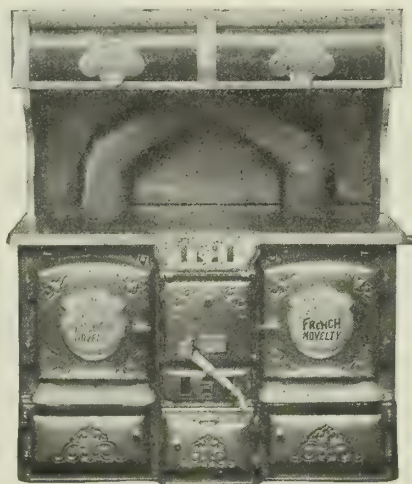
The range is furnished with either right hand coal oven or left hand coal oven. Right hand oven will be shipped unless left is specified in order.
The positions of gas baking-oven and gas broiling-oven are always as shown in illustration on preceding page.
All ranges have six covers; 8-inch on Nos. 118 and 208; 9-inch on No. 209.

"FRENCH
NOVELTY"
RANGE,
"FRENCH"
TOP AND
DOUBLE OVEN.

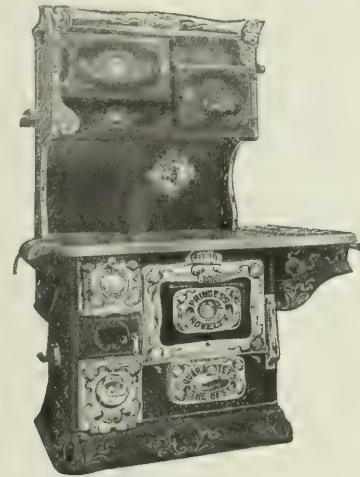
This range has two ovens, made of wrought-iron; dust-proof, can not crack, heats evenly, and can be removed in a few minutes. Also warming ovens for plates, etc. The water-back encircles the top of fire-box and gets the benefit of the fire on all four sides, insuring a plentiful supply of hot water. Range has three large holes, with reducing rings, one over each oven and one over the fire. The ovens are 14 1/2" high, 14" wide, 20" deep (front to back); top 50" long, 28" wide.

"FRENCH NOVELTY" CAST IRON RANGE

Number.....	842
Oven.....	14 x 20
	List Price
With waterback, plate-rack, smoke-pipe and circulating pipes.....	\$136.50
Russia iron smoke-pipe and nickel sections, extra.....	5.25
Russia iron canopy.....	35.00
Steel high closet.....	28.00
Thermometers in oven doors, net.....	2.00



"FRENCH NOVELTY" RANGE



"PRINCESS NOVELTY" COMBINATION GAS AND COAL RANGE

"PRINCESS
NOVELTY"
RANGE.

This is a range of highest grade and finest quality. While the permanent black finish is very handsome and durable, we recommend the Belanoir Bronze as the finest and best finish ever applied to a range. Belanoir Bronze is a dark, lustrous, iridescent finish of exquisite beauty and great durability; being entirely a metal finish, and not a lacquer or coating, it will not burn off nor deteriorate. The "Princess Novelty" requires no blacking.

"PRINCESS NOVELTY" RANGE, SIZES AND DIMENSIONS

	No. 818	No. 820	No. 920		No. 818	No. 820	No. 920
Oven, inches.....	18 x 20 x 13	20 x 20 x 13	20 x 20 x 13	Weight of range, style R or F, pounds.....	525	550	555
Covers or lids, inches.....	6-8 in.	6-8 in.	6-9 in.	Weight of range, style S or G, pounds.....	505	530	535
Fire-box for hard coal, inches.....	17 x 7 1/2 x 8	17 x 8 1/2 x 8	17 x 8 1/2 x 8	Weight of gas closet, complete, pounds.....	118	128	128
Fire-box for soft coal, inches.....	17 x 7 1/2 x 6	17 x 8 1/2 x 6	17 x 8 1/2 x 6	Weight of gas shelf, complete, pounds.....	36	36	36
Length of fire-box for wood, inches.....	25	26	26	Weight of high closet, pounds.....	45	50	50
Baking oven of gas closet, inches.....	16 x 16 x 9	18 x 16 x 9 1/2	18 x 16 x 9 1/2	Weight of high shelf, pounds.....	28	30	30
Broiling oven of gas closet, inches.....	12 x 12 x 9 1/2	13 x 12 x 9 1/2	13 x 12 x 9 1/2				
Height of range to main top, inches.....	30 1/2	30 1/2	30 1/2	STYLE M—Square range with high closet, in Belanoir bronze finish.....	\$ 99.40	\$106.40	\$108.50
Height to table of high shelf or high closet, inches.....	49 1/2	49 1/2	49 1/2	STYLE A—Square range with high closet, in permanent black and nickel finish.....	85.40	92.40	94.50
Extreme height, including high shelf, inches.....	53 1/2	53 1/2	53 1/2	STYLE N—Square range with high shelf, in Belanoir bronze finish.....	91.70	98.70	100.80
Extreme height, including high closet, inches.....	58 1/2	58 1/2	58 1/2	STYLE B—Square range with high shelf, in permanent black and nickel finish.....	77.70	84.70	86.80
Extreme height, including gas closet, inches.....	66 1/2	66 1/2	66 1/2	STYLE O—Reservoir range with high closet, in Belanoir bronze finish.....	113.40	120.40	122.50
Top of square range, not including end shelf, inches.....	33 1/2 x 29	36 1/2 x 29	36 1/2 x 29	STYLE C—Reservoir range with high closet, in permanent black and nickel finish.....	99.40	106.40	108.50
Top of square range, including end shelf, inches.....	44 1/2 x 29	47 1/2 x 29	47 1/2 x 29	STYLE P—Reservoir range with high shelf, in Belanoir bronze finish.....	105.70	112.70	114.80
Top of reservoir range, inches.....	46 x 29	49 x 29	49 x 29	STYLE D—Reservoir range with high shelf, in permanent black and nickel finish.....	91.70	98.70	100.80
Top of range, including gas shelf, inches.....	46 x 29	49 x 29	49 x 29	STYLE Q—With gas closet and gas shelf, in Belanoir bronze finish.....	135.80	142.80	144.90
Floor space occupied by base of range, inches.....	35 x 26	38 x 26	38 x 26	STYLE E—With gas closet and gas shelf, in permanent black and nickel finish.....	121.80	128.80	130.90
Diameter of smoke-collar, inches.....	7	7	7				
Capacity of smoke-collar, square inches.....	38.48	38.48	38.48				
Boiler capacity of water-front, gallons.....	40	40	40				
Capacity of reservoir tank, cubic inches.....	1190	1190	1190				
Weight of water-front, pounds.....	20	20	20				
Weight of range, style M or A, pounds.....	500	525	530				
Weight of range, style N or B, pounds.....	480	505	510				
Weight of range, style O or C, pounds.....	565	590	595				
Weight of range, style P or D, pounds.....	540	565	570				
Weight of range, style Q or E, pounds.....	595	620	625				

FOWLER & WOLFE MANUFACTURING CO.

Wall Radiation

668, 670 and 672 Bourse Building
PHILADELPHIA, PA.



TRADE-MARK

CABLE ADDRESS
"WILTSIE, PHILADELPHIA"

PRODUCTS.

WALL RADIATORS for STEAM, HOT-WATER, VAPOR or VACUUM; SEMI-DIRECT ATTACHMENT to provide for a Positive Supply of Warmed Fresh Air; SPECIAL HIGH-PRESSURE WALL RADIATORS; PLATE WARMERS; BAY-WINDOW RADIATORS, etc.

ADAPTABILITY.

We are the originators of Wall Radiation, which is superseding other types of radiators and pipe coils for heating churches, schools, stores, factories, theaters, and all buildings requiring extended heating surfaces, and where floor space is valuable. It is also being extensively used for steamship heating.

SIZES AND EFFICIENCY.

The Fowler & Wolfe Wall Radiators are made in five sizes, both plain and ornamental:

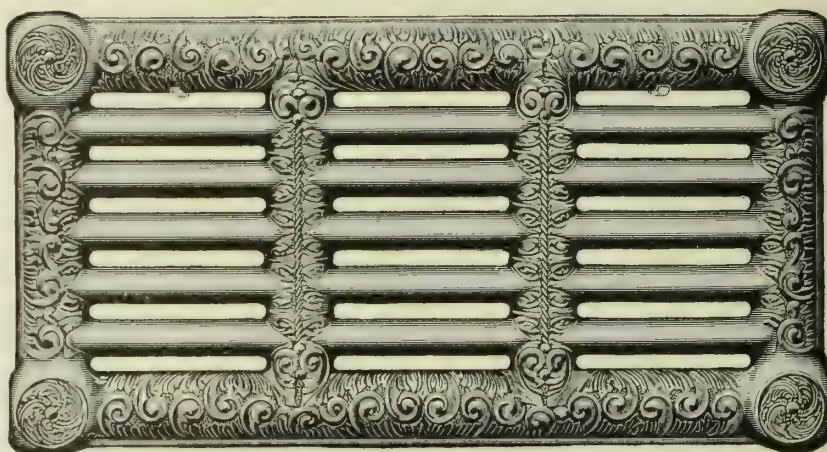
Standard Size—24" long, 12½" wide, 3" thick; contains 7 sq. ft. of surface.
Medium Size—21" long, 12½" wide, 3" thick; contains 6 sq. ft. of surface.
Short Size—17" long, 12½" wide, 3" thick; contains 5 sq. ft. of surface.
Special Size—24" long, 13" wide, 3½" thick; contains 9 sq. ft. of surface.
Dwarf Size—17" long, 9" wide, 3" thick; contains 3½ sq. ft. of surface.

Sections can be assembled in either Vertical or Horizontal form. They are made in special forms to fit angular and circular windows.

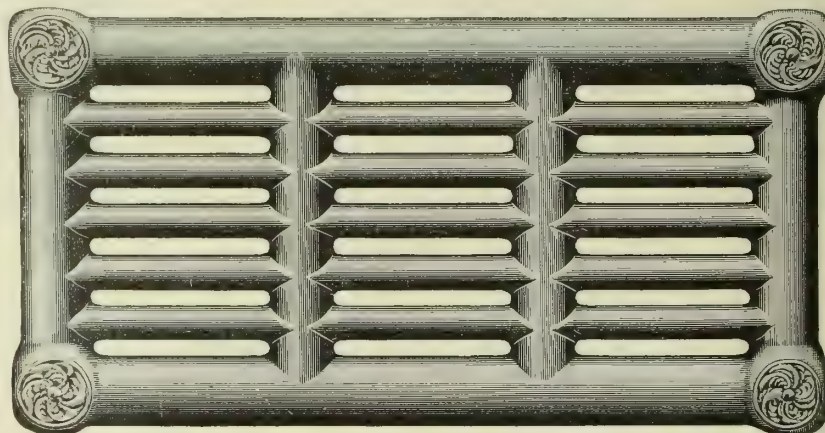
Tests made by the German government demonstrate that the Fowler & Wolfe Wall Radiators are 27 per cent more efficient than one-inch pipe coil radiation.

They can be assembled in units to provide for distribution of heat to special locations, in a manner more economical, more convenient and more effective than pipe coils.

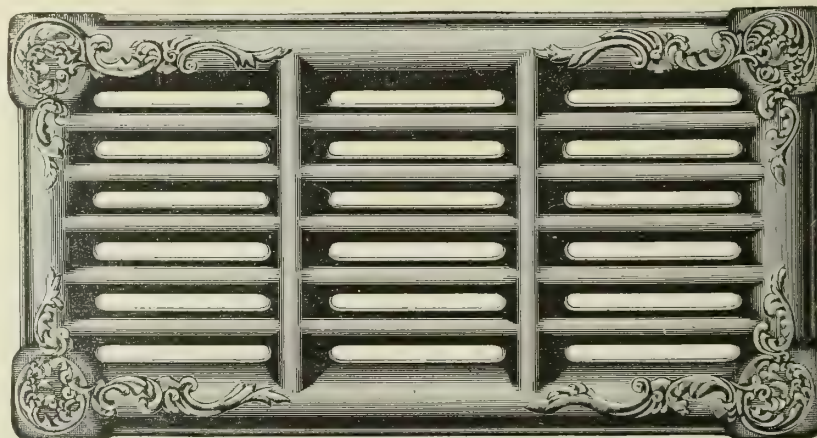
For factory and large building heating Fowler & Wolfe Wall Radiators occupy less than one half the wall area usually covered by pipe coils.



HORIZONTAL FORM—ORNAMENTAL STANDARD SECTION (Patented)



HORIZONTAL FORM—PLAIN STANDARD SECTION (Patented)



HORIZONTAL FORM—SPECIAL NINE-FOOT SECTION (Patented)

DURABILITY.

Fowler & Wolfe Wall Radiators endure longer service than wrought-iron or steel. They are more rigid, withstand pressure better and are free from the disagreeable noise of water hammering.

All regular radiators are subjected to two hydraulic tests at a pressure of 100 pounds to the square inch, before shipment.

HIGH-PRESSURE RADIATORS.

We are the only manufacturers of Wall Radiation guaranteed to withstand a test of from 225 to 425 pounds hydraulic pressure from high-pressure or marine boilers.

THE SEMI-DIRECT WALL BOX AND DAMPER ARRANGEMENT.

The Wall Boxes are combined with Mixing Dampers, and are provided with storm-deflecting baffle-plates; also, with a copper wire insect screen and register face for outside finish. They are amply strong to support weight of walls.

The damper can be operated by hand or foot. When out it admits air from outside. When reversed it effectually closes, and admits air from room. When occupying an intermediate position, air is admitted from both outside and inside in any desired proportion.

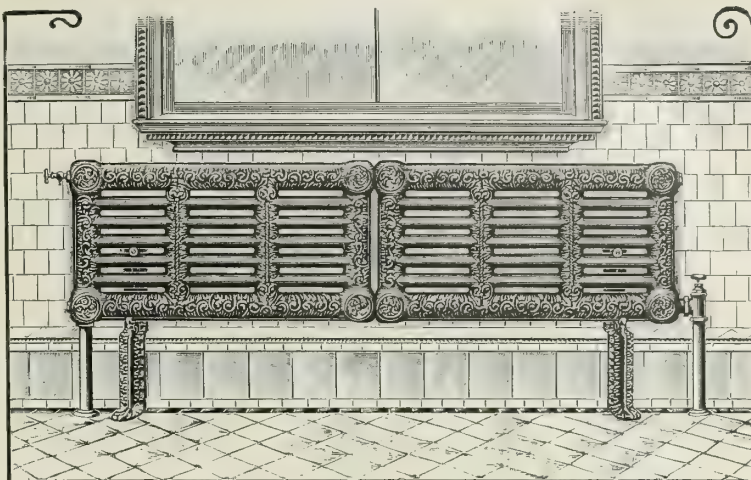
The air, when admitted, is drawn upward through the space between the radiator and wall (the bottom openings in the radiator being closed), and enters the room through the openings at the top. Currents of outdoor air containing impurities are deflected from the walls, thus obviating the staining of same, as is often the case in other systems.

These wall boxes and dampers extend the length of one section and each is complete in itself. Any number may be used to secure the desired amount of fresh air. This arrangement will be found invaluable for use in churches, schools, and other public institutions, as the heating and ventilation for same admits of all radiators being placed on the outside or exposed walls, and any desired proportion of it made to admit fresh air.

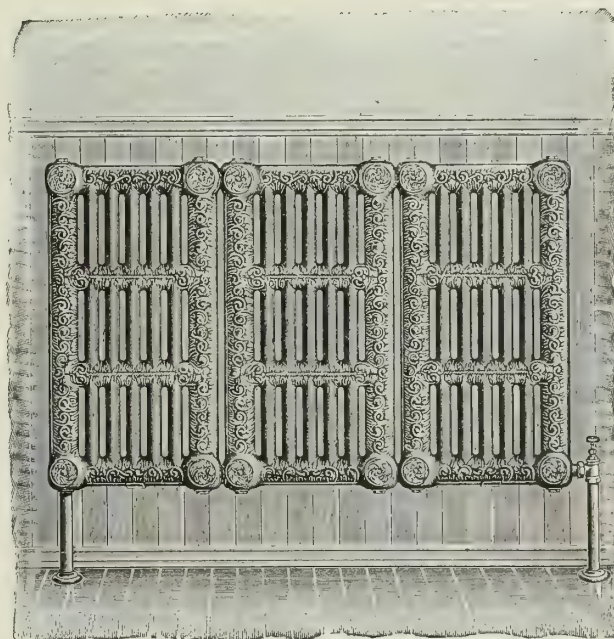
GUARANTEE.

We guarantee our Wall Radiators to contain the rated surfaces. Tested at 100 pounds pressure before shipment. To provide for perfect circulation when installed in either vertical or horizontal form.

We challenge any other manufacturer of Wall Radiation to equal the above guarantee.



REGULAR HORIZONTAL FORM

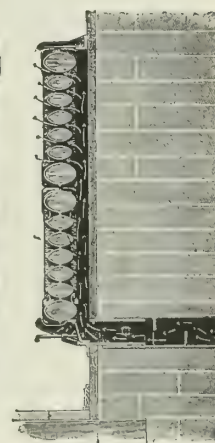


REGULAR VERTICAL FORM



PLATE WARMER

Furnished as many sections high, long or wide and with as many intermediate shelves as desired



SEMI-DIRECT ARRANGEMENT

THE GRAFF FURNACE COMPANY

MANUFACTURERS OF

Furnaces and Ranges

208 Water Street

NEW YORK, N. Y.

PRODUCTS.

We manufacture HOT-AIR FURNACES of all grades and capacities, for burning anthracite or bituminous coal, or wood; SINGLE-OVEN RANGES, in various styles, for domestic use.

SPECIALTY.

The "Faultless" Scientific Heater is our specialty.

HOT AIR THE BEST METHOD OF HEATING.

Although we make both furnaces and boilers, we maintain that no other method of heating is equal to a properly constructed and properly set furnace.

A good furnace of ample size, put in with intelligence and care, will cost about half as much as steam or hot water, and will give thorough satisfaction. Furnace heat is the most healthful obtainable. The air coming into the rooms is direct from out of doors, and is pure, no change having occurred except warming it. An equal volume of air is being forced out of the room, thus the air is changed every few minutes. Other systems heat and re-heat the same air over and over again, and suitable ventilation is not obtained.

"FAULTLESS" SCIENTIFIC HEATER.

In the "Faultless" Scientific Heater, seen in Figs. 1 and 2, the cast-iron air-warming flues entirely surround and overhang the fire-chamber, and the air circulation is mostly through these flues. The direct fire-pot radiation is utilized and merged into the separate flue radiator. The air circulation around the outside of the radiator is also a powerful adjunct.

Every detail of construction has received the most careful attention, and efficiency and durability are assured.

ADVANTAGES.

The "Faultless" Scientific Heater has the largest possible amount of heating surface, producing the maximum volume of pure warm air with the minimum amount of fuel.

Remote rooms can be warmed by controlling the heat produced from one or more of these separate air-heating flues.

This heater is easily managed and kept in order, and it can be readily and thoroughly cleaned.

There is no overheated air, and no lack of ventilation, faults inevitable with steam-heating systems.

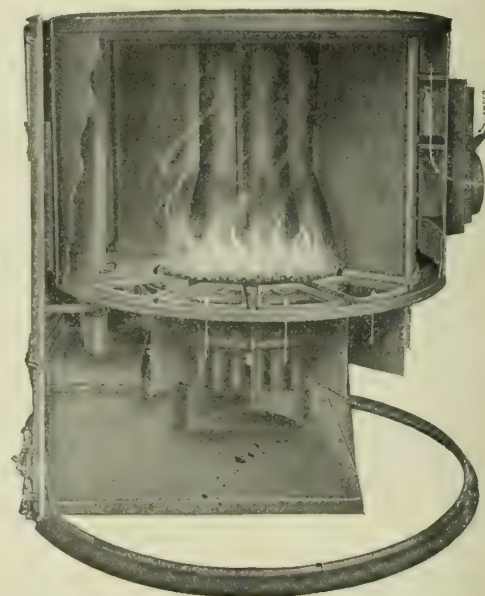


FIG. 1. SECTIONAL VIEW OF
"FAULTLESS" HEATER
Showing Combustion Chamber

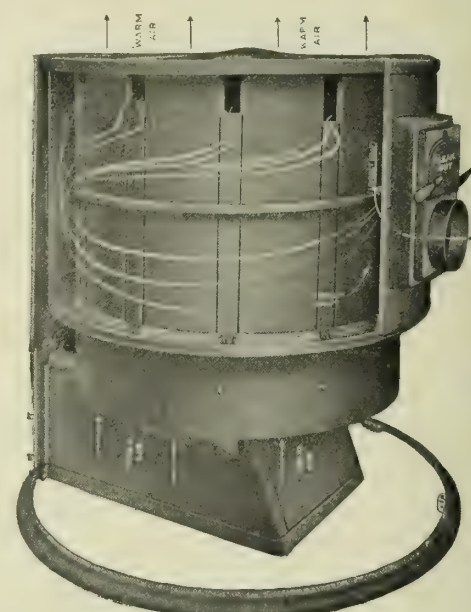


FIG. 2. SECTIONAL VIEW OF
"FAULTLESS" HEATER
Showing Circulation of Air

COMBINATION
HEATING.

A "Champion" Hot-Water Heater can be placed in the "Faultless" for hot-water supply or for heating one or more rooms, giving a powerful combination heating system and is especially adapted for heating conservatories and for rooms where it is difficult to extend the warm-air pipes.

SYSTEM FOR
LARGE
BUILDINGS.

Churches, schools and other large buildings can be thoroughly heated by using the "Faultless" in battery form, or by placing two or more heaters separately. Electric fans in the cold-air ducts will insure an ample and steady flow of air.

REFERENCES.

We can furnish many testimonials to the perfect operation of these Heaters.

DIMENSIONS
AND
CAPACITIES.

Size of Heater	Diameter of Fire-Pot	Diameter of Grate	Grate Area, square inches	Number of Heating Flues	Diameter of Casings	Height with Cone Top Casings	Usual Size of Cold-Air Duct in inches	Square feet of Heating Surface	Cubic feet of Heating Capacity	
									Minimum for Dwellings	Maximum for Churches, etc.
19-48	19 in.	19 in.	283	9	48 in.	66 in.	12 x 36	131	15,000 to	25,000
22-54	22 in.	22 in.	380	10	54 in.	69 in.	14 x 40	152	25,000 to	45,000
25-60	25 in.	25 in.	491	11	60 in.	70 in.	14 x 48	176	40,000 to	60,000
30-70	30 in.	30 in.	707	12	70 in.	70 in.	16 x 60	219	60,000 to	100,000

GUARANTEE.

We guarantee these Heaters to do all that we claim for them, with economy and durability.

"FAULTLESS"
RANGES.

"Faultless" Ranges (Fig. 3) are unsurpassed for quick baking and general efficiency. They are up to date in style and constructive detail, and are designed for ordinary family use as the measurements indicate. Satisfaction is guaranteed. Furnished with or without water back; with or without warming shelf; with or without roll-top high closet. Furnished with nickel-trimmed canopy if desired. Either right or left fire-box. Either portable or for brick setting.

RANGE
DIMENSIONS.

Two Sizes:

No. 8—18, with Oven 18 in. x 18 in. x 12½ in.

No. 8—20, with Oven 20 in. x 20 in. x 12½ in.

No. 8—18 top is 3 ft. 1 in. x 2 ft. 3½ in.

No. 8—20 top is 3 ft. 3 in. x 2 ft. 5½ in.

Range with High Closet is 4 ft. 10 in. high.

High Closet is 8 in. high x 12 in. deep.

Fireplace Opening required for Brick-Set Range:

No. 8—18 Width 2 ft. 10 in.; Depth 12 in.

No. 8—20 Width 3 ft.; Depth 12 in.

CO-OPERATION.

Estimates and plans for heating buildings in places where we have no agents will be gladly furnished, and our special circulars supplied.



FIG. 3. "FAULTLESS" RANGE

THE HOHMANN & MAURER DIVISION TAYLOR INSTRUMENT COMPANIES

MANUFACTURERS OF

Temperature and Pressure Regulators and Thermometers for all Industrial Requirements
ROCHESTER, N. Y.

BRANCH OFFICES

BOSTON, MASS., 44 High Street
NEW YORK, N. Y., 85 Chambers Street
PITTSBURG, PA., S. H. STUPAKOFF, 720 Lewis Block

CHICAGO, ILL., 119 Lake Street
ST. LOUIS, MO., 312 South Eighth Street

PRODUCTS.

HOT-WATER TANK and HEATER REGULATORS, DAMPER and PRESSURE REGULATORS; MECHANICAL THERMOMETERS, for all Industrial Requirements; AIR GAUGES; ANEMOMETERS, HYGRODEIKS, HYDROMETERS, etc.

AUTOMATIC
REGULATORS.

The "H. & M." Automatic Regulators are the most reliable, the simplest, and the most durable Regulators on the market.

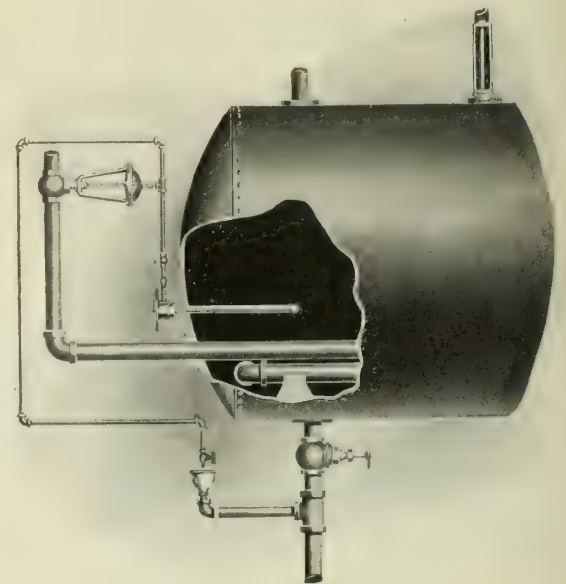
HOT-WATER
TANK
REGULATORS.

The "H. & M." Hot-Water Tank Regulator with the "H. & M." Diaphragm Valve makes the most sensitive, substantial, and reliable regulator outfit ever manufactured for automatically controlling the temperature in hot-water tanks.

All of the parts are made of the best material and the workmanship is A 1. As is the case with all "H. & M." Regulators, these devices are tested under actual working conditions. We have both closed and open tanks in our testing department, and have a high-pressure boiler and pump for testing purposes exclusively, so that it is possible to test under any conditions.

DESCRIPTION.

The Hot-Water Regulator shown in the illustration is the simplest device ever constructed for this purpose. The motive power is water pressure. This pressure is taken from the tank, which means that the water passing through the regulator will always be clean and will always be of an even temperature. It also reduces to a minimum the amount of piping necessary to connect up the device. The only connections necessary are those from the regulator to the diaphragm valve and from the diaphragm valve to a sewer.



"H. & M." HOT-WATER REGULATOR

VALVES.

The valves used in connection with the "H. & M." Regulator are fitted with a union connection hub and are very substantially built; all being tested before leaving the factory to withstand 200 pounds' water pressure.

COMBINED
HOT-WATER
TANK AND
HEATER
REGULATORS.
CO-OPERATIVE
SERVICE.

The "H. & M." Regulator can be used in conjunction with an "H. & M." Lever Motor for operating the damper on a hot-water heater used in connection with a tank supplying water for washing purposes, or a hot-water heater used for heating purposes in residences.

For more detailed information, prices, etc., relating to any of our products, see our detailed catalogue which will be sent to any address upon receipt of request.

THE HONEYWELL HEATING SPECIALTY CO.

MANUFACTURERS OF

The Honeywell Heat Generator, Unique Radiator Valve, and Temperature Regulator

FACTORY AND GENERAL OFFICE

WABASH, IND.

PRODUCTS.

The HONEYWELL HEAT GENERATOR, a device for the acceleration of the circulation and for increasing the efficiency in Hot-Water Heating plants; the HONEYWELL UNIQUE TWO-WAY HOT-WATER RADIATOR VALVE, which makes possible the tapping of the hot-water radiator at one end only; the HONEYWELL TEMPERATURE REGULATOR, an improved device for automatically controlling the boiler dampers.

HOT-WATER HEATING CIRCULATION.

Heating engineers recognize large piping and pressure as the two distinct methods of insuring positive circulation in hot-water heating systems.

Large sizes of pipe are being used, although engineers have realized the extravagance in cost of installation and slowness of heating or cooling of the great volume of water entailed by the large-size piping. The larger volume of water also increases the load on the boiler.

The pressure system has not come into active practice on account of the insecurity of the various devices for maintaining pressure, and the possibility of accident by sticking of mechanical parts or springs.

THE HONEYWELL HEAT GENERATOR SYSTEM OF HOT-WATER HEATING.

The Honeywell Heat Generator insures positive circulation with the pipe sizes cut down one half from ordinary hot-water systems.

The Honeywell Heat Generator is a practical application of a column of mercury of sufficient height to give an added pressure of ten pounds to the square inch over every part of the piping of the heating system. This added pressure is obtained by the fluid weight of the mercury and can never become greater than the prearranged ten pounds. Mercury can not stick or bind, and when any greater pressure is formed by the expansion of the heating water it simply lifts the 21-inch mercury column and the excess flows through it unimpeded to the expansion tank. As the water cools and contracts it passes back into the system from the expansion tank.

INSTALLATION.

Up to October, 1909, there were nearly thirty thousand Honeywell Plants installed in the United States, Canada, and foreign countries. As these are scattered all over the country we are generally able to direct interested architects or owners to plants in operation in their immediate vicinity.

CO-OPERATIVE SERVICE.

If the architect will send us the plans of the building in which he wishes to install the Honeywell System of Hot-Water Heating, showing the boiler and radiators located, and the capacities of the same indicated as they would be used in the old-style system, we will prepare complete guaranteed piping plans for our system, without charge.



FIG. 1.
HONEYWELL
HEAT
GENERATOR



FIG. 2.
SECTION OF
HONEYWELL
HEAT
GENERATOR

GUARANTEE.

We guarantee the water in a Honeywell Hot-Water Heating System to circulate positively and rapidly through all radiators at any temperature between 100 degrees and 240 degrees. This gives the Honeywell System all the efficiency of steam without over heating in mild weather; all the advantages of vacuum without air troubles; all the merits of the old-style hot-water heating without the slowness to heat so often objectionable in the large-pipe system.

HONEYWELL
UNIQUE
TWO-WAY
HOT-WATER
RADIATOR
VALVE.

The Honeywell Unique Two-Way Hot-Water Radiator Valve (seen in Figs. 3 and 4) is designed to be attached to one end of the radiator only, similar to a one-pipe steam connection. The novel construction of this valve permits the flow and return pipes to be connected to the valve from any direction. The valve is so constructed that should the radiator be turned off, the water will by-pass through the valve body the full area of the piping, and a constant circulation will be maintained. One sixth of a turn of the valve handle will open the valve, which allows the water to circulate through the radiator and at the same time closes the by-pass. The water enters the radiator through one side of the valve, passing to the top through the first section, thence across the top of the radiator through the top openings and downward through the remaining sections, thence back through the bottom openings to the return pipe, through the return outlet of the valve. A positive and continuous circulation in one direction is established within the radiator, which overcomes conflicting currents and increases the velocity of the circulation.

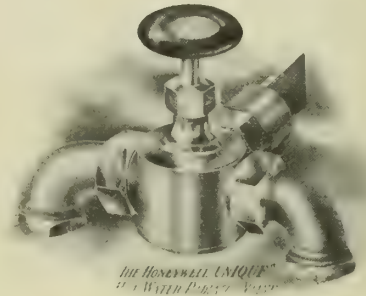


FIG. 3. THE HONEYWELL UNIQUE
TWO-WAY HOT-WATER
RADIATOR VALVE

ADVANTAGES.

Some of the advantages of the Honeywell Unique Two-way Hot-Water Radiator Valve are:

- (1) Connections at one end of the radiator only.
- (2) Saving of space, which will allow a larger radiator to be placed, say between a corner and a window, or between two doors, or in any place where the return elbow of a common connection would be objectionable.
- (3) Should it be necessary to add sections to any radiator after the job is completed, it would only be necessary to build on to the radiator, as there would be no pipe to extend, or new holes to cut in the floor.
- (4) Should risers be concealed in an outside wall there is absolutely no danger of freezing, for the reason that circulation is constantly maintained in the risers when the radiator is turned off.
- (5) Should a radiator in a second-floor room be turned off where risers leading to the same are exposed in some lower room, the risers will continue to give off heat in the lower rooms.
- (6) The water is in constant circulation in the risers, and hot water will enter the radiator the instant the valve is open.
- (7) By the use of this valve it is not necessary to cut joists or flooring when installing the system, as both flow and return are connected at one end of the radiator.
- (8) It is only necessary to make the opening for the risers directly through the floor and ceiling. This is a great advantage, especially when installing radiators in old buildings that have hardwood floors, or where it is impossible to take up flooring or expose the piping along the base-board or beneath the ceiling below.

ROUGHING-IN
MEASURE-
MENTS.

Rough-in for the Unique Hot-Water Radiator Valve as follows:

CENTER TO CENTER OF ELLS			
$\frac{1}{2}$ "	$\frac{3}{4}$ "	1"	$1\frac{1}{4}$ "
$5\frac{1}{8}$ "	$5\frac{3}{4}$ "	7"	$7\frac{1}{2}$ "
CENTER OF SPUD TO BOTTOM OF ELLS			
$\frac{1}{2}$ "	$\frac{3}{4}$ "	1"	$1\frac{1}{4}$ "
$1\frac{3}{4}$ "	$1\frac{3}{4}$ "	2"	$2\frac{3}{8}$ "

$1\frac{1}{4}$ " for $\frac{1}{2}$ " valve
 $1\frac{1}{4}$ " for $\frac{3}{4}$ " valve

END OF SPUD TO CENTER OF BODY			
$\frac{1}{2}$ "	$\frac{3}{4}$ "	1"	$1\frac{1}{4}$ "
$2\frac{3}{8}$ "	$2\frac{7}{8}$ "	3"	$3\frac{1}{4}$ "

LIST PRICES			
$\frac{1}{2}$ "	$\frac{3}{4}$ "	1"	$1\frac{1}{4}$ "
\$4.25	\$5.40	\$5.80	\$7.95

RADIATORS SHOULD BE TAPPED

$1\frac{1}{2}$ " for 1" valve
 2" for $1\frac{1}{4}$ " valve

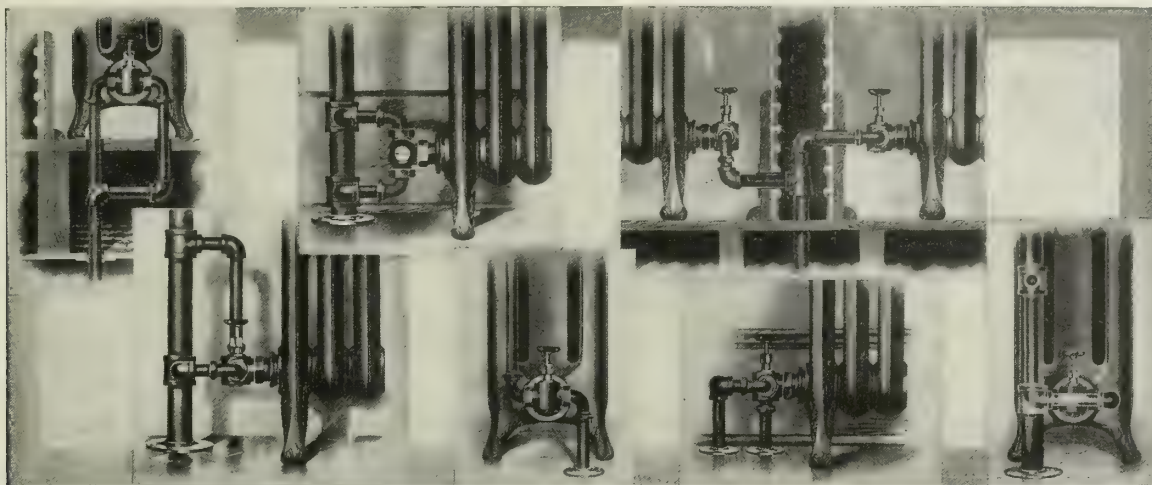


FIG. 4. APPLICATIONS OF THE HONEYWELL UNIQUE TWO-WAY RADIATOR VALVE

HONEYWELL
TEMPERATURE
REGULATOR.

Automatic, thermostatic temperature-controlling devices for regulating the temperature of buildings by operating the heater dampers are becoming so well and favorably known that it is not necessary to make reference to the benefits to be derived from their use. Suffice it to say a reliable temperature regulator is a labor and fuel saver.

The Honeywell Temperature Regulator differs from all others principally in the motor, the device which is located in the heater room and which operates the damper.

The Honeywell Motor is small, compact and neat in appearance and unlike other motors operates the dampers by means of a gradual moving arm or lever. The movement or speed is controlled by an absolutely noiseless and positive-acting governor, and the closing and opening of the dampers is done so quietly and easily that the movement could not be detected unless seen.

There are no springs or delicate parts in the motor to rust and cause trouble, and the moving parts are so few and extremely simple that with ordinary care they should last a lifetime.

The Thermostat is small and very attractive, and will prove an ornament to any room, no matter how rich the furnishings. The greatest care has been given every detail of construction. The cover is of seamless brass, to the front of which is fitted an accurate clock and thermometer.

Notwithstanding the quality and workmanship which enter into every part of the Honeywell Temperature Regulator, it sells for only half the price of other regulators.

PRICES.

Without Time Clock, list price, \$25.00; with Time Clock, list price, \$35.00.

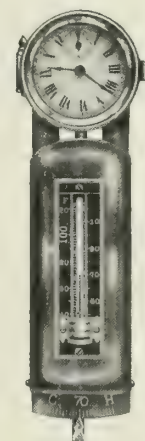


FIG. 5.
HONEYWELL
THERMOSTAT

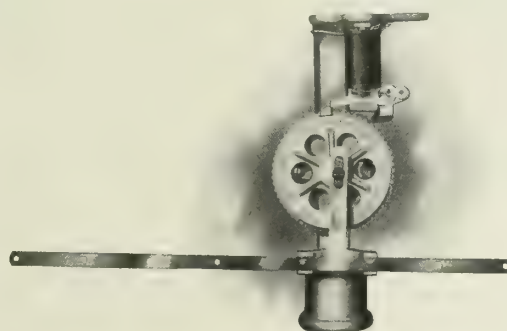


FIG. 6. HONEYWELL MOTOR

KAUFFMAN HEATING & ENGINEERING CO.

Contracting and Consulting Engineers
Heating and Ventilating Apparatus; Power Stations

MAIN OFFICE AND FACTORY

2320 Olive Street
ST. LOUIS, MO.

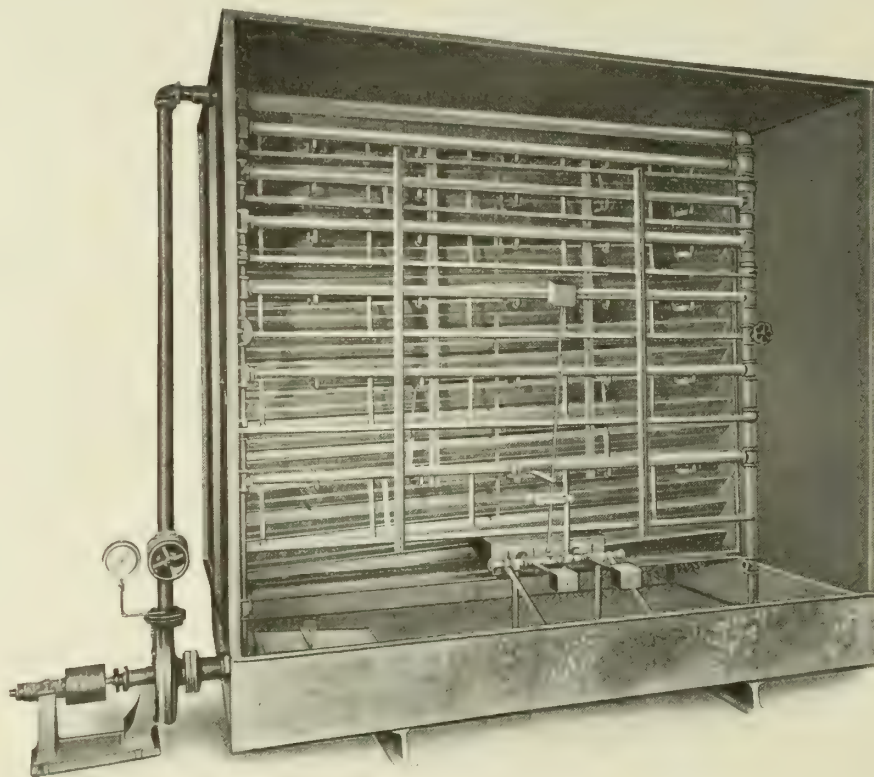
BRANCH OFFICES

NEW YORK, N. Y., DEWIT T. LYON, 39 Cortlandt Street
PITTSBURGH, PA., JOHN T. BEALOR, 2701 Liberty Street
CHICAGO, ILL., CUTHBERT SCHAEFER, First National Bank Building
ATLANTA, GA., H. CLAY MOORE, Empire Building
SALT LAKE CITY, UTAH, THOMAS A. WILLIAMS, Scott Building

PHILADELPHIA, PA., SNYDER & RAUB, 1847 North 6th Street
KANSAS CITY, MO., QUALTROUGH ENGINEERING Co., Reliance Building
BOSTON, MASS., HERBERT A. JOSLIN, 53 State Street
ST. PAUL, MINN., DWYER FIELD Co., American National Bank Building
SAN FRANCISCO CAL., ROYAL HEATING Co.

PRODUCTS.

Manufacturers of the "KINEALY" AIR PURIFIER and HUMIDIFIER; also, "KAUFFMAN" DUSTLESS RADIATOR SHIELD.



"KINEALY" AIR PURIFIER AND HUMIDIFIER

SERVICES.

We are Heating and Ventilating Engineers and install complete Heating and Ventilating Systems for Buildings of every description.

We design, manufacture, and install the "Kinealy" Air Purifier and Humidifier.

The "Kinealy" Air Purifier has been installed in a number of leading buildings throughout this and foreign countries, for the purpose of cooling, humidifying and cleaning the air, and is the only system that is automatic in its operation throughout, requiring no attention of the operator. We control humidity, cool and clean the air, delivering it to its destination free of all foreign matter, free from all odors, and at the proper state of humidity at all times regardless of the exterior conditions.

"KINEALY"
SYSTEM OF
PURIFYING.

Our apparatus is equipped with automatic spray heads which clean themselves every thirty seconds; this means a constant spray of water all the time in the form of mist from each and every spray head, and absolute cleaning of the air.

The power used for cleaning these heads is the water used in them, hence an economy of current or other power for this purpose.

We are the patentees and sole owners of the corrugated horizontal type of eliminator plates.

Our eliminator plates and housings are made of heavy galvanized iron in our standard apparatus; but can be made of copper or other materials, when so ordered, and the piping used can be either galvanized or brass.

The system, complete, consists of a spray chamber, a patented spraying and cleaning device, an eliminator chamber for extracting the entrained moisture from the air, a centrifugal pump, automatic water-supply valve, strainers and automatic humidity-controlling device, if ordered.

ADAPTATION.

The "Kinealy" Air Purifier and Humidifier is adapted to all classes of buildings, such as schools, churches, banks, restaurants, hospitals, railroad stations, factories, textile mills, theaters, and other places where it is desired to have for ventilation air that is clean, sweet and pure, and at the proper humidity.

CO-OPERATIVE
SERVICE.

Our engineering force is at your service for solving any problem dealing with Air Purifying Humidity Regulation and Cooling Systems, and for preparing plans and specifications covering their installation.

We cordially invite your inquiries, which will have our prompt and undivided attention.

SPECIFICA-
TIONS FOR
"KINEALY"
AIR PURIFY-
ING APPA-
RATUS.

General—A "Kinealy" Air Purifying Apparatus will be installed where indicated on the drawings. This apparatus shall be large enough to properly clean and purify cubic feet of air per minute. It shall be installed complete and ready for operation, and shall include an eliminator, spray heads, automatic flushing device, centrifugal pump belted to the fan shaft, proper piping from the pump to the washer, and a waste pipe and overflow.

Washer—The Washer shall have the sides and top made of No. 18 galvanized iron, braced with heavy angle irons. It shall have "Kinealy" spray heads placed and arranged so as to spray and mix with the air a sufficient amount of water to clean the air and to cool it in the summer time.

Automatic Flushing Device—Furnish and install with each apparatus complete an Automatic Flushing and Cleaning Device for automatically cleaning each and every spray head at one and the same time every thirty seconds. The power for operating said device to be the water dropping from the spray heads themselves, and no electric or other power to be used. * This device is to be complete, with hammer and motor, etc.

NOTE—If it is desired that the pump shall be driven by a motor, omit "the fan shaft" and say "a horse-power, 110 volt, direct current motor with C. & H. Speed Regulator."

Eliminator—The Eliminator shall have sides and top made of No. 18 galvanized iron; and it shall be provided with horizontal baffle plates, made of No. 20 galvanized iron, by which the air will be alternately deflected downward and upward, and the up-deflecting plates are to be corrugated and have a gutter at the lower edge to carry off the water.

Centrifugal Pump—A Centrifugal Pump of sufficient size for pumping water for spraying purposes is to be furnished, put in place, and connected up to the spray heads. This pump is to be driven by a belt from to be furnished with the air purifying apparatus.

Piping—The Piping connecting the centrifugal pump to the washer is to be standard weight galvanized-iron pipe. A fresh water connection with automatic cut-off is to be run to the sump, and a properly valved overflow and flushout pipe is to be run from the sump to the sewer. The suction pipe of the pump is to be provided with a strainer to prevent dirt from entering the piping. A hose connection and 20 feet of $\frac{3}{4}$ -inch hose is to be furnished for washing the apparatus.

Sump—A Sump of the full width of the washer, of proper length and depth, made of No. 16 galvanized iron, properly braced with angle iron, is to be placed directly beneath the spray heads.

Painting—The entire housing, eliminator, and tank to be painted with two coats of Goheen's galvanum paint.

Guarantee—This apparatus shall be guaranteed to remove 98 per cent of all dirt and dust from the air; and in summer time, when the humidity of the air supplied to the apparatus does not exceed 75 degrees and the temperature is greater than 80 degrees, the apparatus will be capable of reducing the temperature of the air, leaving the eliminator not less than 5 degrees.

NOTE—If the pump is to be driven from the fan shaft, say "a pulley on the fan shaft"; but if the pump is to be driven by a motor, say "a horse-power, 110 volt, direct-current motor with C. & H. Speed Regulator."

KELLOGG-MACKAY COMPANY

MANUFACTURERS OF

“K-M-C” Boilers and “Kewanee” Radiators, Heating and Plumbing Supplies

GENERAL OFFICES

419 West Eighteenth Street

CHICAGO, ILL.

BRANCH OFFICES

MINNEAPOLIS, MINN.

SEATTLE, WASH.

PRODUCTS.

Manufacturers of “K-M-C” BOILERS and “KEWANEE” RADIATORS; HOT-WATER HEATERS; STEAM and HOT-WATER HEATING APPARATUS; LAUNDRY and TANK HEATERS; “KLYMAX” HEAT ECONOMIZERS; STEAM FITTERS’ and PLUMBERS’ SUPPLIES; AUTOMATIC SPRINKLER APPARATUS.

“K-M-C”
BOILERS.

“K-M-C” Boilers, for steam and water, include the “American,” “Spence,” “Touraine,” “Modern,” and “Improved Florida.” These boilers are made of the best material, by skilled mechanics. They are conservatively rated, durable, efficient, and are made in numerous sizes, suitable for successfully and economically heating the smallest cottages, as well as the largest office buildings, churches, schools, etc.

The “American” Boiler will burn hard or soft coal, coke, wood, or gas. It has large fire-surface, long fire-travel, deep ash-pit, rocking grates, large slicing-door, large fire-chamber, and fire-door. All parts are accessible for cleaning and inspection, most of the surfaces being practically self-cleaning. The joints are few in number and are all outside of the heater, away from action of fire and gases and under the eye of operator. A thoroughly dependable heater—durable, economical, and easy to manage.

CAPACITIES, SQUARE FEET RADIATION, OF “AMERICAN” BOILERS

STEAM				WATER			
S-213	400	S-405	1900	W-213	650	W-405	3150
S-214	600	S-406	2400	W-214	1000	W-406	3975
S-215	800	S-407	2900	W-215	1325	W-407	4800
S-216	1000	S-408	3400	W-216	1650	W-408	5625
S-217	1200	S-409	3900	W-217	2000	W-409	6450
S-264	800	S-4010	4400	W-264	1325	W-4010	7275
S-265	1075	S-4011	4900	W-265	1775	W-4011	8100
S-266	1350	S-466	3150	W-266	2225	W-466	5200
S-267	1625	S-467	3800	W-267	2700	W-467	6275
S-268	1900	S-468	4450	W-268	3150	W-468	7350
S-325	1400	S-469	5100	W-325	2325	W-469	8425
S-326	1750	S-4610	5750	W-326	2900	W-4610	9500
S-327	2100	S-4611	6400	W-327	3475	W-4611	10575
S-328	2450	S-4612	7050	W-328	4050	W-4612	11650
S-329	2800	S-4613	7700	W-329	4625	W-4613	12725
S-3210	3150			W-3210	5200		

THE
“SPENCE”
BOILER.

The “Spence” Hot-Water Boiler has been on the market for many years and has kept pace with modern progress. It is made in four styles and fifty-one sizes. This heater is a standard Hot-Water Boiler, equipped with more conveniences in the way of dampers, ash sifters, etc., than any others of similar construction on the market.

CAPACITIES, SQUARE FEET RADIATION, OF “SPENCE” BOILERS

STYLE “A”				STYLE “D”			
No.		No.		No.		No.	
310	350	350	1200	110	375	134	875
320	450	352	1300	112	475	140	1000
330	600	360	1600	120	575	145	1075
332	775	362	1750	123	650	150	1225
340	900	370	2150	130	700	156	1400
342	1050	372	2350				
						160	1500
						167	1650
						170	1800
						178	2000
						180	2250

The Style “D” can be furnished with a high base and sifting grate. This latter innovation is not found on any other boiler, and is a great fuel saver.

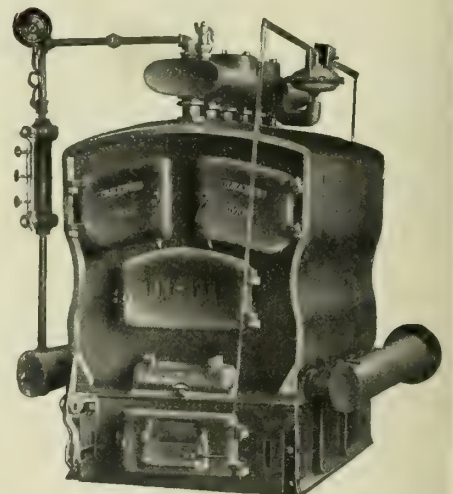


Klymax

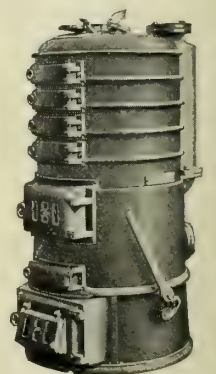
KEWANEE

“K-M-C”

TRADE-MARKS



“AMERICAN” BOILER



“SPENCE” BOILER

"TOURAINE"
AND
"MODERN"
BOILERS.

The "Touraine" and "Modern" Steam and Water Boilers are of similar characteristics. They are horizontal, sectional, screw-nipple constructions; equipped with all the latest improvements, and are good examples of the latest and best practice in the art of boiler making. They are suited for burning hard or soft coal, wood or natural gas.

CAPACITIES, SQUARE FEET RADIATION					
"TOURAINE"			"MODERN"		
STEAM		WATER	STEAM		WATER
02	225	01	375	1S	225
04	250	03	400	2S	300
06	275	05	450	3S	400
2	350	1	575	4S	500
4	400	3	650	4½S	600
6	450	5	750	5S	750
08	500	07	825	6S	1000
8	550	7	900		
10	600	9	1000		
12	700	11	1150		
14	850	13	1400		
16	925	15	1525		
18	1000	17	1650		
20	1100	19	1825		
22	1200	21	2000		
24	1300	23	2150		

"KEWANEE"
RADIATORS.

"Kewanee" Radiators are made for steam or hot-water heating. They can be furnished in corner, curved, round, stairway, or in any shape, width, or height, to fit any space, and with any amount of radiating surface. These radiators are made in one, two, three, and four columns, in plain or ornamental patterns. They are pleasing in appearance, and are well suited for modern interiors.

"KEWANEE" RADIATORS FOR STEAM AND WATER
DIMENSIONS, SIZES, AND CAPACITIES

Height in inches	45	38	32	26	22	20	18
1 Col., width 4½", heating surface, sq. ft. per section	3½	3	2½	2	1½	1½	1½
2 Col., width 8¾", heating surface, sq. ft. per section	5	4	3	2½	2	2	2
"Kew" 3 Col., width 9", heating surface, sq. ft. per section	6	5	4	3½	3	2½	2½
4 Col., width 13", heating surface, sq. ft. per section	9	8	6	5½	3½	3½	3½

"Kewanee" Window Radiators (Steam and Water), made in 20, 18, 16, 14 and 13 inch heights.

"Kewanee" Pin Indirect (Steam and Water), for ventilating purposes, made in 10 and 15 foot sections.

"K-M-C"
LAUNDRY
AND TANK
HEATERS.

"K-M-C" Laundry and Tank Heaters are durable, economical, and easily managed. They furnish large quantities of water for any purpose, in residences, baptistries, conservatories, bottling works, garages, etc.; in fact, in any place where hot water may be required. They will heat irons, and may be used for light cooking.

This device should be specified on every hot-water heating system. It improves the circulation, increases the temperatures in the radiators, results in a saving of fuel, and simplifies the attention. The economizer can be placed on an old as well as a new plant.

We are headquarters for steam and hot-water radiator valves; quick-opening, quarter-turn, positive, and automatic air-valves. The "K-M-C" No. 6, guaranteed for five years, is one of the best steam automatic air-valves on the market. The "K-M-C" No. 6-L, guaranteed for five years, is a lock and shield automatic steam air-valve, which can not be tampered with, except by those holding the key. "K-M-C" No. 5 is a lock and shield positive hot-water radiator valve. We can furnish everything in the way of valves, for steam and hot water.

Automatic Sprinkler Apparatus for fire protection, as installed by us, has satisfied all demands and tests of the most rigid inspection of the Underwriters' Association. We invite the special attention of architects to this department, and solicit inquiries.

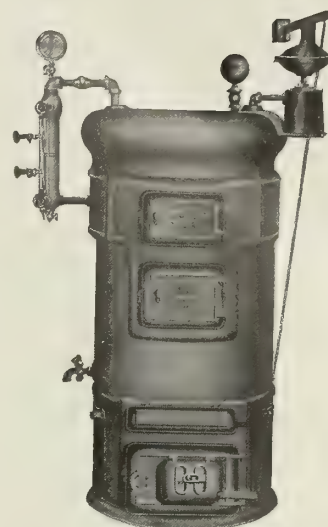
Our Plumbing Goods, including bathtubs, lavatories, closet combinations, sinks, etc., are of superior quality. Architects may specify them with absolute confidence.

We fully guarantee all our goods.

AUTOMATIC
SPRINKLER
SYSTEMS.

PLUMBING.

GUARANTEE.



"MODERN" BOILER



"KEWANEE"
RADIATOR



"K-M-C" LITTLE
GIANT LAUNDRY
HEATER



"KLYMAX"
HEAT
ECONOMIZER

KELSEY HEATING COMPANY

MANUFACTURERS OF

The "Kelsey Warm Air Generator"

MAIN OFFICE

New Rosenbloom Building, Corner of Salina and East Fayette Streets

SYRACUSE, N. Y.

CABLE ADDRESS, "KELSEYCO"

WESTERN UNION TELEGRAPHIC CODE

FACTORIES

SYRACUSE and MANLIUS, N. Y.

BRANCH OFFICES

NEW YORK, N. Y., 156 Fifth Avenue. Telephone, 4141 Gramercy

CHICAGO, ILL., VAN EVERA & LEWIS MFG. Co., 104-106 West Lake Street

BROCKVILLE, CAN., JAMES SMART MFG. Co., Sole Makers for Canada

PRODUCTS.

"KELSEY WARM AIR GENERATORS" for heating residences of any size, churches, schools and public buildings; GRAVITY and MECHANICAL FAN-BLAST SYSTEMS of HEATING and VENTILATING.

ADVANTAGES.

The claims for the efficiency, healthfulness and economy of the "Kelsey Warm Air Generator" are based: (1) On its superior construction and method of warming and distributing air. (2) Its greater heating surfaces and their weight. (3) The utilization of all the heat generated.

METHOD OF WARMING AIR.

The "Kelsey Warm Air Generator" warms fresh air by the best method, by passing in separate currents up through the great battery of cast-iron zigzag heat tubes which surround the fire and form the fire cylinder and combustion chamber. As there are from eight to sixteen Heat Tubes in each Generator and as each Heat Tube has about eight square feet of heating surface this means great volumes of air properly, thoroughly and most economically warmed.

HEATING SURFACES AND WEIGHTS.

The "Kelsey" has two or three times as much weight and heating surface as the ordinary furnace with same size grate and fuel capacity. The weights, heating surfaces, estimated capacities, etc., of each size Generator are shown in the accompanying table, and a comparison of these weights and heating surfaces with those of furnaces will explain why the "Kelsey" is more durable, powerful and economical.

UTILIZATION OF HEAT.

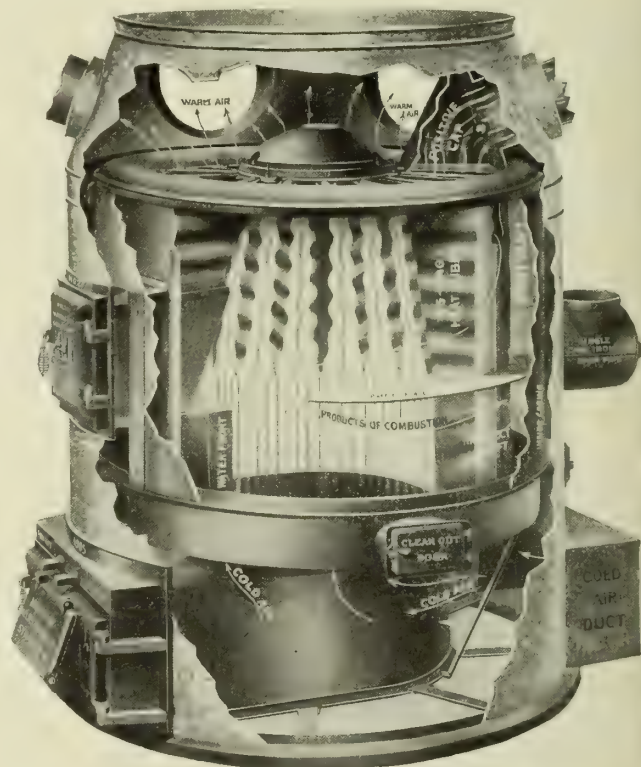
The Heat Tubes being in direct contact with and overhanging the fire are heated on all sides by conduction, by radiation from the fire, and by the burning gases and products of combustion which pass down around their backs.

DISTANT AND EXPOSED ROOMS POSITIVELY HEATED.

Each Heat Tube is an independent heat generator, and by capping over two or more tubes with the Positive Cap Attachment, and connecting a heat-conducting pipe thereto, the warm air which passes up through these particular Heat Tubes is forced through long pipes, or "against the wind" to distant or exposed rooms, and an even temperature is easily maintained throughout the house. By means of a damper in the Positive Cap the warm air can be shut off from the room and diverted to the general supply.

**"KELSEY
WARM AIR
GENERATOR"**

TRADE-MARK
Reg. U. S. Pat. Office



"KELSEY WARM AIR GENERATOR"

Sectional view showing Zigzag Heat Tubes, inside and outside Casings, Direct and Indirect Draft, and Positive Cap Attachment over the sections through which warm air is forced to distant rooms

WATER FRONT.

COMBINATION HOT-WATER HEATER.

WOOD-BURNING CONSTRUCTION.

BATTERY SYSTEM FOR LARGE BUILDINGS.

MECHANICAL SYSTEM FOR CHURCHES AND SCHOOLS.

FAN-BLAST SYSTEM.

PLANS AND ESTIMATES.

DISTRIBUTION.

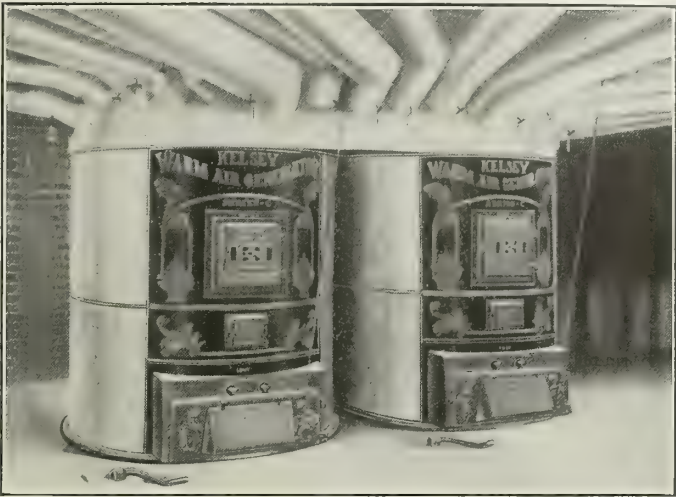
REFERENCES.

The heater is also provided with a water front, at a slight additional cost, for the heating of water in range boilers, and its location under the feed door as illustrated.

With the "Champion" Hot-Water Heater a powerful combination heating system is insured, and is especially adapted for heating conservatories and for rooms where it may be difficult to extend the warm-air pipes.

Besides the regular style, with single-feed door, the "Kelsey" is made with double-feed door for admitting large chunks of wood and with cast-iron front for brick-set form.

The battery form of placing two or more Generators under one dome-casing has been demonstrated to be a most efficient system for heating and ventilating large residences and buildings. The advantages of this system are that the required quantity of warm air is supplied as it may be needed, and there is no waste of fuel.



BATTERY OF TWO "KELSEY" GENERATORS UNDER ONE DOME CASING
With Twenty-Six Heat-Conducting Pipes

This means a forced circulation, by means of a fan or blower, of large quantities of air. The "Kelsey" is the only heater properly designed to heat air traveling at a high velocity, and the "Kelsey" System is meeting all requirements of the new laws for schools in supplying 30 cubic feet of fresh air per minute for each pupil or occupant and warmed to the proper temperature. By actual test, as published in the "Metal Worker" of April 8, 1905, the "Kelsey" has warmed 4500 cubic feet of air, traveling at a velocity of 1000 feet per minute through 130 degrees of temperature.

GRATES			HEATING SURFACES		WEIGHTS	HEIGHT	HEATING CAPACITIES			
Size or Number of Generator	Diameter of Grate and Fire Cylinder	Grate Area, Square Inches	Square Feet of Heating Surfaces	Square Ft. of Heating Surfaces to Each Square Ft. of Grate Surface	Weight of Generators Complete Lbs.	Height Generator Cased Complete	HOUSE HEATING		CHURCH HEATING	
							Number of Average Size Pipes or Rooms	Estimated Capacity in Cubic Feet	Number of Pipes	Estimated Capacity in Cubic Feet
14	14 in.	154	91	85	1008	61 in.	3 to 4	4,000 to 6,000	1	8,000
16	16 "	201	114	82	1168	63 "	4 to 6	6,000 to 10,000	1 to 2	10,000 to 14,000
18	18 "	254	135	78	1635	68 "	6 to 8	12,000 to 16,000	1 to 2	16,000 to 20,000
21	21 "	346	146	61	2033	69 "	9 to 11	18,000 to 24,000	1 to 2	25,000 to 35,000
24	24 "	452	161	51	2300	69 "	10 to 13	24,000 to 32,000	1 to 3	35,000 to 45,000
27	27 "	572 1/2	176	44	2600	72 "	12 to 16	35,000 to 42,000	1 to 3	50,000 to 60,000
30	30 "	707	211	43	3124	76 "	16 to 22	45,000 to 55,000	2 to 4	70,000 to 90,000

The capacities given for house and church heating are estimated averages under varying conditions, and are based on heating to 70° Fah., with temperature outside registering at zero.
All weights include refined sheet-iron inside casings. Series A or B. With cast inside casings add from one to three hundred pounds for each heater.

We supervise the installing of either the Gravity or Mechanical (Fan-Blast) Systems of Heating and Ventilating in large residences or public buildings. Through our Engineering Department we furnish plans and estimates upon receipt of blue-prints of building.

Plans and estimates will be promptly furnished by us or by one of the nine hundred dealers selling "Kelseys," upon receipt of blue-prints of building.

Our products are sold by 900 dealers in the principal towns and cities. These dealers are usually competent to furnish detailed plans and estimates of cost, and their names will be furnished on application.

35,000 sold; over 700 in churches and schools.

The Kelsey Booklets and 112-page book, "Opinions," will be sent on request.

KEWANEE BOILER COMPANY

MANUFACTURERS OF

Steam and Water Heating Boilers, Power Boilers and Radiators

MAIN OFFICE AND FACTORY

KEWANEE, ILL.

CHICAGO, ILL.

BRANCHES

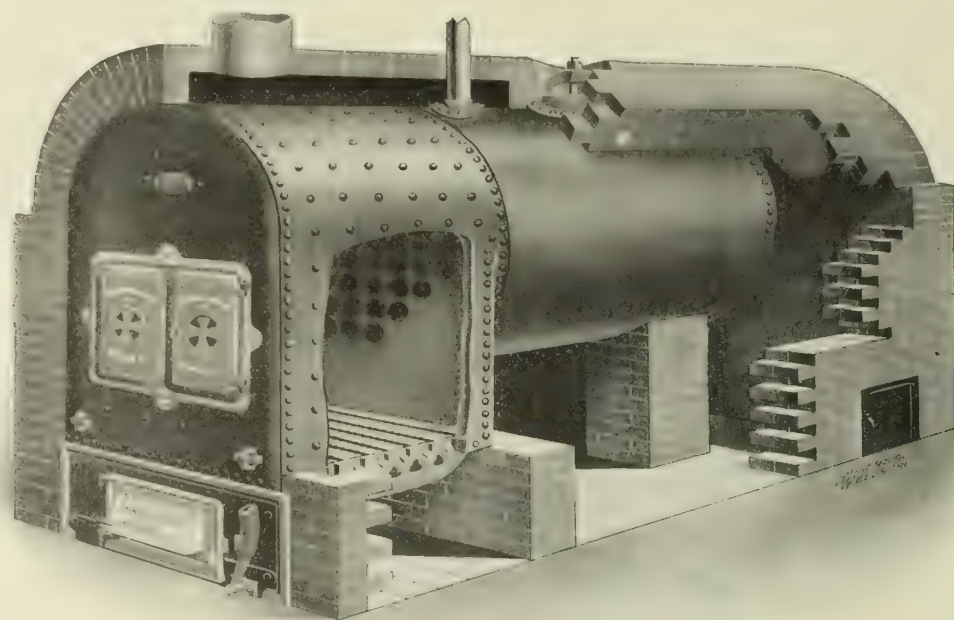
ST. LOUIS, MO.

PRODUCTS.

The "KEWANEE FIRE-BOX" STEAM and WATER HEATING BOILERS, "CENTURY" STEAM and WATER BOILERS, "TABASCO" WATER HEATERS, RADIATORS, STORAGE TANKS, and TUBULAR BOILERS, in all styles, for all purposes, and suitable for working pressures up to 150 pounds.

FACILITIES.

Our factory covers fifteen acres and is equipped with every modern appliance.



"KEWANEE FIRE-BOX" BOILER
With portion of Brick Work removed

"KEWANEE FIRE-BOX" BOILER.

We are the originators of this type as applied to low-pressure heating, and pioneers in bringing it so extensively into general use.

It has been over twenty years since we began to build the "Fire-Box" Boiler for heating. Its success each year has more than met our expectations. As one evidence of its popularity it is interesting to note that in the city of Chicago alone, during the time that we have sold these boilers in that city, enough "Kewanee" Boilers of the "Fire-Box" type have been used to heat a solid row of flats three stories high, the usual depth, and *sixty-five miles long* without street intersections.

We are better equipped than ever for the manufacture of these boilers, and are in position to fill all orders promptly.

RATINGS
AND CON-
STRUCTION.

Having manufactured "Kewanee Fire-Box" Boilers for many years, and consequently having many opportunities for watching them and comparing them with boilers of other makes, we are anxious to inspire those who are to specify, install, or use them, with the same confidence in them that we ourselves have.

These boilers are rated most conservatively. We have not attempted to give them a theoretical or scientific rating. The rating of our heating boilers is based upon a purely practical experience of many years. We know what they can do and are anxious to have those who specify them do so with confidence—specifying a boiler for what it is worth according to its *catalogue* rating, and not specifying one that is from 50 to 100 per cent larger than is necessary. The boilers listed on the following pages will heat the radiation attached to them up to the limit of their listed capacities if the pipes are large enough to carry the steam and take away the water of condensation. "Kewanee" Boilers will positively do what they are rated to do.

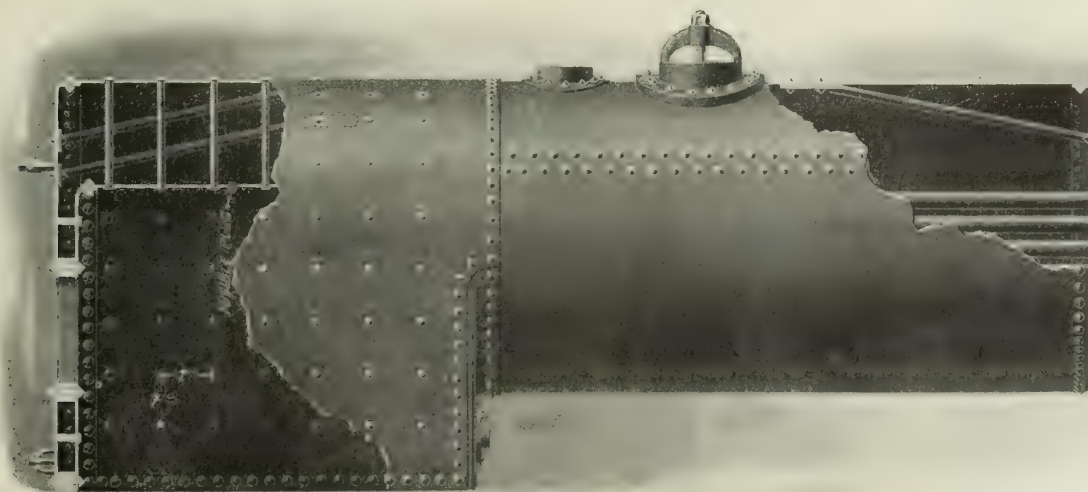
In erecting these boilers we have used both science and skill. We believe them to be properly proportioned in their design. We know that they are assembled with great mechanical skill and by the use of modern methods.

"Kewanee Fire-Box" Boilers are made of the best mild steel, exactly the same material and methods of construction as high-pressure boilers. They can not crack, give way or get loose with any kind of decent care. If treated fairly they will last for many years.

The boiler is encased in brick work; the hot, burning gases pass from the flues entirely around the outside before their final exit from the smoke-pipe. However, in measuring the fire surface of these boilers, as shown in the tables, we have not considered at all the flat outside surface of the fire-box nor the exposed surface above the water-line, believing that they are not of sufficient value to be considered.

The low temperature of the gases as they leave the boiler indicates its efficiency. In "Kewanee" Boilers the gas temperature at point of exit is only a few degrees higher than the water in the boiler. The economical burning of fuel is caused by the large, high fire-box and combustion chamber, and the proper construction of the flues. The small amount of smoke issuing from the smoke-stack or chimney indicates a nearly perfect combustion.

"Kewanee Fire-Box" Boilers are perfectly safe. They are braced, stayed and constructed throughout in accordance with the best engineering practice. The bursting pressure is from 400 to 475 pounds per square inch. The test pressure is 125 pounds per square inch, while the real working pressure is only from 2 to 15 pounds per square inch. Boiler insurance companies are willing to insure these boilers for 60 pounds' working pressure.



"KEWANEE FIRE-BOX" BOILER, SHOWING DETAILS OF CONSTRUCTION

SIZES AND RATINGS OF "KEWANEE FIRE-BOX" BOILERS
For Steam and Water Heating
These boilers will positively do what they are rated to do

Number	00	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Capacity, Steam.....Sq. ft.	500	700	900	1000	1200	1400	1700	2100	2200	2500	2900	3200	3800	4400	4900	5800	7200	8500	9300	10500	11200	12800
Capacity, Water....." "	800	1100	1400	1600	1900	2200	2700	3400	3500	4000	4600	5100	6100	7000	7800	9300	11500	13600	14800	16800	17900	20500
Diameter.....Inches	24	24	30	30	30	36	36	36	42	42	42	48	48	48	54	54	60	60	66	66	72	72
Length, over all.....Feet	5½	7½	6½	7½	8½	7½	9	10½	8½	10	11½	10½	12	13½	14	16½	15½	18	16	18	16	18
Width, Fire-Box.....Inches	19	19	24	24	20	30	30	30	36	36	36	42	42	42	48	48	54	54	60	60	66	66
Length, Fire-Box....."	20	26	26	32	38	32	38	44	38	44	50	44	50	56	56	62	62	68	62	68	68	74
Height, Fire-Box....."	25	25	31	31	31	37	37	37	41	41	41	45	45	45	48	48	54	54	59	59	64½	64½
Size, Tubes....."	3	3	3	3	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4	4	4	4
Length, Tubes....."	42	60	48	55	61	55	67	79	61	73	85	79	91	103	108	132	120	144	126	144	120	138
Square Feet, Fire Surface...	70	93	120	138	154	186	222	258	259	304	348	393	448	502	548	647	809	954	1041	1177	1268	1442
Ratio, Radiation to Fire Surface.....	7.1	7.4	7.5	7.3	7.8	7.5	7.7	8.2	8.5	8.2	8.3	8.2	8.5	8.8	8.9	8.9	8.9	8.9	8.9	8.8	8.9	8.9
Square Feet, Grate.....	2.25	3.30	4.3	5.00	6.33	6.33	8.00	8.80	9.50	11.00	12.5	12.5	14.5	16.0	18.6	20.6	23.3	25.3	25.8	28.3	30.8	33.8
Ratio, Fire Surface to Grate.	31	28	28	27	24	29	27	29	27	28	28	31	31	31	29	31	35	38	40	42	41	43
Size, Fire-Door, Single.....Inches	10x12	10x12	12x18	12x18	12x18	14x24	14x24	14x24	14x24	14x24	14x24	18x30	18x30	18x30	18x30	18x30	18x24	18x24	18x24	18x24	18x24	18x24
*Size, Fire-Door, Double	12	12	16	16	16	18	18	18	20	20	20	22	22	22	24	24	30	30	34	34	38	38
Diameter, Smoke-Pipe	2½	2½	3	3	4	4	4	4	6	6	6	6	6	7	7	7	7	7	8	8	8	8
Size, Steam Supply....	2	2	2½	2½	3	3	3	3	4	4	4	4	4	5	5	5	5	5	6	6	6	6
Size, Return....."	2-3	2-3	2-4	2-4	2-4	2-5	2-5	2-5	2-5	2-6	2-6	2-6	2-6	2-7	2-7	2-7	2-7	2-8	2-8	2-10	2-10	2-10
Flow and Return....."	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Thickness, Shell....."	10	10	10	10	10	11	11	11	13	13	13	13	13	13	14	14	16	16	16	16	16	16
Thickness, Fire-Box and Heads....	10	10	10	10	10	11	11	11	13	13	13	13	13	13	14	14	16	16	16	16	16	16
Depth, Water-Lug....	1900	2300	2450	2750	3150	3450	3850	4350	4500	5000	5650	6650	7350	8000	9100	10250	14000	15250	16800	18400	20000	22000
Shipping Weight.....Pounds	56	56	67	67	67	74	74	74	82	82	82	88	88	88	95	95	103	103	109	109	115	115
Height, Brick Work...Inches	45	45	52	52	52	57	57	57	62	62	62	66	66	66	67	67	75	75	80	80	87	87
Height, Water-Line....	7'5"	9'5"	8'8"	9'8"	10'8"	9'6"	11'2"	12'8"	11'1"	12'7"	14'1"	13'1"	14'7"	16'1"	17'1"	19'7"	18'7"	21'1"	19'1"	21'1"	19'5"	21'5"
Floor Space, Length.....	4'6"	4'6"	5'0"	5'0"	5'0"	5'6"	5'6"	5'6"	6'0"	6'0"	6'0"	6'6"	6'6"	6'6"	7'8"	7'8"	8'2"	8'2"	8'8"	8'8"	9'2"	9'2"
Floor Space Width.....	1400	1500	1600	1700	1800	2000	2300	2400	2500	2800	3000	3200	3500	3700	5500	5700	6000	6500	6700	7100	7500	8000
Number of Brick.....																						

Ash-pit on all sizes is 17 inches from floor line to bottom of water leg. *Boilers No. 15 and larger have two Single Fire-Doors
Boilers No. 14 and larger are made with clinker doors.

PRICE-LIST OF "KEWANEE FIRE-BOX" BOILERS

Number	00	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Steam Boiler Castings and Tools.....	\$255	\$270	\$285	\$300	\$320	\$375	\$400	\$435	\$460	\$510	\$560	\$630	\$680	\$735	\$860	\$935	\$1200	\$1310	\$1500	\$1600	\$1800	\$2000
Trimings for Steam Boiler.....	18	18	18	18	19	19	19	19	23	23	23	23	23	28	28	28	40	40	40	44	44	44
Water Boiler, Castings and Tools.....	265	280	295	310	330	390	415	450	475	525	575	645	695	755	880	955	1225	1335	1530	1630	1840	2040

LIST-PRICE OF EXTRAS AND CHANGES TO BE ADDED TO LIST OF REGULAR BOILERS

For longer Shell, each foot or fraction of a foot.....	\$11	\$11	\$15	\$15	\$15	\$19	\$19	\$19	\$23	\$23	\$23	\$32	\$32	\$32	\$40	\$40						
For longer Fire-Box, including Grate, each six inches.....	15	15	20	20	20	25	25	25	30	30	30	40	40	40	45	45						
Wrought-Iron Rings.....	24	24	26	26	26	28	28	28	30	30	30	32	32	32	36	36	Regular Boiler No. 15 and larger made with Wrought Iron Rings					
Extra Stays and Braces for 150-pound test	6	6	7	7	8	8	9	10	12	15	17	18	20	21	30	35	\$40	\$45	\$45	\$50	\$55	\$60
Two Lugs on Shell.....	8	8	8	8	8	8	8	8	10	10	10	10	10	10	12	12	12	12	12	12	12	12
Rear Flue Clean-Out Doors.....	12	12	12	12	12	16	16	16	18	18	18	22	22	22	26	26	32	32	38	38	46	46
Smoke-Box, Head and Doors for rear, when Boiler is not encased in brick work.....	24	24	28	28	28	32	32	32	42	42	42	48	48	48	60	60	74	74	90	90	106	106

Openings in Fire-Box for Coil, \$4.00 list per Boiler. Boilers for 150-pound test pressure will be made with Wrought-Iron Rings, at above extra price.

The base-ring and door-ring on all boilers up to No. 15 are made of semi-steel, which makes them much stronger.

"TABASCO"
WATER-
HEATERS AND
TANKS.

These are used for flats, laundries, residences, hotels, conservatories, greenhouses, bath-houses; in short, wherever hot-water supply is needed. The rating of these heaters is based on the number of gallons of water they will actually raise sixty degrees in one hour.

PRICE-LIST, SIZES AND CAPACITIES

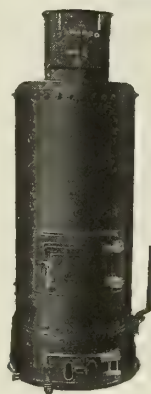
Heater	Heating Capacity, Gallons per Hour	Size of Heater, Inches	Total Height, Inches	Sizes Flows and Returns, Inches	Weight, Pounds	Price, Magazine Feed	Price, Surface Burner
17	130	17x30	52	2-1 1/2	400	\$ 74.00	\$ 67.00
18	150	17x36	57	2-1 1/2	420	80.00	73.00
21	200	21x30	52	2-2	520	88.00	80.00
22	250	21x36	59	2-2	550	96.00	87.00
25	300	25x36	59	2-2	780	118.00	107.00
26	350	25x42	65	2-2	810	128.00	117.00
27	400	25x48	71	2-2	840	142.00	130.00
30	500	30x42	65	2-3	1100	156.00	144.00
31	600	30x48	75	2-3	1150	166.00	154.00
32	700	30x54	81	2-3	1240	176.00	164.00

Magazine Feed Heaters are always shipped unless Surface Burners are specified in order. Are provided with brass clean-out plugs

PRICE-LIST AND DIMENSIONS, "JUNIOR" WATER-HEATER

Number	Size of Heater, Inches	Gallons Per Hour	Size Flows and Returns, Inches	Weight, Pounds	Price of Heater
1	10x16	30	1	125	\$40.00
2	10x18	40	1	130	42.00
3	12x24	65	1	200	54.00
4	12x30	80	1	215	56.00
5	15x30	100	1 1/4	280	64.00
6	15x36	120	1 1/4	300	66.00

All "Junior" Heaters except Nos. 1 and 2 have Front Fire-Doors



"TABASCO" WATER-HEATER
"TABASCO JUNIOR" "TABASCO" IMPROVED ROCKING GRATE
WATER-HEATER SECTIONAL CLINKER-CUTTING
DUMPING GRATE

Surface Burners only

All "Tabasco" Heaters except "Juniors" are fitted with this new grate. "Junior" Heaters have Shaking and Dumping Grate in one piece

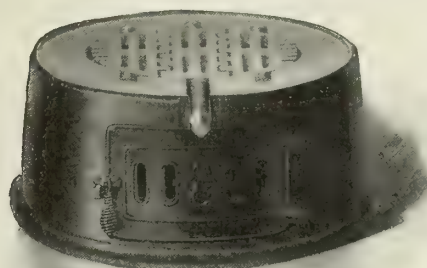


TABLE OF STANDARD "TABASCO" TANKS

Nominal Capacity, Gallons	Size	Approximate Weight	Openings	Price List		Coils in Tanks		
				Plain	Galv	Price List		
						Size	Plain	Galv
66	20x4'	250	1 1/2"	\$43.00	\$57.00	4 pipes 1"	\$12.00	\$15.00
85	20x5	290	1 1/2"	45.00	61.00	4 " 1"	12.00	15.00
100	24x4	300	1 1/2"	47.00	64.00	4 " 1 1/4"	14.00	17.00
120	24x5	350	1 1/2"	50.00	69.00	4 " 1 1/4"	14.00	17.00
140	24x6	400	1 1/2"	52.00	74.00	4 " 1 1/4"	16.00	19.00
150	30x4	420	2"	55.00	79.00	4 " 1 1/4"	14.00	17.00
180	30x5	480	2"	60.00	90.00	4 " 1 1/4"	14.00	17.00
220	30x6	540	2"	64.00	97.00	4 " 1 1/4"	16.00	19.00
250	30x7	600	2"	70.00	106.00	4 " 1 1/4"	18.00	21.00
295	30x8	660	2"	77.00	117.00	4 " 1 1/4"	20.00	23.00
315	36x6	740	2"	82.00	126.00	4 " 1 1/2"	20.00	23.00
365	36x7	820	2"	90.00	139.00	4 " 1 1/2"	22.00	25.00
420	36x8	900	2"	96.00	150.00	4 " 1 1/2"	24.00	28.00
525	36x10	1060	2"	106.00	170.00	4 " 1 1/2"	28.00	32.00
430	42x6	890	2"	102.00		4 " 1 1/2"	20.00	23.00
500	42x7	1000	2"	110.00		4 " 1 1/2"	22.00	25.00
575	42x8	1080	2"	116.00		4 " 1 1/2"	24.00	28.00
720	42x10	1260	2"	128.00		4 " 1 1/2"	28.00	32.00
865	42x12	1450	2"	140.00		4 " 1 1/2"	32.00	36.00
1000	42x14	1650	2"	156.00		4 " 1 1/2"	36.00	40.00

100 pounds test, 65 pounds working pressure

HEAVY CAST-IRON TANK STANDS FOR VERTICAL TANKS

Diameter Tanks.	18	20	24	30	36	42
Price, Stand.	\$7.40	\$8.50	\$10.00	\$15.00	\$17.00	\$20.00



SECTIONAL VIEW OF
"TABASCO" HEATER

EXTRA-HEAVY
"TABASCO"
TANKS FOR
WATER
STORAGE.

These tanks are for pressures up to 100 pounds. All horizontal seams double-riveted. All heads dished. Tapped as shown, so that they may be used either horizontally or vertically.

PRICE-LIST "TABASCO" TANK EXTRAS
STANDARD AND EXTRA HEAVY

Flanged Openings	
2 inch.....	\$5.00
2½ inch.....	5.00
3 inch.....	6.00
3½ inch.....	6.00
4 inch.....	7.00

Handhole in Shell or Head,	\$5.00
Manhole in Head,	15.00
Manhole in Shell,	25.00

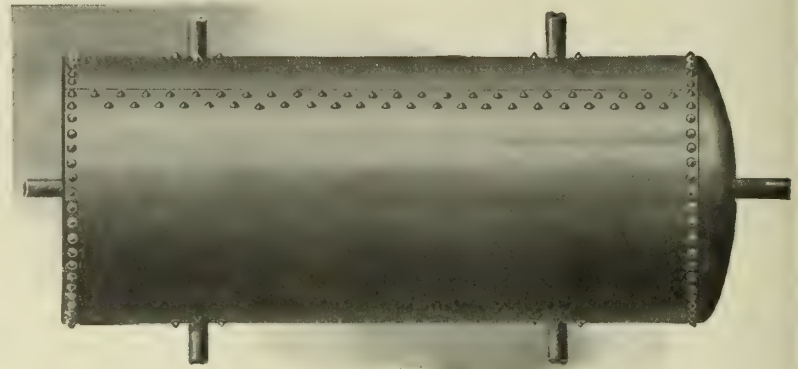
"CENTURY"
RETURN
TUBULAR
BOILER CON-
STRUCTION.

The "Century" Return Tubular Boiler is made throughout of the best flange steel. It is constructed in the same manner and with as much care as our high-pressure boilers, and tested to 100 pounds' pressure per square inch.

The rivets are driven with hydraulic pressure; the tubes are expanded and beaded with the most improved tools. A fusible plug is placed in the rear head to prevent danger from low water. All parts are accessible for cleaning easily and quickly.

The fire-box is made of cast-iron, lined with one inch of asbestos cement and one course of firebrick, making a most desirable and heat-retaining fire-box.

The boiler is fitted with the "Century" rocking grates which are the best obtainable for this class of boiler. The rear cast-iron head, enclosing the combustion chamber, is extra heavy and lined with a heavy layer of asbestos fire-felt.

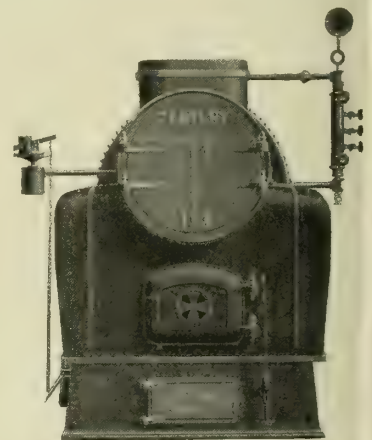


EXTRA HEAVY "TABASCO" TANK FOR WATER STORAGE

EXTRA-HEAVY "TABASCO" TANKS

Nominal Capacity, Gals.	Size	Thickness, Shell, Inches	Thickness, Heads, Inches	Approximate Shipping Weight	Regular Openings, Inches	Price-List
120	24x 5	1/8	5/16	400	1 1/2	\$58.00
140	24x 6	1/8	5/16	460	1 1/2	62.00
180	30x 5	1/8	5/16 and 3/8	560	2	69.00
220	30x 6	1/8	5/16 and 3/8	640	2	73.00
250	30x 7	1/8	5/16 and 3/8	700	2	82.00
295	30x 8	1/8	5/16 and 3/8	770	2	87.00
315	36x 6	1/4	5/16 and 3/8	970	2	95.00
365	36x 7	1/4	5/16 and 3/8	1080	2	104.00
420	36x 8	1/4	5/16 and 3/8	1180	2	112.00
525	36x10	1/4	5/16 and 3/8	1400	2	129.00
430	42x 6	1/4	5/16 and 3/8	1230	2	113.00
500	42x 7	1/4	5/16 and 3/8	1350	2	124.00
575	42x 8	1/4	5/16 and 3/8	1480	2	135.00
720	42x10	1/4	5/16 and 3/8	1750	2	153.00
865	42x12	1/4	5/16 and 3/8	2000	2	171.00
1000	42x14	1/4	5/16 and 3/8	2250	2	191.00
750	48x 8	1/4	5/16 and 3/8	1800	3	168.00
940	48x10	1/4	5/16 and 3/8	2100	3	188.00
1130	48x12	1/4	5/16 and 3/8	2400	3	209.00
1300	48x14	1/4	5/16 and 3/8	2700	3	230.00

150 pounds test, 100 pounds working pressure.



PRICE-LIST OF PORTABLE BOILERS, STEAM AND WATER
For Hard or Soft Coal

"CENTURY" RETURN
TUBULAR BOILER

Boiler No.	Diameter Boiler, Inches	Height Boiler only, Inches	Length over all, Inches	Outside Surface Boiler, Sq. Feet	Height Fire-Box, Inches	Width Grates, Inches	Length Grates, Inches	Smoke Opening, Inches	Fire Door, Inches	Size Steam Opening, Inches	Size Return Opening, Inches	No. and Size Supply and Return Tappings, Water	Weight, Pounds	Number, Fire Brick	Capacity Radiation, Sq. Ft. Steam	Capacity Radiation, Sq. Ft. Hot Water	† List Price
12	37	57	102	80	25	30	30	10x16	16x20	4	3	2-4"	5,100	160	1,200	2,000	\$ 565.00
15	37	57	114	90	25	30	36	10x16	16x20	4	3	2-5"	5,700	175	1,500	2,500	615.00
18	37	57	126	98	25	30	42	10x16	16x20	4 1/2	3	2-5"	6,400	190	1,800	3,000	665.00
22	48	62	114	100	27	42	36	10x21	16x20	4 1/2	3	2-5"	7,300	235	2,200	3,600	715.00
26	48	62	132	120	27	42	42	10x21	16x20	5	4	2-6"	8,000	265	2,600	4,300	790.00
30	48	62	150	130	27	42	48	10x21	16x20	5	4	2-6"	9,000	295	3,000	5,000	865.00
36	48	62	168	150	27	42	54	10x21	16x20	6	4	2-6"	9,800	325	3,600	6,000	975.00
45	48	62	192	180	27	42	60	12x21	16x20	6	4	2-7"	11,100	355	4,500	7,500	1140.00

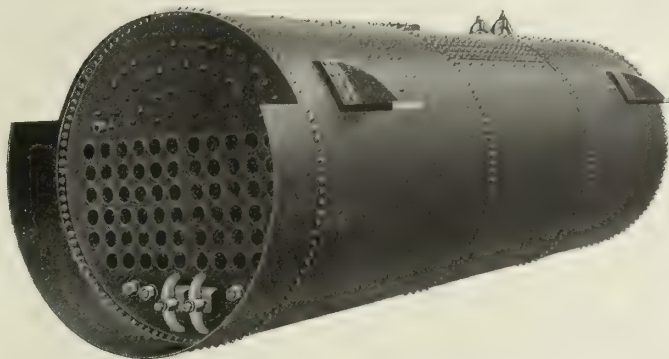
†The outside surface to be covered with asbestos or plastic cement when required. ‡ List price includes trimmings but does not include fire brick, nor trimmings for Water Boiler. Height of water-line from floor in boilers 37 inches, diameter 62 inches; in boilers 48 inches, diameter 67 inches.

"KEWANEE"
HORIZONTAL
TUBULAR
BOILER,
GENERAL
DESCRIPTION.

We make a full line of Horizontal Tubular Boilers for heating and power purposes, safe for a working pressure of from 100 to 150 pounds.

The dimensions, thickness of material, number and size of tubes as given in the following specifications, representing our recommendations based on an experience of over thirty years, are in line with the recommendations of the best authorities on boiler construction.

All materials used in their construction conform to the standard adopted by the Association of American Steel Manufacturers. The riveting, bracing, and entire construction of these boilers conform strictly to the most modern engineering practice. They are subjected to a steady hydrostatic pressure 50 per cent in excess of the working pressure for which they are constructed, and when requested we will furnish, without charge, certificate of such test.



"KEWANEE" HORIZONTAL TUBULAR BOILER

For 100, 125, and 150 pounds' working pressure, made with 3-, 3½-, or 4-inch tubes

SIZES AND CAPACITIES OF "KEWANEE" HORIZONTAL TUBULAR BOILERS

Horse-Power	15	20	25	30	35	40	45	50	60	70	75	80	90	100	115	125	150	175	200	200	225
Catalogue No. for 100-pound Boilers...	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345
Catalogue No. for 125-pound Boilers...							415	416	417	418	419	420	421	422	423	424	425	426	427	428	429
Catalogue No. for 150-pound Boilers...							170	171	172	173	174	175	176	177	178	179	180	181	182	183	184
Diameter of Shell, inches.....	36	36	36	42	42	42	48	48	54	54	60	60	60	66	66	72	72	78	78	84	84
Length of Tubes, feet.....	8	10	12	10	12	14	12	14	14	16	14	16	18	16	18	16	18	18	20	18	20
Size of Tubes, (regular), inches.....	3	3	3	3	3	3½	3	3½	3½	4	3½	4	4	4	4	4	4	4	4	4	4
Number of Tubes.....	24	24	24	39	39	32	46	32	44	36	54	44	44	54	54	70	70	84	84	92	92
Number of Tubes can be sub-stituted without change in price } (3½ in.) 4							32	26	36		44	54	54	66	66	86	86	110	110	124	124
Thickness of Shell, in. } 100-lb. Boilers {	¼	¼	¼	¼	¼	¼	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝
Thickness of Heads, in. } 100-lb. Boilers {	⅜	⅜	⅜	⅜	⅜	⅜	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝
Thickness of Shell, in. } 125-lb. Boilers {							⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝
Thickness of Heads, in. } 125-lb. Boilers {							⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝
Thickness of Shell, in. } 150-lb. Boilers {							⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝
Thickness of Heads, in. } 150-lb. Boilers {							⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝	⅝
Diameter of Dome, inches.....	18	18	18	20	20	20	24	24	27	27	30	30	30	32	32	36	36	36	40	40	40
Height of Dome, inches.....	20	20	20	24	24	24	24	24	30	30	30	30	30	32	32	36	36	40	40	40	40
Width of Grate, inches.....	36	36	36	42	42	42	48	48	54	54	60	60	60	66	66	72	72	78	78	84	84
Length of Grate, inches.....	36	36	42	36	42	48	48	48	48	54	54	54	60	60	66	66	72	66	72	66	72
Diameter of Stack, inches.....	16	16	16	18	18	18	24	24	26	26	28	28	28	32	32	36	36	38	38	42	42
Length of Stack, feet.....	28	28	35	35	35	40	40	40	40	45	40	45	50	45	50	45	50	60	70	60	70
Gauge of Steel in Stack.....	16	16	16	16	16	16	16	16	16	16	14	14	14	14	14	14	14	14	14	14	14
Size of Steam Supply or Lever Safety Valve for 100-pound Boilers, inches.....	1½	2	2½	2½	2½	2½	3	3	3	3½	3½	4	4	5	5	5	5	6	6	6	6
Size, Steam Supply for 125 and 150-pound Boilers, inches.....							3	3	3	3½	3½	4	4	5	5	5	5	6	6	6	6
Size, Pop Safety Valve, for 125 and 150-pound Boilers, inches.....							2½	2½	2½	2½	3	3½	3½	3½	3½	4	4	4½	5	5	5
Size of Blowoff Valve, inches.....	2	2	2	2	2	2	2½	2½	2½	2½	2½	2½	2½	2½	2½	2½	2½	2½	2½	2½	2½
Size of Check and Stop Valves, inches.....	¾	¾	¾	1	1	1	1	1	1¼	1¼	1¼	1¼	1¼	1½	1½	1½	1½	1½	1½	1½	1½
Size of Steam Gauge for 100-pound Boilers, inches.....	5	5	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6
Size of Steam Gauge for 125 and 150-pound Boilers, inches.....							6	6	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½	8½
Capacity, Steam Radiation.....	1400	1800	2200	2800	3300	3700	4200	4700	5600	6600	7100	7600	8500	9500	10900	12000	14500	17000	19500	19500	22000

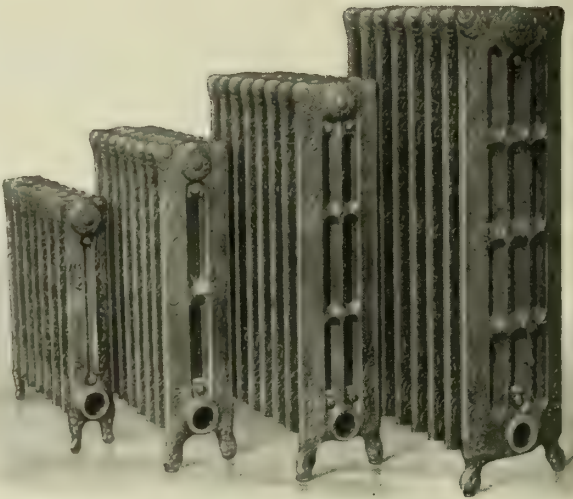
The 100-pound Boilers are regularly built with domes; the 125 and 150 pound Boilers without domes.

“KEWANEE”
LINE OF
CAST-IRON
RADIATORS.

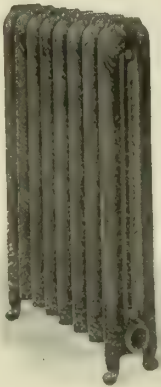
These radiators are built on ideas based on many years of experience in the heating business. To get the best effects from them we have made the waterways thin and have made abundant provision for the free passage of air over the entire surface. Most of the surface comes in direct contact with the cool air in the room. There is a larger proportion of outside radiating surface in “Kewanee” Radiators than in radiators of any other make, which in consequence greatly increases their efficiency.

MEASUREMENTS OF RADIATORS

RADIATOR	HEIGHT	Floor to Center of Lower Tapping, Straight Hub, for Hot Water, and Supply on Two-Pipe Steam.	Floor to Center of Lower Tapping, Drop Hub, One-Pipe Steam or Return on Two-Pipe Steam	Floor to Center of Upper Tapping	Center to Center, Straight Hub, Hot Water
“ACME”	In.	In.	In.	In.	In.
18	2 1/2	2	15 1/8	13 7/8	
Width, legs, 7 3/4 in.	20	4 1/2	4	17 1/8	13 7/8
Width, section, 7 3/8 in.	26	4 1/2	4	23 3/8	18 7/8
Length, section in stack, 2 1/2 in.	30	4 1/2	4	28 1/8	23 3/8
	38	4 1/2	4	35 7/8	31 3/8
	45	4 1/2	4	42 5/8	38 1/8
“CORINTH”	In.	In.	In.	In.	In.
18	3	2 1/2	15 1/8	12 1/8	
Width, legs, 9 1/2 in.	20	5	4 1/2	17 3/4	12 3/4
Width, section, 9 1/2 in.	26	5	4 1/2	23 1/8	18 1/8
Length, section in stack, 2 1/2 in.	32	5	4 1/2	29 3/4	24 3/4
	38	5	4 1/2	35 5/8	30 5/8
	45	5	4 1/2	42 1/2	37 1/2
“KEWANEE”	In.	In.	In.	In.	In.
1-Col.—Width, legs and top, 4 7/8 in., width, middle, 4 1/2 in. . . .	18	3	2 1/2	15 1/8	12 1/8
2-Col.—Width, legs and top, 8 1/2 in., width, middle, 7 3/8 in. . . .	20	5	4 1/2	17 1/8	12 3/4
3-Col.—Width, legs and top, 9 1/2 in., width, middle, 9 in. . . .	26	5	4 1/2	23 1/8	18 1/8
4-Col.—Width, legs and top, 13 in., width, middle, 12 1/8 in. . . .	32	5	4 1/2	29 1/8	24 1/8
Length, section in stack, 2 1/2 in.	38	5	4 1/2	35 1/8	30 1/8
	45	5	4 1/2	42 1/8	37 1/8
“FEDERAL” WINDOW	In.	In.	In.	In.	In.
13	2 5/8	Not made	10 15/16	8 5/16	
Width, legs, 13 in.	14	3 5/8	11 15/16	8 1/5	
Width, middle 12 in.	16	3 5/8	13 15/16	10 1/5	
Width, top, 12 1/4 in.	18	3 5/8	15 15/16	12 1/5	
Length, section in stack, 3 in.	20	3 5/8	17 15/16	14 1/5	
NEW “KEWANEE”	In.	In.	In.	In.	In.
18	4 1/2	4	15 1/2	11	
Width, legs, 9 in.	22	4 1/2	19 1/2	15	
Width, middle, 9 in.	26	4 1/2	23 1/2	19	
Length, section in stack, 2 1/2 in.	32	4 1/2	29 1/2	25	
	38	4 1/2	35 1/2	31	
	45	4 1/2	42 1/2	38	



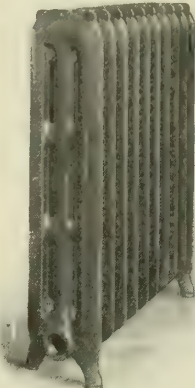
“KEWANEE” ONE, TWO, THREE, AND FOUR COLUMN RADIATORS



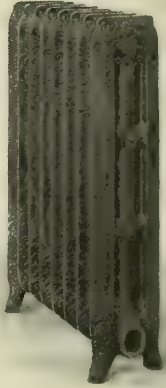
“ACME”



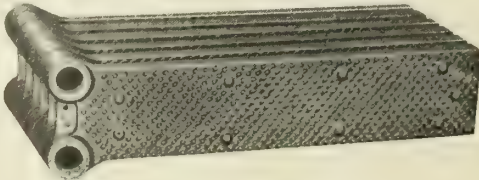
“CORINTH”



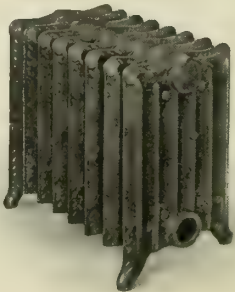
NEW “KEWANEE” PLAIN



NEW “KEWANEE” ORNAMENTAL



“KEWANEE” PIN INDIRECT
Made in two sizes, sections containing 10 and 15 square feet



“FEDERAL” WINDOW

CAMERON SCHROTH CAMERON CO.

WESTERN DISTRIBUTERS

189 Michigan Street
CHICAGO, ILL.

THE McCRUM-HOWELL CO.

EASTERN DISTRIBUTERS

Park Avenue and Forty-First Street
NEW YORK, N. Y.

"Richmond" Boilers and Radiators

BOILER PLANT, NORWICH, CONN.

RADIATOR PLANT, UNIONTOWN, PA.

PRODUCTS.

We make "RICHMOND" STEAM and HOT-WATER HEATING BOILERS and RADIATORS; "RICHMOND" TANK HEATERS and LAUNDRY STOVES.

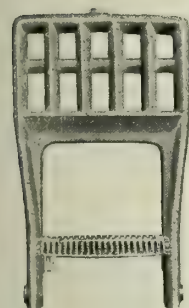
"RICHMOND"
TRADE-MARK

NEW "RICHMOND" SECTIONAL WATER-BASE BOILERS.

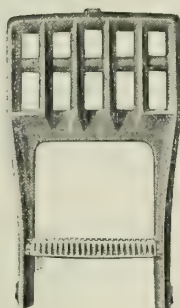
These boilers, for both steam and hot water heating, are truly sectional, as truly sectional as a loose-leaf ledger or sectional bookcase. Sections can be added or taken away, or they can be cut out entirely without tearing down the boiler and without a day's delay or loss of heat; for the "Richmond" Boilers are of the screw-nipple type, the sections being screwed instead of pushed together.

STEAM HEADER.

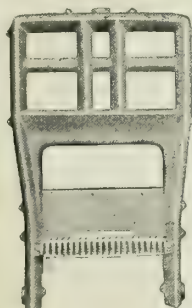
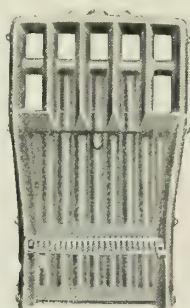
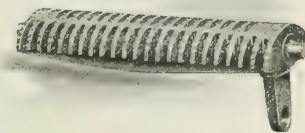
Each section is in reality a separate, independent boiler and delivers the steam directly into the header, which is identical with a steam-chest or dome. Push-nipple boilers miss entirely the effectiveness of this header construction.



Leg Section



Cut Leg-Section

Front Section,
seen from insideBack Section,
seen from insideSmoke Box and Diving Flue,
as seen from inside

Grate Bar

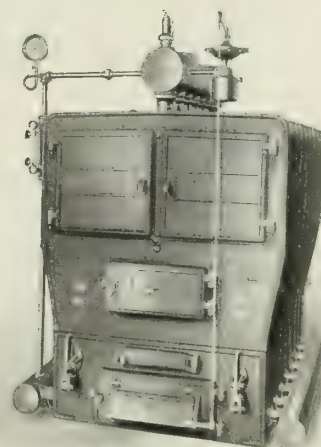
PARTS OF "RICHMOND" SECTIONAL WATER-BASE BOILER

WATER-BASE.

The Water-Base is formed by the sections extending to the base of the boiler, giving a solid footing and a high ash-pit surrounded by water, and additional surface for absorbing heat.

FIRE TRAVEL.

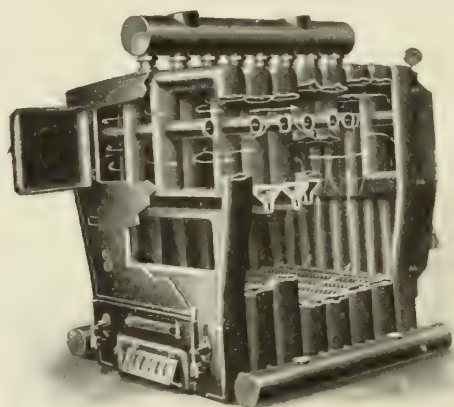
The center flues of the Back and Cut Leg-Sections are open to the fire-box, allowing the direct heat of the fire to rise to the top of the boiler, to be thence carried to the front in the combined center flues and to the rear in the outside flues. Here, instead of passing at once to the chimney, as in most boilers, the smoke and gases are drawn down on the outside of the rear water section into a special smoke-box before being allowed to escape. A direct-draft damper in this box permits a straight draft through the center flues for starting the fire.



308-S Boiler
SECTIONAL STEAM BOILERS,
WATER-BASE

BASIS OF RATINGS.

The ratings for all our boilers are for direct radiation and are based upon all piping, both flow and return, being figured as radiating surface, unless covered throughout with best quality asbestos cement or sectional magnesia covering. The boilers should also be covered with $1\frac{1}{2}$ inch of asbestos cement for economy in fuel and increased efficiency. The ratings are further based on a pressure of two pounds, in the case of Steam Boilers, and of a temperature of 180° Fahr. in the water as it leaves the boiler, in the case of Hot-Water Boilers.



308-W Boiler

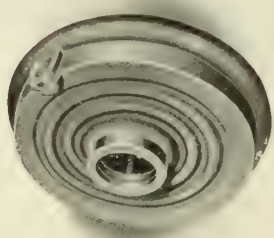
SECTIONAL WATER BOILERS,
WATER-BASE"RICHMOND"
ROUND-
SECTIONAL
BOILERS.

The dome of these boilers is of sufficient depth to insure a steam chamber of ample size. An ingenious arrangement of baffle-plates inside the dome permits only dry steam to leave the boiler. An equalizing pipe absolutely prevents an unsteady water-line.

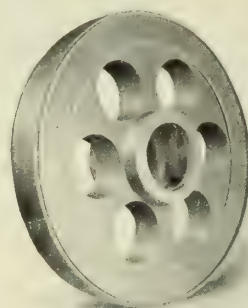
The wheel section, directly underneath the dome and connected by a heavy cast-iron screw nipple, is converted by the ports passing through it into a veritable "spider's web," and in conjunction with the deflecting ring, located immediately below and connected in the same manner, presents to the action of the fire the most effective heating surface possible.

COMBINED TABLE OF "RICHMOND" WATER-BASE BOILERS FOR STEAM OR
HOT-WATER HEATING

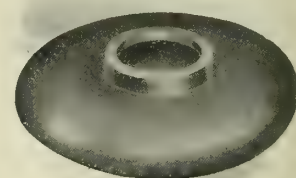
Designation of Boilers	Number of Different Sizes	Number of Sections in each	Area of Fire Pot	Smoke Collar	Height of Water Line for Steam	Height to Top of Supply Outlet	Total Length with Smoke Box	Total Width	Size of Supply	Size of Return	Rating square feet-steam	Price-List, Steam	Rating square feet-Water	Price-List, Water
204 to 208	5	4 to 8	22" x 19" to 22" x 43"	10"	46"	61"	34" to 58"	40"	1-3" to 2-3"	2-3"	525 to 1150	\$238 to 445	850 to 1900	228 to 435
305 to 3010	6	5 to 10	28" x 28" to 28" x 62"	12"	50"	68"	45" to 80"	46"	1-4" to 2-4"	2-3" to 4-3"	1200 to 2350	460 to 790	2000 to 3900	450 to 770
42-5 to 42-14	9	6 to 14	42" x 35" to 42" x 89"	15" to 18"	56 $\frac{1}{2}$ " to 78"	78"	52" to 108"	64"	2-5" to 2-6"	3-4" to 4-4"	2400 to 6400	800 to 1624	3975 to 10575	780 to 1604



Dome



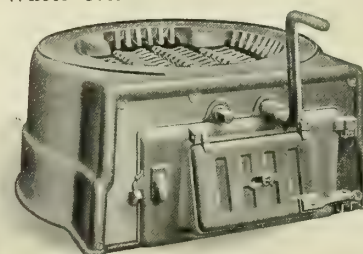
Wheel Section



Deflecting Ring



Fire Pot



Ash Pit



Grate Bar

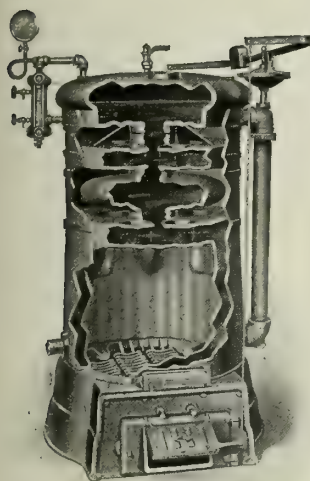
PARTS OF "RICHMOND" ROUND-SECTIONAL BOILER

The fire-pot, the largest casting in the boiler, can be taken through any doorway. The inside is corrugated and the overhanging self-cleaning arms at the top add materially to the amount of direct fire surface in the boiler. The feed door and all other doors are unusually large, making the boiler easy to fire and clean.

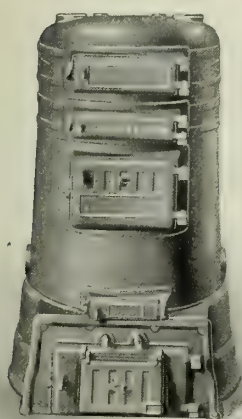
COMBINED TABLE OF "RICHMOND" ROUND SECTIONAL BOILERS FOR STEAM AND HOT-WATER HEATING

Designation of Boilers	Number of Different Sizes	Diameter of Fire-Pot	Smoke Collar	Height of Water Line for Steam	Height to Top, Steam	Height to Top, Water	Supply Tapping for Steam	Return Tapping for Steam	Supply Tapping for Water	Return Tapping for Water	Rating, Square-feet, Steam	Price-List, Steam	Rating, Square-feet, Water	Price-List, Water
217 to 417	3	17"	7"	41" to 51"	45" to 55"	41" to 51"	1-2 $\frac{1}{2}$ "	1-2"	2-2"	2-2"	250 to 350	\$132.00 to 167.00	400 to 575	\$114.00 to 158.00
220 to 520	4	20"	8"	43" to 59"	46" to 62"	42" to 59"	1-3"	1-2 $\frac{1}{2}$ "	2-2 $\frac{1}{2}$ "	2-2 $\frac{1}{2}$ "	325 to 500	158.00 to 219.50	550 to 825	149.50 to 210.50
223 to 523	4	23"	9"	44" to 61"	47" to 64"	43" to 61"	1-3"	1-2 $\frac{1}{2}$ "	2-2 $\frac{1}{2}$ "	2-2 $\frac{1}{2}$ "	525 to 675	226.00 to 293.00	875 to 1100	217.50 to 283.00
326 to 526	3	26"	10"	51" to 64"	54" to 68"	51" to 64"	1-4"	1-3"	2-3"	2-3"	750 to 850	316.00 to 346.00	1250 to 1400	306.00 to 336.00
329 to 629	4	29"	10"	52" to 70"	56" to 74"	52" to 70"	1-5"	1-3 $\frac{1}{2}$ "	2-3 $\frac{1}{2}$ "	2-3 $\frac{1}{2}$ "	1000 to 1300	389.50 to 477.00	1650 to 2150	380.00 to 467.50

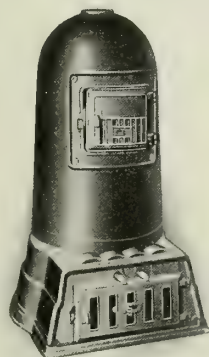
NOTE—Numbers 520, 523, 526, 529 and 629 are for hard coal only



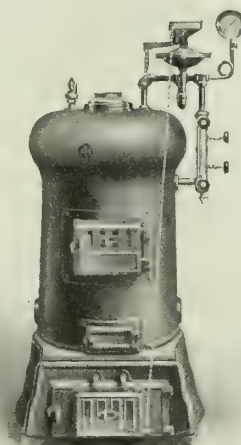
420-S Boiler
ROUND-SECTIONAL
STEAM BOILER



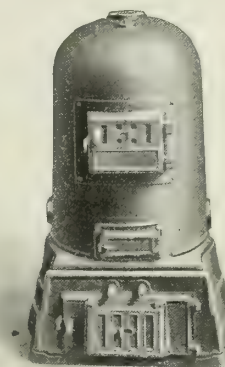
323-W Boiler
ROUND-SECTIONAL
WATER BOILER



ROUND-TOP TANK
HEATER



119-S Boiler



119-W Boiler

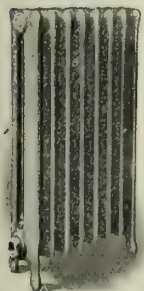
NEW ROUND TWO-PIECE STEAM BOILERS

"RICHMOND" RADIATORS.

The following illustrations show a part of our line of Radiators for Steam and Water. We make them in 1, 2, 3, 4 and 6 column style, both plain and ornamental. We also supply Circular, Curved, Corner, Direct-Indirect and Window Radiators in all our styles.

DETAILS AND PRICES.

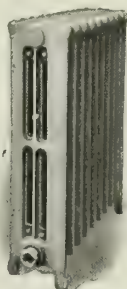
Tables of sizes, ratings, roughing-in dimensions, prices and all other details are given in our complete Radiator Catalogue, which will be sent upon application.



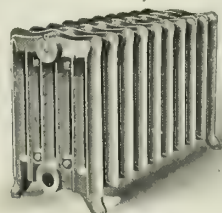
One-Column, Plain



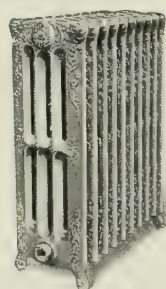
Two-Column, Plain



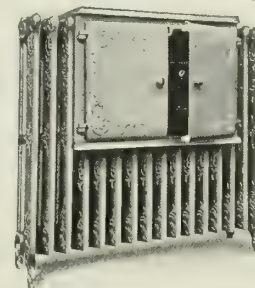
Three-Column, Plain



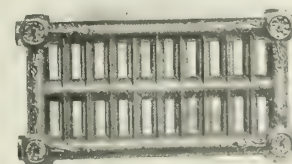
Six-Column, Plain



Four-Column, Ornamental



Dining-Room Radiator



Wall Radiator

TYPES OF "RICHMOND" RADIATORS

LEWIS & KITCHEN

Heating and Ventilating, Refuse and Garbage Disposal

KANSAS CITY, MO.

CHICAGO, ILL.

PRODUCTS. SERVICES.

Engineers-Contractors for HEATING and VENTILATING PLANTS; REFUSE and GARBAGE DISPOSAL PLANTS; and manufacturers of VENTILATED SANITARY APPLIANCES, CLOSETS and URINALS.

HEATING AND VENTILATING.

Our experience in the installation of heating and ventilating apparatus for public buildings is unsurpassed. We have solved successfully the problem of adequately heating and ventilating many of the most complicated and difficult old buildings in the country; some of which are quite famous.

We have equipped several of the largest and finest churches in the East and West. We designed and installed the heating, ventilating and mechanical equipment in one of the largest and most perfect hospitals in the world. We install the heating and mechanical ventilation in more than sixty school buildings every year.



PUBLIC BUILDINGS EQUIPPED BY LEWIS & KITCHEN

ENGINEER- ING.

Our engineering department is organized for the benefit of architects and owners, and while we charge a reasonable percentage for our services we can prove from many experiences that we save much more than this expense by reductions in the cost of the building; by economies in the use of apparatus; and by the surety of successful operation of the plant after it is installed.

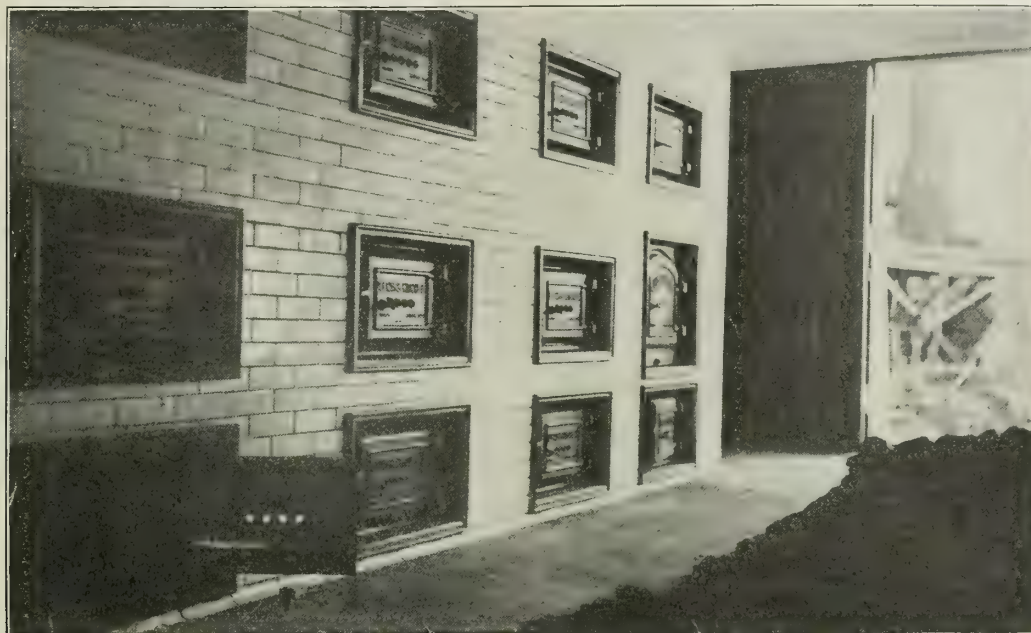
We are employed by the year to design all the heating and ventilating apparatus for the schools of several large cities. We are employed by the year to do all the designing of heating apparatus for many prominent architects.

The necessity for perfect ventilation of toilets has required the designing and manufacturing of specially ventilated fixtures such as closets and urinals. These are of the very highest quality, and while such construction is expensive, we have found it justified. We do not make an unventilated appliance in this line. We positively guarantee against odors from our apparatus. No others have equal area for ventilation or equal sanitary features.

GARBAGE
DISPOSAL
PLANTS.

Our work in this connection consists of the preliminary investigation and the complete engineering and erection of these plants for institutions and municipalities.

We hold ourselves responsible for their operation and protect our clients to the fullest extent under our own patents.



VIEW OF FRONT OF GARBAGE INCINERATOR AT NEWPORT, R. I.
Showing arrangement and construction of firing and stoking doors in a brick-set furnace.
Entire exterior of white enameled brick

SEWAGE
DISPOSAL.

We design and construct complete plants for the clarification and purification of sewage to any desired degree, for any capacity, from that of suburban residences to that of large cities. Septic Tanks, Filtration Systems, and Contact Beds are covered by our own patents.

CAMP
SANITATION.

We have a very complete line of Incinerators, Crematories and Evaporators for the dry sanitation of camps, factories, summer hotels, etc.



LEWIS & KITCHEN TYPE "A" INCINERATOR
Showing four of the eight seats, as in use beneath a wall tent, ten feet by fourteen feet

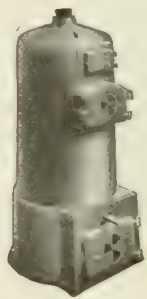
LORD & BURNHAM CO.

Steam and Water Boilers

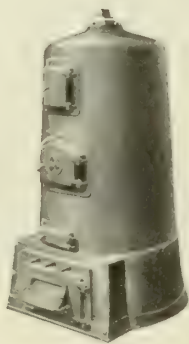
IRVINGTON-ON-HUDSON, N. Y.

PRODUCTS.

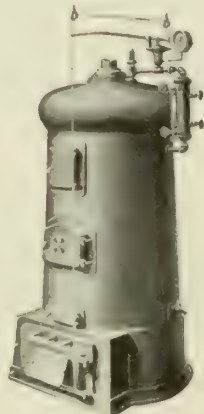
Manufacturers of four distinct types of the "BURNHAM" CAST-IRON BOILERS, for Steam or Hot Water, as follows: VERTICAL SECTIONAL, ROUND SECTIONAL, ONE-PIECE ROUND BOILERS, and TANK HEATERS.



JUNIOR
BOILER OR
TANK HEATER



ONE-PIECE
ROUND
WATER BOILER



ONE-PIECE
ROUND
STEAM BOILER



SQUARE SECTIONAL
STEAM BOILER



ROUND
SECTIONAL
STEAM BOILER



ROUND
SECTIONAL
WATER BOILER

"BURNHAM"
VERTICAL
SECTIONAL
STEAM OR
WATER BOILER.

They are nipple-connected and have short tie-bolts, making erection easy. Water surrounded fire-pot and no bricks. Combustion chamber is of ample size and the cross fire channels are deep with side flue openings which prevent the back rush of burning gases and make every section equally efficient. The fire travel is three times the boiler's length. These boilers burn any kind of fuel, and have proved their economy in actual operation.

"BURNHAM"
ROUND
SECTIONAL
WATER BOILER.

Is nipple-connected. It is constructed on the same principles as the "Burnham" Vertical Sectional Boiler.

"BURNHAM"
ROUND
SECTIONAL
STEAM BOILER.

It is exactly like the Water Boiler, with the exception that the top section is enlarged for the steam dome.

"BURNHAM"
ONE-PIECE
ROUND
WATER BOILER.

It has a water surrounded fire-pot. The fire surfaces consist principally of a series of alternate arms extending from the outside waterways to a central column. All circulation is upward. These boilers will carry fire a long time and show great economy in operation.

"BURNHAM"
ONE-PIECE
ROUND
STEAM BOILER.

It is made like the Water Boiler, with the top enlarged for the steam dome. It is a quick steamer and has a steady water line.

"BURNHAM"
JUNIOR OR
TANK HEATER.

It is constructed on practically the same lines as the One-Piece Round Boilers. They are used for tank heaters, hot-water supplies, heating conservatories, or any place where the regular One-Piece Round Boilers would be too large.

TABLES OF
SIZES,
CAPACITIES,
ETC.

VERTICAL SECTIONAL BOILERS

STEAM						WATER					
No.	No. of Sections	Square Feet Direct Radiation	Total Height in Inches	Total Length in Inches	Total Width in Inches	No.	No. of Sections	Square Feet Direct Radiation	Total Height in Inches	Total Length in Inches	Total Width in Inches
410	4	450	54 $\frac{1}{2}$	35 $\frac{1}{2}$	33	418	4	750	50 $\frac{1}{2}$	35 $\frac{1}{2}$	33
510	5	600	54 $\frac{1}{2}$	41 $\frac{1}{2}$	33	518	5	1000	50 $\frac{1}{2}$	41 $\frac{1}{2}$	33
610	6	750	54 $\frac{1}{2}$	47 $\frac{1}{2}$	33	618	6	1275	50 $\frac{1}{2}$	47 $\frac{1}{2}$	33
710	7	900	54 $\frac{1}{2}$	53 $\frac{1}{2}$	33	718	7	1550	50 $\frac{1}{2}$	53 $\frac{1}{2}$	33
810	8	1050	54 $\frac{1}{2}$	59 $\frac{1}{2}$	33	818	8	1800	50 $\frac{1}{2}$	59 $\frac{1}{2}$	33
520	5	875	69 $\frac{1}{4}$	45	39 $\frac{1}{2}$	524	5	1450	63 $\frac{1}{4}$	45	39 $\frac{1}{2}$
620	6	1075	69 $\frac{1}{4}$	51	39 $\frac{1}{2}$	624	6	1800	63 $\frac{1}{4}$	51	39 $\frac{1}{2}$
720	7	1375	69 $\frac{1}{4}$	57	39 $\frac{1}{2}$	724	7	2150	63 $\frac{1}{4}$	57	39 $\frac{1}{2}$
820	8	1525	69 $\frac{1}{4}$	63	39 $\frac{1}{2}$	824	8	2525	63 $\frac{1}{4}$	63	39 $\frac{1}{2}$
920	9	1750	69 $\frac{1}{4}$	69	39 $\frac{1}{2}$	924	9	2900	63 $\frac{1}{4}$	69	39 $\frac{1}{2}$
540	5	1475	70	52 $\frac{1}{2}$	47 $\frac{1}{2}$	546	5	2475	64	52 $\frac{1}{2}$	47 $\frac{1}{2}$
640	6	1875	70	60	47 $\frac{1}{2}$	646	6	3125	64	60	47 $\frac{1}{2}$
740	7	2250	70	67 $\frac{1}{2}$	47 $\frac{1}{2}$	746	7	3750	64	67 $\frac{1}{2}$	47 $\frac{1}{2}$
840	8	2650	70	75	47 $\frac{1}{2}$	846	8	4350	64	75	47 $\frac{1}{2}$
940	9	3050	70	82 $\frac{1}{2}$	47 $\frac{1}{2}$	946	9	4950	64	82 $\frac{1}{2}$	47 $\frac{1}{2}$
530	5	2000	81 $\frac{3}{8}$	55	52 $\frac{1}{2}$	536	5	3400	75	55	52 $\frac{1}{2}$
630	6	2500	81 $\frac{3}{8}$	62 $\frac{1}{2}$	52 $\frac{1}{2}$	636	6	4200	75	62 $\frac{1}{2}$	52 $\frac{1}{2}$
730	7	3000	81 $\frac{3}{8}$	70	52 $\frac{1}{2}$	736	7	5000	75	70	52 $\frac{1}{2}$
830	8	3500	81 $\frac{3}{8}$	77 $\frac{1}{2}$	52 $\frac{1}{2}$	836	8	5800	75	77 $\frac{1}{2}$	52 $\frac{1}{2}$
930	9	4000	81 $\frac{3}{8}$	85	52 $\frac{1}{2}$	936	9	6600	75	85	52 $\frac{1}{2}$
1030	10	4500	81 $\frac{3}{8}$	92 $\frac{1}{2}$	52 $\frac{1}{2}$	1036	10	7400	75	92 $\frac{1}{2}$	52 $\frac{1}{2}$

ROUND SECTIONAL BOILERS

STEAM				WATER			
No.	Square Feet Direct Radiation	Total Diameter, In. Incl. Base	Total Height Inches to Top Outlets	No.	Square Feet Direct Radiation	Total Diameter, In. Incl. Base	Total Height Inches to Top Outlet
S-218	325	27	48 $\frac{3}{4}$	W-218	550	27	43 $\frac{1}{4}$
S-318	375	27	54 $\frac{3}{4}$	W-318	600	27	49 $\frac{1}{4}$
S-418	425	27	60 $\frac{3}{4}$	W-418	650	27	55 $\frac{1}{4}$
S-221	450	30	52 $\frac{1}{2}$	W-221	750	30	45 $\frac{3}{4}$
S-321	500	30	57 $\frac{1}{4}$	W-321	825	30	52 $\frac{3}{4}$
S-421	550	30	62 $\frac{1}{4}$	W-421	900	30	59 $\frac{3}{4}$
S-224	575	33	55 $\frac{1}{2}$	W-224	925	33	48 $\frac{1}{2}$
S-324	650	33	62 $\frac{1}{2}$	W-324	1050	33	55 $\frac{1}{2}$
S-424	725	33	69 $\frac{1}{2}$	W-424	1175	33	62 $\frac{1}{2}$
S-227	750	36	58	W-227	1250	36	49 $\frac{3}{4}$
S-327	850	36	65 $\frac{1}{2}$	W-327	1400	36	57 $\frac{1}{4}$
S-427	950	36	73	W-427	1550	36	64 $\frac{3}{4}$
S-230	1000	41 $\frac{1}{2}$	60 $\frac{3}{4}$	W-230	1650	41 $\frac{1}{2}$	51 $\frac{1}{2}$
S-330	1150	41 $\frac{1}{2}$	68 $\frac{3}{4}$	W-330	1900	41 $\frac{1}{2}$	59 $\frac{1}{2}$
S-430	1300	41 $\frac{1}{2}$	76 $\frac{3}{4}$	W-430	2150	41 $\frac{1}{2}$	67 $\frac{1}{2}$

ONE-PIECE ROUND BOILERS

STEAM				WATER			
No.	Square Feet Direct Radiation	Total Diameter, In. Incl. Base	Total Height, Inches	No.	Square Feet Direct Radiation	Tank Capacity, Gallons	Total Diameter, In. Incl. Base
215A	200	24	47	315A	350	450	24
215X	250	24	51	315X	425	500	24
218A	325	27	54	318A	550	700	27
218X	375	27	58	318X	650	800	27
221A	450	30	61 $\frac{1}{4}$	321A	775	900	30
221X	525	30	65 $\frac{1}{4}$	321X	900	1050	30
224A	625	33	65	324A	1075	1200	33
224X	700	33	69	324X	1150	1350	33
227A	800	36	69	327A	1350	1500	36

JUNIORS

No.	Square Feet Direct Radiation	Tank Capacity, Gallons	Total Diameter, In. Incl. Base	Total Height, Inches
110	125	175	16	32 $\frac{3}{4}$
112	200	275	18	36 $\frac{5}{8}$
114	300	375	20	39

MODEL HEATING COMPANY

Makers of the "Model" Boiler

142 North Tenth Street

PHILADELPHIA, PA.

CABLE ADDRESS, "MODEL, PHILADELPHIA"

BRANCH OFFICE

NEW YORK, N. Y., 76-78 Centre Street



PRODUCTS.

Manufacturers of MODEL BOILERS for STEAM and HOT-WATER HEATING; RADIATORS; TANK HEATERS; LAUNDRY STOVES; FURNACES and LEDOM RANGES.

SERVICES.

Jobbers of all supplies for complete steam and hot-water apparatus.

RATING

CAPACITY.

The capacity of the Model Boiler is calculated on a basis of coal consumed per hour and efficiency of the boiler as explained in price-list. The rating is considered available at boiler outlet. All requirements of piping (mains and risers, flow and return) in addition to radiation to be used must therefore be provided for, also allowance as required for local conditions.

DIMENSIONS.

MODEL STEAM BOILER

Number of Boiler.....	12-3	18-3B	18-3	22-3	18-4	22-4	18-5	18-6	22-5	30-4	22-6	30-5	30-6	30-7	40-6	40-7	40-8	40-9	40-10	40-11	40-12
Dimensions of Grate.....	12x14	18x14	18x14	22x14	18x21	22x21	18x28	18x35	22x28	30x21	22x35	30x28	30x35	30x42	40x36	40x42	40x49	40x56	40x63	40x70	40x77
Height of Boiler to top of Outlet.....	48	51	51	51	51	51	51	51	51	59½	51	59½	59½	59½	65½	65½	65½	65½	65½	65½	65½
Length of Boiler, including Smoke-Box.....	29	35	35	39	35	39	35	35	39	50	39	50	50	50	60	60	60	60	60	60	60
Width of Boiler, including Water-Front connection.....	22	22	22	22	29	29	36	43	36	32	43	39	46	53	48	55	62	69	76	83	90
Size of Smoke-Pipe recommended.....	8	8	8	8	9	9	10	10	10	10	10	12	14	15	14	15	16	17	18	19	20
Capacity, square feet Steam Radiation.....	207	252	310	379	465	568	620	775	758	775	947	1033	1481	1777	2347	2738	3195	3651	4108	4564	5020
Capacity B. T. U. per hour.....	51744	63000	77616	94864	116424	142296	155232	194040	189728	194040	237160	258720	369600	443520	586080	683760	797720	911680	1025640	1139600	1253560

MODEL WATER BOILER

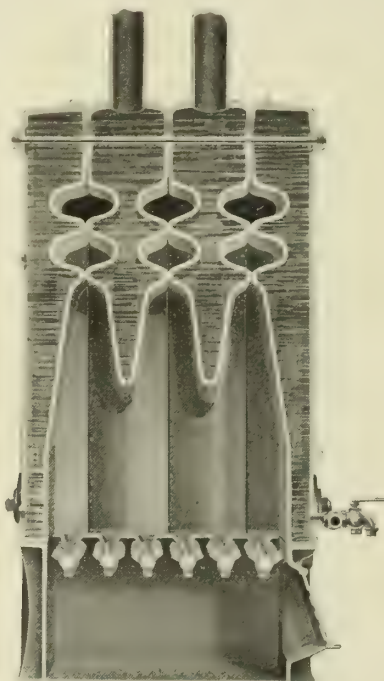
Number of Boiler.....	12-3	18-3B	18-3	22-3	18-4	22-4	18-5	18-6	22-5	30-4	22-6	30-5	30-6	30-7	40-6	40-7	40-8	40-9	40-10	40-11	40-12
Dimensions of Grate.....	12x14	18x14	18x14	22x14	18x21	22x21	18x28	18x35	22x28	30x21	22x35	30x28	30x35	30x42	40x36	40x42	40x49	40x56	40x63	40x70	40x77
Height of Boiler to top of Outlet.....	48	51	51	51	51	51	51	51	51	59½	51	59½	59½	59½	65½	65½	65½	65½	65½	65½	65½
Length of Boiler, including Smoke-Box.....	29	35	35	39	35	39	35	35	39	50	39	50	50	50	60	60	60	60	60	60	60
Width of Boiler, including Water-Front connection.....	22	22	22	22	29	29	36	43	36	32	43	39	46	53	48	55	62	69	76	83	90
Size of Smoke-Pipe recommended.....	8	8	8	8	9	9	10	10	10	10	10	12	14	15	14	15	16	17	18	19	20
Capacity square feet Water Radiation.....	144	421	517	631	775	947	1033	1292	1263	1292	1579	1722	2468	2961	3903	4553	5312	6071	6829	7588	8347
Capacity B. T. U. per hour.....	51744	63000	77616	94864	116424	142296	155232	194040	189728	194040	237160	258720	369600	443520	586080	683760	797720	911680	1025640	1139600	1253560

* Number of feet of exposed surface (with all radiators and uncovered pipes included) the boiler will carry under ordinary conditions.



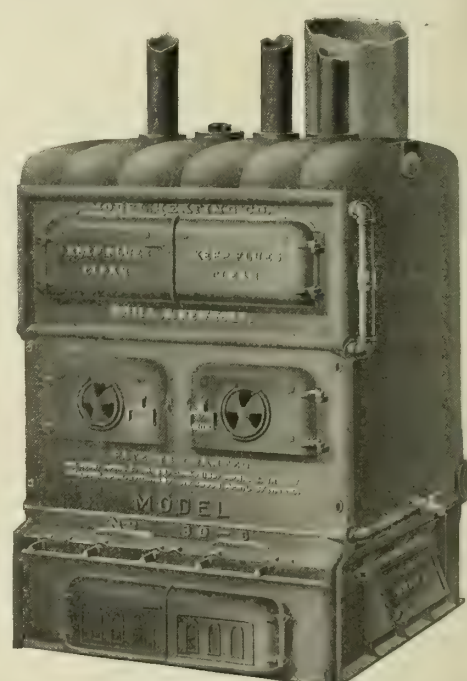
MODEL STEAM BOILER

Showing four-section Boiler ready for operation



MODEL BOILER

Sectional view showing Heating Surfaces and Waterways



MODEL WATER BOILER

A six-section Model showing Double-Door Construction

THE MODEL
RADIATOR.



RATINGS AND DIMENSIONS

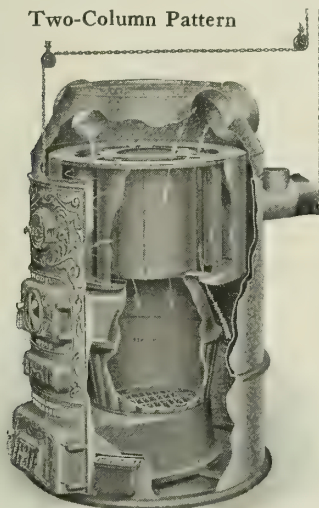
Name	Height in inches						Length Each Section
	45	38	32	26	22	20	18
One column, feet per sec.		3	2½	2		1½	2½ ins
Two columns, feet per sec.	5	4	3½	2¾	2		2½ ins
Three cols. feet per sec.	6	5	4½	3¾	3	2¼	2½ ins
Four cols., feet per sec.	10	8	6½	5	4	3	2½ ins



THE MODEL RADIATOR
Two-Column Pattern

THE MODEL RADIATOR
Three-Column Pattern

THE MODEL
FURNACE.



WITH STEEL RADIATOR
PORTABLE STYLE

Number	Diameter of Castings, Inches	Diameter of Fire-Pot, Inches	Capacity in equivalent cubic feet of space furnace will heat
228	28	16	23,000
232	32	18	28,000
236	36	20	35,000
240	40	22	44,000
244	44	25	53,000
248	48	27	63,000
256	56	30	96,000
260	60	34	103,000

Fuel—Hard Coal, Semi-Anthracite and good qualities of free-burning Bituminous

RATINGS AND DIMENSIONS

WITH STEEL RADIATOR
BRICK-SET STYLE

Number	Diameter of Castings, Inches	Diameter of Fire Pot, Inches	Capacity in equivalent cubic feet of space furnace will heat
236	36	20	35,000
240	40	22	44,000
244	44	25	53,000
248	48	27	63,000

Fuel—Hard Coal, Semi-Anthracite and good qualities of free-burning Bituminous

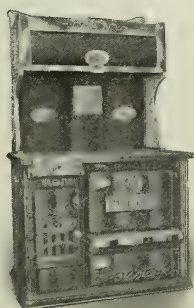
CAST-IRON RADIATOR
PORTABLE STYLE

Number	Diameter of Castings, Inches	Diameter of Fire-Pot, Inches	Capacity of equivalent cubic feet of space furnace will heat
332	32	18	28,000
336	36	20	35,000
340	40	22	44,000
344	44	25	53,000
348	48	27	63,000

Not made for brick setting
Fuel—Hard Coal, Soft Coal or Wood

THE MODEL FURNACE
Portable Style

THE LEDOM
RANGE.



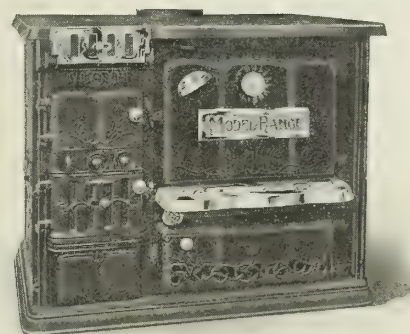
Style A. Plain Range, with Thermometer, Door Base, Bottom in Low Closet, Ash-Pan, Duplex Grate and Water-Front—no Splash Plate



Style B. Range with Skeleton High Shelf, Thermometer, Door Base, Bottom in Low Closet, Ash-Pan, Smoke-Pipe with Check Register, Duplex Grate and Water-Front



Style C. Range with Princess Steel High Closet, Thermometer, Door Base, Bottom in Low Closet, Ash-Pan, Smoke-Pipe with Check Register, Duplex Grate and Water-Front



Style D. Range with complete Gas Attachment, Thermometer, Door Base, Bottom in Low Closet, Ash Pan, Smoke-Pipe with Check Register, Duplex Grate and Water-Front

STYLES OF THE LEDOM RANGE

The Ledom Ranges are made with either a right or left oven and with the following changes:

Plain Grate
Plain Base
Without Thermometer
Without Water-Front
Cast High Closet
High Boiler Closet

Low Boiler Rack
Hot-Air Pipe to top of Mantel
Without Ash-Pan
Without Bottom in Low Closet
Splash Plate, all sizes
High Shelf, all sizes

Sheet-Iron Back for Hot Air
Gas Burners under two Covers
One Gas Burner in Oven
Gas Water-Heater
Smoke Pipe with Check Register

OPTIONAL
CHANGES.

L. J. MUELLER FURNACE CO.

197 Reed Street
MILWAUKEE, WIS.

ESTABLISHED 1857

PRODUCTS.

Manufacturers of "MUELLER" FURNACES and COMBINATION HEATERS, made in all sizes and styles, for all kinds of fuel; "MUELLER" BOILERS for Steam and Water, and everything in HEATING SUPPLIES.

DESCRIPTION.

The "Mueller" line of furnaces is the most complete on the market. They are made in 50 sizes and in different styles. The heating capacities range from 7,000 cubic feet to 300,000 cubic feet.

All "Mueller" furnaces are powerful, durable, and economical.

"MUELLER"
DOUBLE-
RADIATOR,
ALL-CAST
FURNACES.

The All-Cast, Double-Radiator Furnace possesses more direct heating surface than any other furnace manufactured. *This is a positive guarantee.* This furnace is self-cleaning and will burn any and all kinds of fuel.

"MUELLER" DOUBLE-RADIATOR, ALL-CAST FURNACE
For Coal, Wood, Gas, or Coke
Seven Sizes Portable, Six Sizes Brick Set

No. of Furnace	Inside Diameter of Fire-Pot, Inches	Depth of Fire-Pot, Inches	Diameter of Grate, Inches	Height of Castings, Inches	Diameter of Smoke-Pipe, Inches	Diameter of Casing, Inches	Capacity: No. of Pipes of Average Size for Dwellings	Estimated Heating Capacity in Cubic Feet for	
								Schools	Churches and Stores
*240	20	11	18	53	8	37	4 to 6	6-10000	10- 16000
244	22	12	19	57	8	44	7 to 9	9-14000	16- 28000
248	24	12	22	57	8	44	8 to 10	11-17000	20- 34000
252	26	14	24	62	9	49	9 to 11	14-22000	28- 44000
254	27	16	24	67	10	55	11 to 13	17-26000	38- 60000
260	30	16	28	67	10	55	12 to 14	20-32000	42- 68000
266	33	17	30	71	10	60	14 to 17	25-40000	60-100000

*This size is made with single radiator.

"MUELLER" LOW-DOWN, RETURN-FLUE RADIATOR, ALL-CAST FURNACE
For Coal, Wood, Gas, or Coke
Five Sizes Portable, Three Sizes Brick Set

No. of Furnace	Inside Diameter of Fire-Pot, Inches	Depth of Fire-Pot, Inches	Diameter of Grate, Inches	Height of Castings, Inches	Diameter of Smoke-Pipe, Inches	Diameter of Casing, Inches	Capacity: No. of Pipes of Average Size for Dwellings	Estimated Heating Capacity in Cubic Feet for	
								Schools	Churches and Stores
354	18	10	15	44	7	32	3 to 4	4- 7000	7-12000
363	21	11	18	50	7	37	4 to 6	6- 9000	10-15000
372	24	12	22	54	8	44	6 to 8	8-13000	14-24000
381	27	13	24	59	8	49	8 to 10	11-17000	20-34000
390	30	14	28	64	9	55	10 to 12	15-24000	30-50000

This furnace is also made with Hot Blast, Smoke-Consumer Attachment.

"MUELLER" RETURN-FLUE RADIATOR, ALL-CAST FURNACE, WITH DOUBLE FIRE DOOR
For Coal, Wood, Gas, or Coke
Four Sizes Portable, Three Sizes Brick Set

No. of Furnace	Inside Diameter of Fire-Pot, Inches	Depth of Fire-Pot, Inches	Diameter of Grate, Inches	Height of Castings, Inches	Diameter of Smoke-Pipe, Inches	Size of Fire Door, Inches	Diameter of Casing, Inches	Capacity: No. of Pipes of Average Size for Dwellings	Estimated Heating Capacity, Cubic Feet	
									Schools	Churches and Stores
863	21	11	18	57	8	12 x 14½	37	5 to 7	7-10000	12-20000
872	24	12	22	62	9	12¾ x 15½	44	7 to 9	9-14000	16-28000
881	27	13	24	67	9	12¾ x 15½	49	9 to 11	13-20000	26-42000
890	30	14	28	72	10	14 x 19	55	11 to 13	17-26000	38-60000

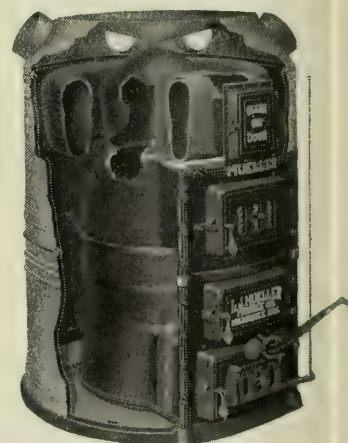
This furnace is also made with Hot Blast, Smoke-Consumer Attachment.

CATALOGUE.

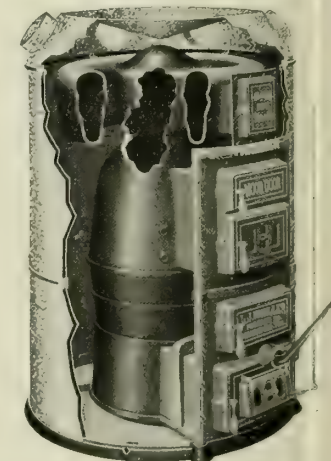
Full description of the entire line of "Mueller" Furnaces and Combination Heaters is given in our catalogue, of which a copy will be mailed on request.



DOUBLE RADIATOR, ALL-CAST FURNACE



LOW-DOWN, RETURN-FLUE RADIATOR, ALL-CAST FURNACE



RETURN-FLUE RADIATOR, ALL-CAST FURNACE WITH DOUBLE FIRE DOOR

“ MUELLER ” RETURN-FLUE, SHEET-STEEL RADIATOR FURNACE
For Hard Coal, Wood, or Gas
Five Sizes Portable, Four Sizes Brick Set

Number of Furnace	Inside Dia- meter of Fire- Pot, Inches	Depth of Fire-Pot, Inches	Diameter of Radiator, Inches	Height of Radiator, Inches	Height of Castings, Inches	Diameter of Smoke Pipe, Inches	Diameter of Casing, Inches	Size of Fire Door, Inches	Capacity: No. of Pipes of Av. Size for Dwellings	Estimated Heating Capacity in Cubic Feet for	
										Schools	Churches and Stores
557	19	11	30	24½	47	7	37	....	4 to 6	6- 9000	10-15000
566	22	12	35½	27½	52	7	44	....	6 to 8	8-13000	14-24000
572	24	14	40	29½	57	8	49	....	8 to 10	11-17000	20-34000
581	27	16	44	32½	62	8	55	....	10 to 12	15-25000	32-50000
590	30	18	48	32½	67	9	60	....	12 to 14	20-32000	42-68000
638	19	11	30	24½	47	7	37	12 x14½	4 to 6	6- 9000	10-15000
644	22	12	35½	27½	52	8	44	12¾ x15½	6 to 8	8-13000	14-24000
648	24	14	40	29½	57	9	49	12¾ x15½	8 to 10	11-17000	20-34000
654	27	16	44	32½	62	9	55	14 x19	10 to 12	15-25000	32-50000
660	30	18	48	32½	67	10	60	15½ x19½	12 to 14	20-32000	42-68000

NOTE—Furnaces No. 638 to 660 are made with double fire door.

“ MUELLER ” DOUBLE-RETURN FLUE, SHEET-STEEL RADIATOR FURNACE
For Wood

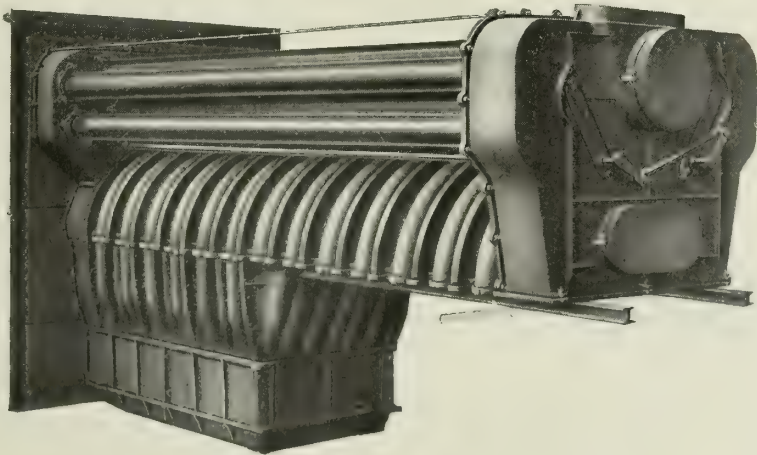
Number of Furnace	Length of Fire- Box, Inches	Width of Fire- Box, Inches	Height of Fire- Box, Inches	Length of Radiator, Inches	Width of Radiator, Inches	Height of Radiator, Inches	Height of Cast- ings, Inches	Diameter of Smoke Pipe, Inches	Size of Fire Door, Inches	Capacity: No. of Pipes of Average Size for Dwellings	Estimated Heating Capacity in Cubic Feet for	
											Schools	Churches and Stores
58	58	31	29½	58	44	19	62	10	17 x19	11 to 13	20-32000	48- 75000
60	58	31	29½	58	44	23	66	10	17 x19	12 to 14	22-35000	52- 80000
70	70	36	32½	70	48	21	66	10	17 x19	15 to 18	28-42000	70-100000
72	70	36	31½	70	48	25	70	10	17 x19	16 to 19	30-45000	75-105000
49	54	24	24	53	44	..	69	9	14½x14½	9 to 11	14-24000	32- 50000
43	42	24	24	51	32	..	53	9	14½x14½	5 to 7	7-12000	12- 22000
46	54	24	24	63	32	..	53	9	14½x14½	7 to 9	10-16000	20- 32000

Nos. 70 and 72 can be converted into coal burners by removing wood grate and installing a coal grate 20 x 32 inches. This change is easily made.

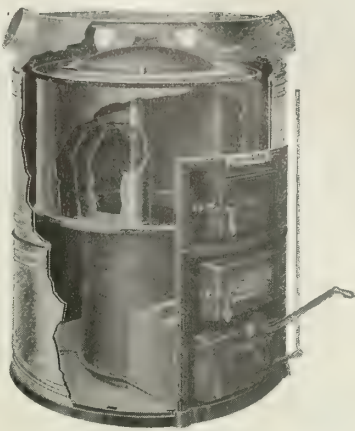
“ MUELLER ”
CHURCH AND
SCHOOL-
HOUSE
HEATER.

For Coal, Wood, Coke or Gas
Brick Set Only

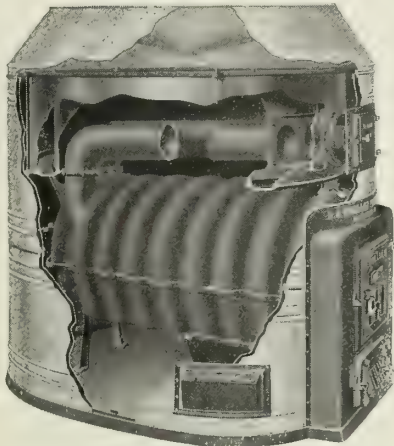
Number of Furnace	Size of Grate, Inches	Width of Fire- Box, Inches	Length of Fire- Box, Inches	Total Length of Furnace, Inches	Total Width of Furnace, Inches	Total Height of Furnace, Inches	Size of Fire Door, Inches	Diameter of Smoke Pipe, Inches	Estimated Heating Capacity in Cubic Feet for	
									Schools	Churches, Stores, and other Public Buildings
93	24 x 56	42	74	116	72	96	17 x 19½	15	50- 80000	150-250000
94	24 x 56	42	74	136	72	96	17 x 19½	15	60- 90000	175-275000
95	24 x 56	42	74	156	72	96	17 x 19½	15	70-100000	200-300000



No. 95. CHURCH AND SCHOOLHOUSE HEATER



RETURN-FLUE, SHEET-STEEL RADIATOR FURNACE



DOUBLE-RETURN FLUE, SHEET-STEEL RADIATOR FURNACE FOR WOOD



FIRE BOX OF CHURCH AND SCHOOLHOUSE HEATER

**"MUELLER"
BOILER.**

"Mueller" Boilers, for steam and water, are products of our many years of experience. They are constructed on the principle of obtaining the greatest efficiency from the minimum consumption of fuel.

Great care is exercised in the manufacture and testing of each individual part, as well as of the assembled sections as a whole. The fire-pot, intermediate sections, and dome, are tested separately to a pressure of 85 pounds, and the entire boiler when assembled is again tested to the same pressure, making doubly sure that all parts are perfect.

**DIMENSIONS
AND
CAPACITIES.**

STEAM BOILERS

No.	Size of Grate, Inches	Diameter of Base, Inches	Depth of Fire-Pot, Inches	Depth of Coal Carrying Cap., In.	Height to top of Outlet, Inches	Size of Outlet, Inches	Size of Fire Door, Inches	Diameter of Smoke-Pipe, Inches	Number and Size of Inlets, Inches	Size of Center Column, Inches	Direct Radiation, Sq. Ft.
1-16-S	16	25	24	17 $\frac{1}{4}$	49 $\frac{1}{2}$	2	8 $\frac{1}{2}$ x 10 $\frac{7}{8}$	7	3 2	5 $\frac{1}{2}$	250
2-16-S	16	25	24	17 $\frac{1}{4}$	53 $\frac{3}{4}$	2	8 $\frac{1}{2}$ x 10 $\frac{7}{8}$	7	3 2	5 $\frac{1}{2}$	275
3-16-S	16	25	24	17 $\frac{1}{4}$	57 $\frac{1}{2}$	2	8 $\frac{1}{2}$ x 10 $\frac{7}{8}$	7	3 2	5 $\frac{1}{2}$	300
1-19-S	19	27 $\frac{3}{16}$	24	17 $\frac{1}{4}$	50 $\frac{1}{2}$	2 $\frac{1}{2}$	8 $\frac{1}{2}$ x 10 $\frac{7}{8}$	8	3 2 $\frac{1}{2}$	5 $\frac{1}{2}$	325
2-19-S	19	27 $\frac{3}{16}$	24	17 $\frac{1}{4}$	54 $\frac{3}{8}$	2 $\frac{1}{2}$	8 $\frac{1}{2}$ x 10 $\frac{7}{8}$	8	3 2 $\frac{1}{2}$	5 $\frac{1}{2}$	375
3-19-S	19	27 $\frac{3}{16}$	24	17 $\frac{1}{4}$	58 $\frac{3}{4}$	2 $\frac{1}{2}$	8 $\frac{1}{2}$ x 10 $\frac{7}{8}$	8	3 2 $\frac{1}{2}$	5 $\frac{1}{2}$	400
1-22-S	22	30 $\frac{1}{2}$	25	18 $\frac{1}{4}$	52 $\frac{1}{4}$	3	8 $\frac{1}{2}$ x 12 $\frac{1}{2}$	9	3 3	7	475
2-22-S	22	30 $\frac{1}{2}$	25	18 $\frac{1}{4}$	56 $\frac{1}{4}$	3	8 $\frac{1}{2}$ x 12 $\frac{1}{2}$	9	3 3	7	575
3-22-S	22	30 $\frac{1}{2}$	25	18 $\frac{1}{4}$	60 $\frac{3}{8}$	3	8 $\frac{1}{2}$ x 12 $\frac{1}{2}$	9	3 3	7	600
1-25-S	25	33 $\frac{1}{4}$	25	18 $\frac{1}{4}$	52 $\frac{3}{8}$	3	8 $\frac{1}{2}$ x 12 $\frac{1}{2}$	10	3 3	8	625
2-25-S	25	33 $\frac{1}{4}$	25	18 $\frac{1}{4}$	56 $\frac{3}{8}$	3	8 $\frac{1}{2}$ x 12 $\frac{1}{2}$	10	3 3	8	725
3-25-S	25	33 $\frac{1}{4}$	25	18 $\frac{1}{4}$	60 $\frac{3}{8}$	3	8 $\frac{1}{2}$ x 12 $\frac{1}{2}$	10	3 3	8	750
1-28-S	28	36 $\frac{1}{4}$	26	18 $\frac{3}{8}$	54 $\frac{1}{4}$	4	9 $\frac{1}{2}$ x 15 $\frac{1}{2}$	11	3 4	9	850
2-28-S	28	36 $\frac{1}{4}$	26	18 $\frac{3}{8}$	59	4	9 $\frac{1}{2}$ x 15 $\frac{1}{2}$	11	3 4	9	950
3-28-S	28	36 $\frac{1}{4}$	26	18 $\frac{3}{8}$	63 $\frac{7}{8}$	4	9 $\frac{1}{2}$ x 15 $\frac{1}{2}$	11	3 4	9	1000
1-31-S	31	39 $\frac{1}{2}$	26	19	54 $\frac{3}{8}$	4	9 $\frac{1}{2}$ x 15 $\frac{1}{2}$	12	3 4	9	1100
2-31-S	31	39 $\frac{1}{2}$	26	19	59 $\frac{5}{8}$	4	9 $\frac{1}{2}$ x 15 $\frac{1}{2}$	12	3 4	9	1300
3-31-S	31	39 $\frac{1}{2}$	26	19	63 $\frac{7}{8}$	4	9 $\frac{1}{2}$ x 15 $\frac{1}{2}$	12	3 4	9	1350
1-34-S	34	44	26	19	54 $\frac{3}{8}$	5	9 $\frac{1}{2}$ x 15 $\frac{1}{2}$	13	3 5	10	1300
1-34-S	34	44	26	19	59 $\frac{5}{8}$	5	9 $\frac{1}{2}$ x 15 $\frac{1}{2}$	13	3 5	10	1550
3-34-S	34	44	26	19	63 $\frac{7}{8}$	5	9 $\frac{1}{2}$ x 15 $\frac{1}{2}$	13	3 5	10	1650

WATER BOILERS

No.	Size of Grate, Inches	Diameter of Base, Inches	Depth of Fire-Pot, Inches	Depth of Coal Carrying Cap., In.	Height to top of Outlet, Inches	Number and Size of Out- lets, Inches	Size of Fire-Door, Inches	Diameter of Smoke- Pipe, Inches	Number and Size of Inlets, Inches	Size of Center Column, Inches	Direct Radiation, Sq. Ft.
1-16-W	16	25	24	17 $\frac{1}{4}$	45 $\frac{5}{8}$	3 2	8 $\frac{1}{2}$ x 10 $\frac{7}{8}$	7	3 2	5 $\frac{1}{2}$	400
2-16-W	16	25	24	17 $\frac{1}{4}$	50	3 2	8 $\frac{1}{2}$ x 10 $\frac{7}{8}$	7	3 2	5 $\frac{1}{2}$	450
3-16-W	16	25	24	17 $\frac{1}{4}$	54	3 2	8 $\frac{1}{2}$ x 10 $\frac{7}{8}$	7	3 2	5 $\frac{1}{2}$	500
1-19-W	19	27 $\frac{3}{16}$	24	17 $\frac{1}{4}$	45 $\frac{7}{8}$	3 2 $\frac{1}{2}$	8 $\frac{1}{2}$ x 10 $\frac{7}{8}$	8	3 2 $\frac{1}{2}$	5 $\frac{1}{2}$	525
2-19-W	19	27 $\frac{3}{16}$	24	17 $\frac{1}{4}$	50 $\frac{1}{4}$	3 2 $\frac{1}{2}$	8 $\frac{1}{2}$ x 10 $\frac{7}{8}$	8	3 2 $\frac{1}{2}$	5 $\frac{1}{2}$	600
3-19-W	19	27 $\frac{3}{16}$	24	17 $\frac{1}{4}$	54 $\frac{1}{4}$	3 2 $\frac{1}{2}$	8 $\frac{1}{2}$ x 10 $\frac{7}{8}$	8	3 2 $\frac{1}{2}$	5 $\frac{1}{2}$	650
1-22-W	22	30 $\frac{1}{2}$	25	18 $\frac{1}{4}$	48 $\frac{1}{2}$	3 3	8 $\frac{1}{2}$ x 12 $\frac{1}{2}$	9	3 3	7	775
2-22-W	22	30 $\frac{1}{2}$	25	18 $\frac{1}{4}$	52 $\frac{3}{8}$	3 3	8 $\frac{1}{2}$ x 12 $\frac{1}{2}$	9	3 3	7	950
3-22-W	22	30 $\frac{1}{2}$	25	18 $\frac{1}{4}$	56 $\frac{1}{2}$	3 3	8 $\frac{1}{2}$ x 12 $\frac{1}{2}$	9	3 3	7	1000
1-25-W	25	33 $\frac{1}{4}$	25	18 $\frac{1}{4}$	48 $\frac{1}{4}$	3 3	8 $\frac{1}{2}$ x 12 $\frac{1}{2}$	10	3 3	8	1025
2-25-W	25	33 $\frac{1}{4}$	25	18 $\frac{1}{4}$	52 $\frac{3}{8}$	3 3	8 $\frac{1}{2}$ x 12 $\frac{1}{2}$	10	3 3	8	1200
3-25-W	25	33 $\frac{1}{4}$	25	18 $\frac{1}{4}$	56 $\frac{1}{4}$	3 3	8 $\frac{1}{2}$ x 12 $\frac{1}{2}$	10	3 3	8	1250
1-28-W	28	36 $\frac{1}{4}$	26	18 $\frac{3}{8}$	50 $\frac{1}{4}$	3 4	9 $\frac{1}{2}$ x 15 $\frac{1}{2}$	11	3 4	9	1400
2-28-W	28	36 $\frac{1}{4}$	26	18 $\frac{3}{8}$	54 $\frac{1}{4}$	3 4	9 $\frac{1}{2}$ x 15 $\frac{1}{2}$	11	3 4	9	1550
3-28-W	28	36 $\frac{1}{4}$	26	18 $\frac{3}{8}$	59 $\frac{1}{2}$	3 4	9 $\frac{1}{2}$ x 15 $\frac{1}{2}$	11	3 4	9	1650
1-31-W	31	39 $\frac{1}{2}$	26	19	51 $\frac{1}{4}$	3 4	9 $\frac{1}{2}$ x 15 $\frac{1}{2}$	12	3 4	9	1800
2-31-W	31	39 $\frac{1}{2}$	26	19	55 $\frac{3}{8}$	3 4	9 $\frac{1}{2}$ x 15 $\frac{1}{2}$	12	3 4	9	2150
3-31-W	31	39 $\frac{1}{2}$	26	19	60 $\frac{1}{4}$	3 4	9 $\frac{1}{2}$ x 15 $\frac{1}{2}$	12	3 4	9	2225
1-34-W	34	44	26	19	51 $\frac{3}{8}$	3 5	9 $\frac{1}{2}$ x 15 $\frac{1}{2}$	13	3 5	10	2150
2-34-W	34	44	26	19	56	3 5	9 $\frac{1}{2}$ x 15 $\frac{1}{2}$	13	3 5	10	2550
3-34-W	34	44	26	19	60 $\frac{3}{8}$	3 5	9 $\frac{1}{2}$ x 15 $\frac{1}{2}$	13	3 5	10	2725

CATALOGUE.

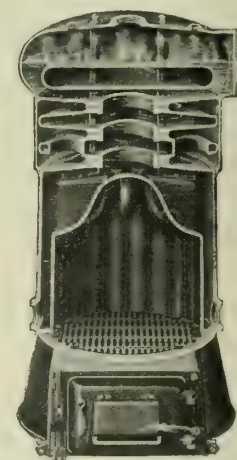
Catalogue, fully illustrated, and completely describing
"Mueller" Boilers, sent on application.



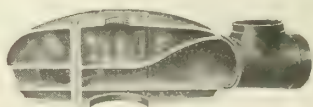
STEAM BOILER



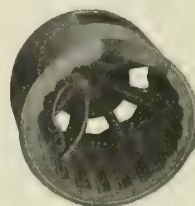
WATER BOILER



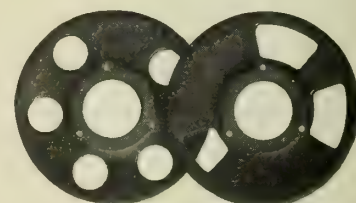
**SECTIONAL ILLUS-
TRATION OF
STEAM BOILER**



**SECTIONAL ILLUS-
TRATION
OF DOUBLE DOME**



**CORRUGATED
FIRE-BOX**



INTERMEDIATE SECTIONS

SHIRLEY RADIATOR AND FOUNDRY CO.

MANUFACTURERS OF

Boilers, Radiators, Tank Heaters, etc.

Indiana Trust Building
INDIANAPOLIS, IND.

PLANT
SHIRLEY, IND.

PRODUCTS.

A complete line of STEAM and HOT-WATER BOILERS—HEAVY-DUTY, SECTIONAL, and ROUND; TANK HEATERS and LAUNDRY STOVES; STEAM and HOT-WATER RADIATORS—DIRECT RADIATION, INDIRECT RADIATION, DIRECT-INDIRECT RADIATION, and WALL RADIATION. Floor Radiators made in one, two, three, four and five columns, a complete line, PLAIN and ORNAMENTAL.

"SHIRLEY" BOILERS.

The "Shirley" Boilers are honestly rated. They are easy to install, easy to operate, need but little attention and require the minimum of fuel, saving coal and time.

ADVANTAGES.

Among the salient features of "Shirley" Radiators may be mentioned the uniformity in design running through each complete line of ornamental radiators, the completeness of our line of plain radiators, the cleanliness and smoothness (inside and outside) of our castings, and the increased air-space obtained in our products, greatly increasing their efficiency. The elegance of decoration of our ornamental radiators also makes them greatly advantageous over other similar goods.



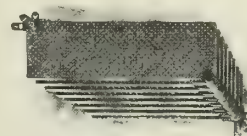
SHIRLEY DINING-
ROOM RADIATOR,
WITH OVEN



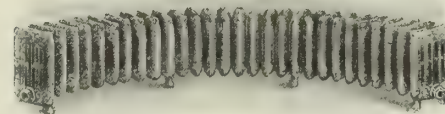
LOW WINDOW RADIATOR



ONE-COLUMN
RADIATOR



SHIRLEY PIN INDIRECT
RADIATOR
12 and 20 foot sections



CORNER, CURVED, AND COLUMN
RADIATORS
Made in all sizes

SIZES, DIMENSIONS, RATING.

LOW WINDOW RADIATOR

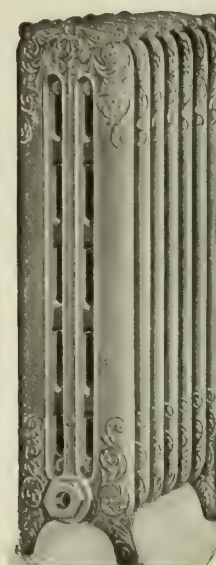
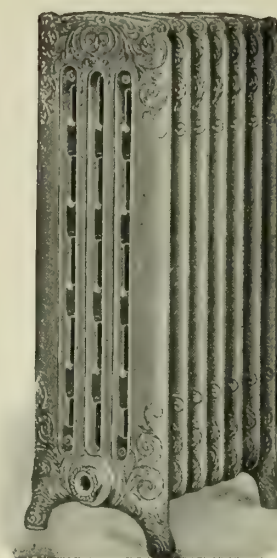
Number of Sections	Length, inches	HEATING SURFACE, SQUARE FEET			
		20 inches high, 5 sq. ft. per section	18 inches high, 4 1/2 sq. ft. per section	16 inches high, 4 sq. ft. per section	14 inches high, 3 1/2 sq. ft. per section
2	6	10	9	8	7
3	9	15	13 1/2	12	10 1/2
4	12	20	18	16	14
5	15	25	22 1/2	20	17 1/2
6	18	30	27	24	21
7	21	35	31 1/2	28	24 1/2
8	24	40	36	32	28
9	27	45	40 1/2	36	31 1/2
10	30	50	45	40	35

In estimating length of radiator allow 1/2 inch for each bushing

ONE-COLUMN RADIATOR

Number of Sections	Length, inches	HEATING SURFACE, SQUARE FEET			
		38 inches high, 3 sq. ft. per section	32 inches high, 2 1/2 sq. ft. per section	26 inches high, 2 sq. ft. per section	20 inches high, 1 1/2 sq. ft. per section
2	5	6	5	4	3
3	7 1/2	9	7 1/2	6	4 1/2
4	10	12	10	8	6
5	12 1/2	15	12 1/2	10	7 1/2
6	15	18	15	12	9
7	17 1/2	21	17 1/2	14	10 1/2
8	20	24	20	16	12
9	22 1/2	27	22 1/2	18	13 1/2
10	25	30	25	20	15

In estimating length of radiator allow 1/2 inch for each bushing

TWO-COLUMN
RADIATORTHREE-COLUMN DIRECT-INDIRECT
RADIATOR, WITH BOX BASETHREE-COLUMN
RADIATORFOUR-COLUMN
RADIATOR

TWO-COLUMN RADIATOR

Number of Sections	Length, inches	HEATING SURFACE					
		45 in. high, 5 sq. ft. per section	38 in. high, 4 sq. ft. per section	32 in. high, 3 1/2 sq. ft. per section	26 in. high, 2 3/4 sq. ft. per section	23 in. high, 2 1/2 sq. ft. per section	20 in. high, 2 sq. ft. per section
2	5	10	8	6 3/4	5 1/4	4 3/4	4
3	7 1/2	15	12	10	8	7	6
4	10	20	16	13 1/4	10 3/4	9 1/4	8
5	12 1/2	25	20	16 3/4	13 1/4	11 3/4	10
6	15	30	24	20	16	14	12
7	17 1/2	35	28	23 1/4	18 3/4	16 3/4	14
8	20	40	32	26 3/4	21 3/4	18 3/4	16
9	22 1/2	45	36	30	24	21	18
10	25	50	40	33 1/4	26 3/4	23 1/4	20

THREE-COLUMN RADIATOR

Number of Sections	Length, inches	HEATING SURFACE				
		44 in. high, 6 1/2 sq. ft. per section	38 in. high, 5 1/2 sq. ft. per section	32 in. high, 4 1/2 sq. ft. per section	26 in. high, 3 3/4 sq. ft. per section	20 in. high, 2 3/4 sq. ft. per section
2	5	13	11	9	7 1/2	5 1/2
3	7 1/2	19 1/2	16 1/2	13 1/2	11 1/4	8 1/4
4	10	26	22	18	15	11
5	12 1/2	32 1/2	27 1/2	22 1/2	18 3/4	13 3/4
6	15	39	33	27	22 1/2	16 1/2
7	17 1/2	45 1/2	38 1/2	31 1/2	26 1/4	19 1/4
8	20	52	44	36	30	22
9	22 1/2	58 1/2	49 1/2	40 1/2	33 3/4	24 3/4
10	25	65	55	45	37 1/2	27 1/2

In estimating length of radiator, allow 1/2 inch for each bushing

THREE-COLUMN RADIATOR, BOX BASE

Sections	Width, inches	Height, inches	Length, inches	Number of Sections	* Length, 2 1/2 in. per section	HEATING SURFACE—SQUARE FEET					
						44 in. high, 9 sq. ft. per sec.	38 in. high, 8 sq. ft. per sec.	32 in. high, 6 1/2 sq. ft. per sec.	26 in. high, 5 1/2 sq. ft. per sec.	22 in. high, 4 sq. ft. per sec.	20 in. high, 3 1/2 sq. ft. per sec.
4	9 1/2	4 1/4	4 3/4	2	5	18	16	13 1/4	10 3/4	8	7
5	9 1/2	4 1/4	5 1/4	3	7 1/2	27	24	20	16	12	10 1/2
6	9 1/2	4 1/4	6 1/4	4	10	36	32	26 3/4	21 3/4	16	14
7	9 1/2	4 1/4	7 1/4	5	12 1/2	45	40	33 1/4	26 3/4	20	17 1/2
8	9 1/2	4 1/4	8 1/4	6	15	54	48	40	32	24	21
9	9 1/2	4 1/4	9 1/4	7	17 1/2	63	56	46 3/4	37 1/4	28	24 1/2
10	9 1/2	4 1/4	10 1/4	8	20	72	64	53 1/4	42 3/4	32	28
11	9 1/2	4 1/4	11 1/4	9	22 1/2	81	72	60	48	36	31 1/2
12	9 1/2	4 1/4	12 1/4	10	25	90	80	66 3/4	53 1/4	40	35

FOUR-COLUMN RADIATOR

The bottom of back-air inlet opening is 1/2 inch above floor level

* In estimating length of radiator, allow 1/2 inch for each bushing

SPECIAL
RADIATION.

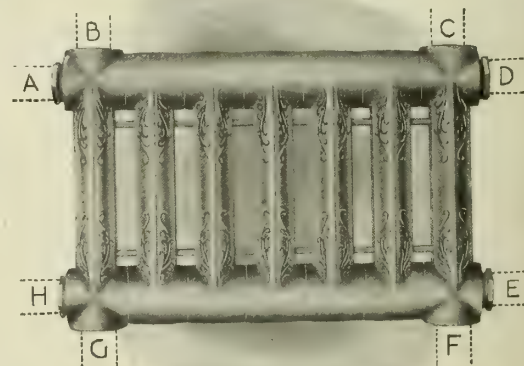
We make Special Radiators to detail, as may be required by architects for unusual situations.

The illustration of the wall radiator shows seven one-foot sections assembled, and the end view of a single section. The lettered pipes show at how many different places piping can be connected.

Each section is 14 1/4 inches high, 3 inches wide, and 3-inch centers, and contains one square foot of heating surface. Can be assembled in units of any size, and units may be connected either horizontally or vertically by means of hexagon center right-and-left screw nipples. Openings A, D, E and H are tapped 1 1/2 inch and either bushed or plugged as desired; B, C, F and G tapped only on order.



Single Section



Elevation

WALL RADIATOR

Made in any size unit desired

WALL
RADIATORS.

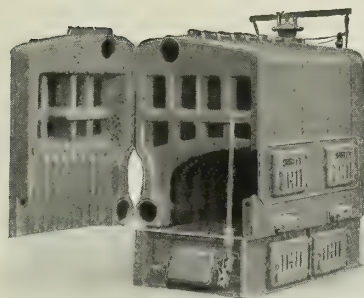
The adoption of the wall radiation has found great favor during recent years. Our complete line of wall radiators enables us to meet the fast increasing demands. "Shirley" Wall Radiation can be assembled in any size units desired.

UTILITY.

"Shirley" Boilers and Radiators are suitable for all classes of buildings, and there are no special requirements that may not be met by the use of our goods.

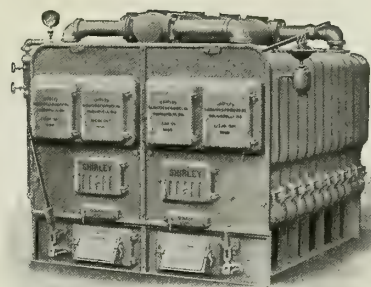
TESTS.

These goods are subjected to a hydrostatic pressure test of 80 pounds per square inch, and are given a rigid inspection of all details before shipment is made.



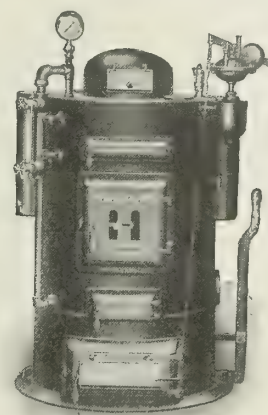
"SHIRLEY" SQUARE SECTIONAL
BOILER

Capacity: Steam, 700 to 2500 sq. ft.;
Water, 1175 to 4100 sq. ft.



"SHIRLEY" HEAVY-DUTY BOILER

Capacity: Steam, 3000 to 8500 sq. ft.;
Water, 5000 to 14025 sq. ft.



"SHIRLEY" ROUND
BOILER

Capacity: Steam, 400 to 800
sq. ft.; Water, 600 to
1250 sq. ft.



"SHIRLEY" TANK HEATER



"SHIRLEY" LAUNDRY STOVE

PRICE-LIST OF "SHIRLEY" TANK HEATERS

Number	Height, inches	Diameter Heater, inches	Diameter Grate, inches	Outlet, inches	Size Smoke Pipe, inches	Tank Capacity, gallons	Price Complete
9	26	18	10	1 1/4	6	80	\$33.60
10	32	18	10	1 1/4	6	100	36.60
12	32	18	12	1 1/2	6	150	44.25
14	36	23	14	2	6	250	54.30

When soft coal is used for fuel, a size larger heater is required than when hard coal is used

PRICE-LIST OF "SHIRLEY" LAUNDRY STOVES

Number	Height, inches	Size Top, inches	Diameter Base, inches	Diameter Grate, inches	Outlet, inches	Size Smoke Pipe, inches	Tank Capacity, Gallons	Price Complete
110	26	18 x 24 1/2	18	10	1 1/4	6	80	\$38.70
210	32	18 x 24 1/2	18	10	1 1/4	6	100	38.70
212	32	18 x 24 1/2	18	12	1 1/2	6	150	46.35

FACILITIES.

We have manufacturing facilities that enable us to promptly fill orders of any size in the United States or Canada.

CO-OPERATIVE
SERVICE.

Special information and suggestions will gladly be furnished architects and heating engineers on application.

GUARANTEE.

We guarantee our goods to the architect and heating engineer direct, as well as to the trade.

NATIONAL VACUUM HEATING COMPANY

MANUFACTURERS OF

The "Dunham" System of Heating MARSHALLTOWN, IOWA

FORT WORTH, TEX.
Box 462

CHICAGO, ILL.
503 FISHER BUILDING

SELLING REPRESENTATIVES

L. B. MELLOR, 18 South Seventh Street, Philadelphia, Pa.

IRA WATTS, 506 Hyde Block, Spokane, Wash.

AARON MILLER, 210 South Pitcher Street, Kalamazoo, Mich.

PRODUCTS.

VACUO-VAPOR SYSTEM—the "DUNHAM" VAPOR SYSTEM and VACUUM SYSTEM of STEAM HEATING—"DUNHAM" RADIATOR TRAPS and "DUNHAM" AUTOMATIC VACUUM AIR-VALVES.

"DUNHAM"
VACUO-VAPOR
SYSTEM OF
STEAM
HEATING.

The "Dunham" Vacuo-Vapor System is designed especially for use in residences, apartment houses, office buildings and installations where steam is required for heating purposes only. It is entirely automatic in operation which is as follows: Fire being started, the steam passes through the system, driving the air through the radiator trap and returns into receiver "D" (Fig. 1) and escapes through the air valve "A." Condensation following is precipitated into "D" and held until sufficient to cause the water-line to drop below the equalizing tube "C." Steam then passes through bell "C" over the loop into the tank "D," thus equalizing the pressure with that in the boiler, causing the water to drop back to the boiler by gravity, thus raising the water-line and sealing tube "C."

The steam trapped in tank "D" condenses, forming a vacuum which draws upon the ends of the returns, quickly emptying them of accumulated water and air, and the operation is repeated. The vacuum gradually increases until the system is freed of air, operating for hours at a time below atmospheric pressure. (See Chart, Fig. 2.)

ADVANTAGES.

The Vacuo-Vapor System is always under perfect control, operates noiselessly and without waste, and perfect temperature regulation is maintained by partially throttling the inlet valve to the radiator. The entire system can be warmed in thirty minutes, starting fire in a cold boiler.

"DUNHAM"
RADIATOR
TRAP.

This trap (Fig. 3) is used on the return end of each radiator, preventing the passage of steam into the return pipe without retarding the passage of water or air. Its action is positive and quick and it has no joints or sliding contacts. The trap

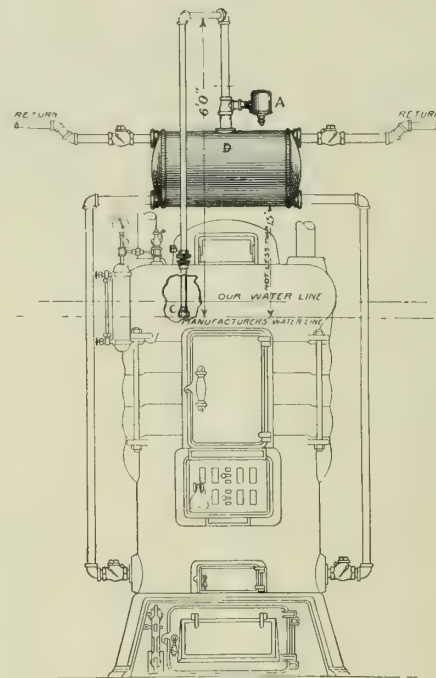


FIG. 1. BOILER AND FITTINGS

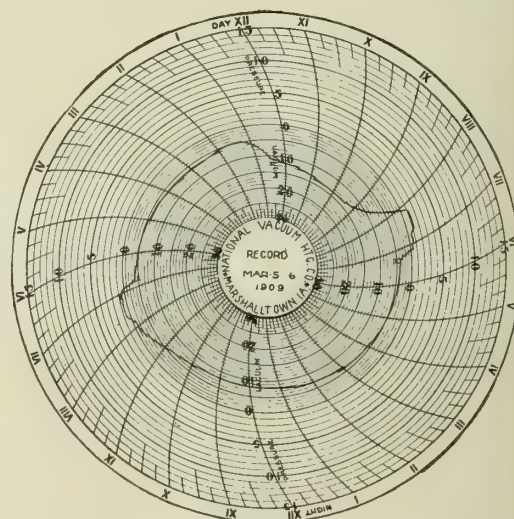


FIG. 2. PRESSURE AND VACUUM CHART

measures four inches from end to center. The body is bronze and at its base is a $\frac{5}{16}$ " valve opening. A corrugated disc is securely fixed to the cap containing a combination of fluids which operate the valve at varying pressures and temperatures due to the vaporization of the fluid into gas pressure. The trap remains open when cold. It can not freeze as there is no water seal. Air, water, oil, and foreign matter pass through readily but steam closes the valve the instant it comes in contact with the disc, holding back the steam until the heat is given up, then opening to prevent the escape of the condensation formed.

"DUNHAM"
AUTOMATIC
VACUUM
AIR-VALVE.

This valve is the result of years of experimental work and operates as follows: Exhaust air from the heating systems enters the valve through opening at side of base, passes around corrugated disc through opening in base of float chamber, around the float and out of the two port-holes on either side of projection on top of valve body. Should water enter the valve it would follow the same course until it entered the float chamber, which would cause the float to rise, causing the valve in top of float to close against its seat, preventing the water's escape. Steam entering the valve comes in immediate contact with the disc anchored in base of lower chamber, causes it to expand and thus closing the valve opening connecting the disc chamber with the float chamber. If this valve should be open and a vacuum begin to form, the air would rush into the tube at the top, into the interior of vacuum disc, expanding it and thus closing the system against the entrance of air from the outside.

ENGINEER-
ING SERVICES.

As Heating and Ventilating Engineers we are prepared at all times to handle propositions, regardless of magnitude.

PRICES.

Prices on this apparatus will compare favorably with others of the same class, and the Company will be pleased to take up this matter with prospective clients.

REFERENCES.

We would be glad to furnish references to parties interested. The cut of the Paulson Building, Spokane, Wash., shows the class of work furnished by us. This building is equipped with the "Dunham" Vacuum System of Heating.

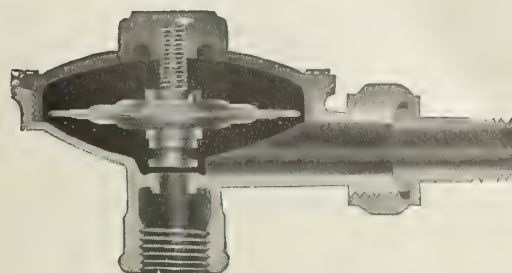


FIG. 3. "DUNHAM" RADIATOR TRAP

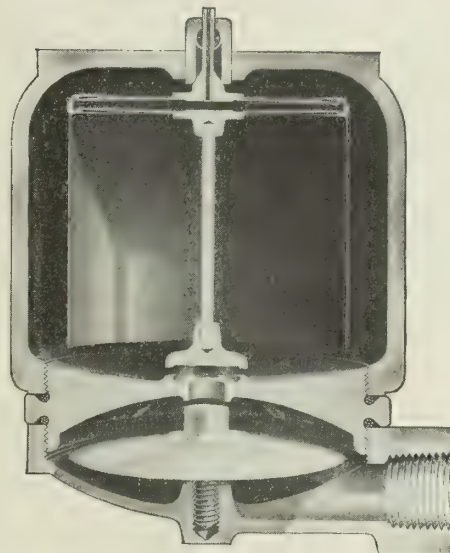


FIG. 4. "DUNHAM" AUTOMATIC
VACUUM AIR-VALVE



FIG. 5. PAULSON BUILDING, SPOKANE, WASH.
Equipped with the "Dunham" Vacuum System of Heating

THE POWERS REGULATOR CO.

MANUFACTURERS OF

Automatic Temperature-Controlling Apparatus

40 Dearborn Street
CHICAGO, ILL.

111 Fifth Avenue
NEW YORK, N. Y.

BRANCH OFFICES

CINCINNATI, OHIO, 45 Wiggins Block
DETROIT, MICH., 713 Washington Arcade
BOSTON, MASS., 220 Congress Street

PHILADELPHIA, PA., 1716 Sansom Street
KANSAS CITY, MO., 618 Dwight Building
WINNIPEG, CAN., Travellers Building

PRODUCTS.

We are manufacturers of AUTOMATIC HEAT REGULATORS for House-Heating Boilers and Furnaces; REGULATORS for Hot-Water Tanks and Heaters; HEAT-REGULATING SYSTEMS for Schools, Public Institutions, Office Buildings; TEMPERATURE-CONTROLLING APPARATUS, and THERMOSTATS.

SERVICES.

We are Contracting Engineers for the installation of the Heat-Regulating Apparatus that we manufacture.

EXPLANATION.

Our Temperature-Controlling Specialties are divided into two classes—those we sell to the trade, allowing them to make the installations, and those which we contract for and install ourselves. The former class includes regulators for house-heating boilers and furnaces, also regulators for hot-water tanks. These devices are simple in construction and can be readily installed by any mechanic who will follow the instructions which always accompany them.

The other class of apparatus comprises our Systems of Automatic Temperature Control, also termed Individual Room Regulation. Such systems are usually of some magnitude and should always be installed by experienced workmen. We maintain a construction force covering all parts of the United States and Canada for the purpose of installing this form of apparatus. These systems of temperature control are applied to large residences, schools, public buildings, etc.

REGULATORS
FOR HOUSE-
HEATING
BOILERS AND
FURNACES.

These regulators are simple, absolutely automatic, easily installed, and very durable. They are well known among the heating trade in all parts of the country and can be installed by any mechanic. They are non-electric, having no batteries to fail, no clockwork or spring motors to be periodically wound up. The regulator is a great benefit to any house-heating boiler or furnace, affording as it does a general control of the heating plant, regulating it more closely than can be done by hand, and saving from fifteen to twenty-five per cent of the fuel.



FIG. 1. THERMOSTAT

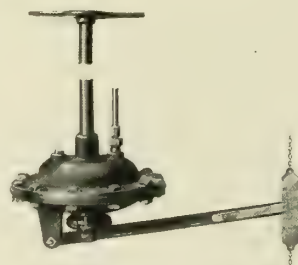


FIG. 2. DIAPHRAGM MOTOR



FIG. 3. NATURAL-GAS VALVE

The Thermostat (Fig. 1), centrally located in one of the principal living rooms, is connected by means of a small lead tube with the diaphragm motor (Fig. 2) which is located at the heater and connected to the draft and check dampers. The adjusting plate at the end of the lever provides a means for setting the apparatus to carry any desired

temperature. The gas valve (Fig. 3) is used where natural gas is burned for fuel, the diaphragm motor in such cases being connected to this valve instead of to the draft dampers. This regulator sells for about \$50, put in complete.

SPECIFICATION.

To specify, write as follows:

"Furnish and install in connection with this heating apparatus a Powers Regulator complete with thermostat and special check damper for smoke-pipe."

THE POWERS REGULATOR NO. 6, FOR RESIDENCES OF THE BETTER CLASS.

This regulator is extremely accurate and powerful; is adjustable at the thermostat by means of a key, and is applicable to any kind of residence heating apparatus.

The pneumatic thermostat (Fig. 4) used with this regulator is a very handsome instrument finished in electroplate and operated by compressed air, this compressed air being supplied by a small air pump connected to the city water pipe in basement. This pump is self-regulating, operating only as the thermostat requires air, and using a negligible quantity of water. A small lead tube delivers the compressed air to the thermostat and from it to a diaphragm motor (Fig. 2) at the heater, this motor being connected to the draft or check dampers. The tubing is easily put in place and concealed from view.

By means of our special gas valve (Fig. 3) this regulator can be applied to those heaters which burn natural gas for fuel.

By means of the diaphragm valve (Fig. 5) this regulator can be adapted to the control of steam or hot water when the building is heated from a street system, the valve controlling automatically the admission of steam or hot water to the building.

The Powers Regulator No. 6 is a very high-grade specialty, designed for those who want the best. It costs about \$100 put up complete.

SPECIFICATION.

To specify, write as follows:

"Furnish and install a No. 6 Powers Regulator complete with all attachments necessary to the control of this heating apparatus."

THE POWERS REGULATORS FOR HOT-WATER TANKS.

These regulators are most excellent machines for the automatic control of the hot-water supply in buildings of all classes. If the water is heated by a coal or gas burning heater the No. 1 Regulator should be used (Fig. 6). It costs about \$40 put up complete. If, however, the tank is heated by a steam coil, the No. 9 Regulator should be used (Fig. 7). This costs, installed complete, \$70 and upwards, depending upon the size of the steam valve.

These regulators are very reliable in their operation, and will absolutely prevent overheating of the hot-water supply, with its consequent waste of fuel and damage to plumbing.

SPECIFICATION.

To specify, write as follows:

"Furnish and install in connection with this hot-water tank a Powers Regulator adjusted to keep the water at a constant temperature."

The specialties described in the foregoing have been before the public for the past fifteen years, and have a reputation for durability and effectiveness that is equaled by no other device of the kind. The heating trade, with few exceptions, is well acquainted with and competent to install these regulators, so that architects may specify them freely with advantage to their clients.

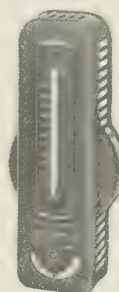


FIG. 4
PNEUMATIC
THERMOSTAT



FIG. 5
DIAPHRAGM
VALVE



FIG. 6. NO. 1 REGULATOR
APPLIED TO HEATER

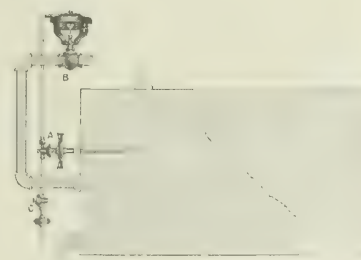


FIG. 7. NO. 9 REGULATOR
APPLIED TO TANK

INDIVIDUAL
ROOM CON-
TROL, DIRECT
RADIATION.

The systems of individual room control for steam or hot-water heating apparatus are applicable to all classes of buildings, from the residence of moderate size to the largest office buildings. Such systems are invariably installed by ourselves, and comprise a suitable apparatus located in the basement of the building for the generation of a supply of compressed air. This air being the motive power for the system is distributed throughout the building by concealed tubes and delivered to the thermostats. Each room to be controlled is supplied with one of these thermostats (Fig. 8) connected by air tube with the diaphragm valves on the radiators in that room. The thermostat is adjustable by means of a key and may be set for a certain desired temperature. The radiator valves under its control will open and close as the temperature varies from the desired point, the result being a precise regulation of temperature without attention by the room occupants.

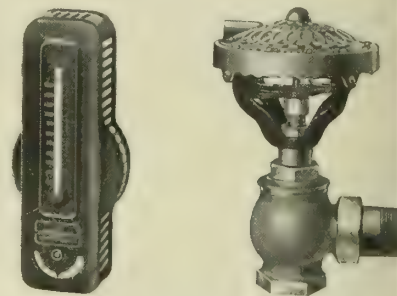


FIG. 8. THERMOSTAT AND DIAPHRAGM VALVE FOR RADIATORS

The cost of this system necessarily varies greatly, and heating plans for the building should be furnished us for estimating purposes. We have a large organization for the handling of this class of work. It extends throughout the United States and Canada and we are prepared to give prompt attention to those desiring our services.

SPECIFICA-
TION.

To specify, write as follows:

"Furnish and install in connection with this heating apparatus the Powers System of Temperature Control; the same to be installed and guaranteed by the manufacturers and arranged to control the following rooms * * *."

THE POWERS
SYSTEM OF
HEAT REGU-
LATION FOR
SCHOOLS AND
PUBLIC
INSTITUTIONS
HEATED BY
THE FAN
SYSTEM.

In buildings heated by the fan or blower system automatic temperature control is absolutely necessary, as the air is drawn into the building and forced through heating coils or furnaces to the rooms in such quantities that hand control is impossible.

In the Powers System of Heat Regulation for buildings thus heated each room is supplied with a thermostat that controls mixing dampers so arranged that they will properly mix the hot and cold air before it enters the room.

In Fig. 9, "A" is the thermostat which controls the compressed air generated at "F," and operates the diaphragm motor "B," which is connected to the mixing dampers "C," and holds them in such a position as will properly mix the hot and tempered air before it enters the room. It will also be noted in Fig. 9 that the cold air from out of doors is first drawn through tempering or preheating coils and warmed to a temperature not higher than 60 degrees. To prevent the overheating of this air, a thermostat, "D," is placed in the tempered air chamber, where it operates the by-pass damper "E" beneath the tempering coil.

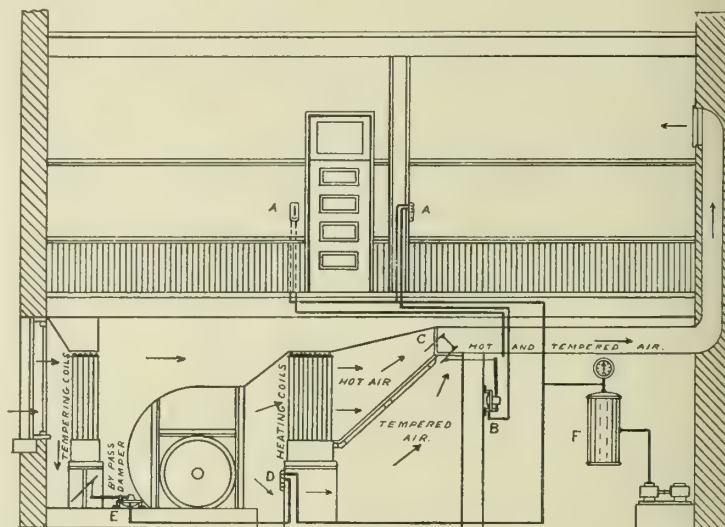


FIG. 9. TYPICAL ARRANGEMENT OF FAN-HEATING SYSTEM WITH POWERS REGULATION
(Elevation)

The arrangement of the thermostat, diaphragm and mixing dampers shown in Fig. 9 is repeated for as many rooms as are to be controlled; each room having its own thermostat, mixing dampers and heating duct. The compressed air from the reservoir "F" is supplied to all thermostats through a suitable arrangement of piping.

This system of heat regulation can be applied to any fan or blower system of heating, whether the heating coils form a unit or are divided and placed at the base of each flue. The only requirement is an arrangement that will permit the placing of the dampers or valves so that they will control individually the heat supply of the rooms.

SPECIFICA-
TION.

To specify, write as follows:

"Furnish and install in connection with this heating apparatus the Powers System of Heat Regulation, controlling all heated rooms."

SPECIAL
FEATURES
AND
ADVANTAGES.

The Powers Temperature-Controlling Appliances and Systems stand preeminent in the field by reason of their simplicity and durability. The thermostats are all constructed upon the well-known vapor disc principle which has now been used for the past fifteen years with the greatest success. They are powerful in their action and free from the fine air passages, delicate springs and complicated mechanisms which characterize other devices used in this class of work.

Great attention is paid by the manufacturers to design and finish of apparatus, and where installations are made in residences, club-houses, etc., the thermostats will be provided in special finishes to match the hardware or decorative scheme of the rooms in which they are located.

In the regulation of fan systems of heating the Powers Thermostats afford the true graduated control by which the dampers are held in absolute mixing positions coincident to the room temperatures. This does away entirely with the objectionable hot and cold drafts experienced when other means of temperature control are employed. The apparatus for controlling the mixing dampers gradually is covered broadly by patents owned by this Company, and infringers will be prosecuted.

INSTALLA-
TIONS.

Hundreds of schools, colleges, and similar buildings all over the country are equipped with the Powers System of Heat Regulation, and in all cases with the most gratifying results.

In addition to having construction centers in various parts of the country, we maintain a corps of inspectors who keep in touch with all of our installations, thus guaranteeing to the owners prompt attention when needed.

A WORD TO
ARCHITECTS
AND
ENGINEERS.

A system of heat regulation to be effective and desirable should be installed by workmen especially skilled in the art and operating under an organization of superintendents and inspectors trained in the work. The business is unique and unlike all other trades. No two buildings or heating systems are exactly alike, and the application of the temperature-controlling apparatus must be varied in almost every case to suit special conditions. The organization back of this work must be so large and varied in its resources as to be able to give special attention to every contract, and must be of such permanency as to insure the apparatus having such prompt and expert attention as it may need in the years following its installation.

While the appliances we manufacture are simple and durable in the extreme, the necessity for repairs at some time is inevitable and should be considered. A system out of order, with its promoters out of business, is most undesirable.

In addition to our large organization of skilled mechanics we have an engineering force especially skilled in planning and drafting specifications for work of this kind, and this force is always at the service of architects and engineers desirous of applying heat regulation to their work.

We have special catalogues of all our appliances, and are glad to send them out upon application.

SMITH & THAYER COMPANY

Manufacturers of Steam and Water Heaters

234-236 Congress Street

BOSTON, MASS.

BRANCH OFFICE

NEW YORK, N. Y., Fuller Building.

PRODUCTS.

We are manufacturers of "WINCHESTER," "AJAX" and "DRAGON" STEAM and HOT-WATER HEATERS.

The high standing of our products needs no special words of commendation on our part. As the prevailing conditions of competition necessitate the maintenance of prices on the part of all manufacturers on a practically level basis, it remains only for the manufacturer to claim an architect's consideration through the liberality and fairness with which he treats an architect's clients.

Our reputation for liberality of treatment in cases where the slightest question has arisen regarding the efficiency of our goods, is our strongest claim to an architect's consideration.

SIZES,
DIMENSIONS,
ETC."WINCHESTER"
HEATERS.
SERIES C."DRAGON"
HEATERS.

STEAM								
No.	238	240	242	244	246	248	250	252
Grate Dia. . .	15"	17"	19"	22"	25"	28"	31"	34"
Capacity . . .	200	300	400	550	700	900	1150	1450

HOT-WATER								
No.	239	241	243	245	247	249	251	253
Grate Dia. . .	15"	17"	19"	22"	25"	28"	31"	34"
Capacity . . .	325	500	650	900	1150	1475	1900	2450

STEAM								
No.	198E	200E	202E	204E	206E	208E	210E	212E
Grate Dia. . .	15"	17"	19"	22"	25"	28"	31"	34"
Capacity . . .	200	275	375	525	675	850	1100	1350

HOT-WATER								
No.	199D	201D	203D	205D	207D	209D	211D	213D
Grate Dia. . .	15"	17"	19"	22"	25"	28"	31"	34"
Capacity . . .	300	425	550	775	1000	1300	1600	2100

(Owing to the place at which smoke pipe is attached on our "Dragon" type, this heater is particularly adapted for low studded cellars, greenhouses, and work where a low heater is required.)

"WINCHESTER"
HEATERS.
SERIES A.

STEAM								
No.	4	8	12	16	20	24	28	34
Grate Dia. . .	17"	17"	19"	22"	25"	28"	31"	37"
Capacity . . .	225	275	350	500	650	825	1050	1750

HOT-WATER								
No.	3	5	9	17	21	25	29	35
Grate Dia. . .	17"	17"	19"	22"	25"	28"	31"	37"
Capacity . . .	375	450	575	825	1050	1350	1725	2850

SERIES B.

STEAM								
No.	100	114	118	122	126	132		
Grate Dia. . .	19"	22"	25"	28"	31"	37"		
Capacity . . .	300	425	550	725	950	1450		

HOT-WATER								
No.	107	115	119	123	127	133		
Grate Dia. . .	19"	22"	25"	28"	31"	37"		
Capacity . . .	475	700	900	1200	1550	2350		

"AJAX" SECTIONAL HEATERS

Steam—Table of Dimensions

Hot-Water—Table of Dimensions

Number	No. of Sections	No. of Outlets	Fire-Pot Areas	Diam. of Smoke-Pipe	Total Length, in.	Total Height, in.	Water Line, in.	Capacity	Price	Number	No. of Sections	No. of Outlets	Fire-Pot Areas	Diam. of Smoke-Pipe	Total Length, in.	Total Height, in.	Total Width, in.	Capacity	Price
130	4	2-3	19x18 1/4	8	21 1/4	46	38	300	\$114	131	4	2-3	19x18 1/4	8	21 1/4	42 1/2	27 1/2	500	\$106
132	5	2-3	19x24 1/2	8	27 1/2	46	38	425	147	133	5	2-3	19x24 1/2	8	27 1/2	42 1/2	27 1/2	700	140
134	6	2-3	19x30 1/4	8	33 1/4	46	38	550	172	135	6	2-3	19x30 1/4	8	33 1/4	42 1/2	27 1/2	900	164
136	7	2-3	19x37	8	40	46	38	675	212	137	7	2-3	19x37	8	40	42 1/2	27 1/2	1100	204
138	8	2-3	19x43 1/4	8	46 1/2	46	38	800	238	139	8	2-3	19x43 1/4	8	46 1/4	42 1/2	27 1/2	1300	230

THE "WINCHESTER" HEATER,
SHOWING ASBESTOS COVERING. SERIES ATHE "WINCHESTER"
HEATER. SERIES C

"AJAX" SECTIONAL HEATERS

Steam—Table of Dimensions

Hot-Water—Table of Dimensions

Number	No. of Sections	No. of Outlets	Area of Fire-Pot	Diam. Smoke Pipe, in.	Length, in.	Height, in.	Water Line	Capacity	Price
220	5	2-3	21 3/4 x 26 1/2	9	52 3/4	56 1/2	41	600	\$181.30
222	6	2-3	21 3/4 x 33	9	58 1/2	56 1/2	41	750	227.50
224	7	3-3	21 3/4 x 39 1/2	9	65	56 1/2	41	900	259.02
230	5	2-4	30 x 31	11	59	65	48	1100	301.02
232	6	2-4	30 x 38 3/4	11	67	65	48	1350	353.52
234	7	3-4	30 x 46 1/2	11	74 1/2	65	48	1600	406.00
236	8	3-4	30 x 54 1/2	11	82	65	48	1850	458.50

Number	No. of Sections	No. of Outlets	Area of Fire-Pot	Diam. Smoke Pipe, in.	Length, in.	Width, in.	Height, in.	Capacity	Price
221	5	2-3	21 3/4 x 26 1/2	9	52 3/4	31	50	1000	\$174.32
223	6	2-3	21 3/4 x 33	9	58 1/2	31	50	1250	220.50
225	7	3-3	21 3/4 x 39 1/2	9	65	31	50	1500	252.00
231	5	2-4	30 x 31	11	59	40 1/2	58	1825	294.00
233	6	2-4	30 x 38 3/4	11	67	40 1/2	58	2225	346.50
235	7	3-4	30 x 46 1/2	11	74 1/2	40 1/2	58	2650	399.00
237	8	3-4	30 x 54 1/2	11	82	40 1/2	58	3050	451.52

"AJAX" SECTIONAL HEATERS

Steam—Table of Dimensions

Hot-Water—Table of Dimensions

Number	No. of Sections	No. of Outlets	Fire-Pot Areas	Diam. Smoke Pipe, in.	Total Length, in.	Total Height, in.	Water Line, in.	Capacity	Price
S-160	5	2-4	25x28	10	38	67 1/4	45	800	\$238
S-162	6	2-4	25x35	10	45	67 1/4	45	1000	280
S-164	7	3-4	25x42	10	52	67 1/4	45	1200	322
S-166	8	3-4	25x49	10	59	67 1/4	45	1400	364
S-190	5	2-4	34x32	12	42	75	52	1300	343
S-192	6	2-4	34x40	12	50	75	52	1625	410
S-194	7	3-4	34x48	12	58	75	52	1950	478
S-196	8	3-4	34x56	12	66	75	52	2275	546

Number	No. of Sections	No. of Outlets	Fire-Pot Areas	Diam. Smoke Pipe, in.	Total Length, in.	Total Height, in.	Total Width	Capacity	Price
H-161	5	2-4	25x28	10	38	52	36	1300	\$230
H-163	6	2-4	25x35	10	45	52	36	1650	273
H-165	7	3-4	25x42	10	52	52	36	2000	315
H-167	8	3-4	25x49	10	59	52	36	2350	357
H-191	5	2-4	34x32	12	42	75	53	2150	335
H-193	6	2-4	34x40	12	50	75	53	2675	404
H-195	7	3-4	34x48	12	58	75	53	3200	472
H-197	8	3-4	34x56	12	66	75	53	3725	532

Note.—These heaters are especially adapted for wood fuel.
Use a size larger heater when soft coal is used for fuel

Note.—These heaters are especially adapted for wood fuel

"AJAX" SECTIONAL HEATERS

Steam—Table of Dimensions

Hot-Water—Table of Dimensions

Number	No. of Sections	No. of Outlets	Fire-Pot Areas	Smoke Pipe	Length, in.	Water Line, in.	Capacity	Price
518	5	2-5	41x36	15	48	57	2100	\$ 510
520	6	2-5	41x45	15	57	57	2625	590
522	7	3-5	41x53	15	66	57	3150	672
524	8	3-5	41x63	15	75	57	3675	752
526	9	4-5	41x73	15	84	57	4200	832
480	6	2-6	50x53	21	64	70	4750	906
482	7	2-6	50x64	21	75	70	5700	1038
484	8	3-6	50x75	21	85	70	6650	1172
486	9	3-6	50x86	21	96	70	7600	1304
488	10	3-6	50x96	21	107	70	8550	1436

Number	No. of Sections	No. of Outlets	Fire-Pot Areas	Smoke Pipe	Total Height	Length, in.	Capacity	Price
519	5	2-5	41x36	15	70	48	3450	\$ 496
521	6	2-5	41x45	15	70	57	4325	576
523	7	3-5	41x54	15	70	66	5200	658
525	8	3-5	41x63	15	70	75	6050	738
527	9	4-5	41x73	15	70	84	6900	818
481	6	2-6	50x53	21	82	64	7825	892
483	7	2-6	50x64	21	82	75	9400	1024
485	8	3-6	50x75	21	82	85	10975	1158
487	9	3-6	50x86	21	82	96	12550	1290
489	10	3-6	50x96	21	82	107	14125	1424

COVERINGS.

An iron front for our Heaters will be furnished at a slight additional cost where owner desires to surround his boiler by brick work.

We recommend covering heaters with asbestos cement.

INSTALLATION.

Our goods are sold through and installed by the steam-fitting trade, as we ourselves do no work of installation.

FACILITIES, PRICES, ETC.

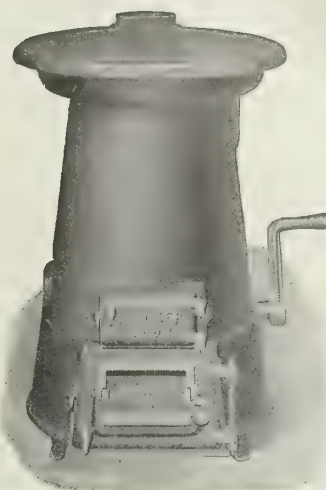
We carry a complete line of our Heaters in stock at Boston and New York, and can make shipment on short notice. Prices of our Heaters will be supplied on application.

RATINGS.

Our boilers are conservatively rated in accordance with the accepted standards, but on account of the varying conditions surrounding the installation of heaters, we guarantee our boilers only to the extent of replacing imperfections in their manufacture.

Ratings are based on all piping, mains, risers, flows and returns being figured as radiating surface in addition to the cast-iron direct radiation to be used.

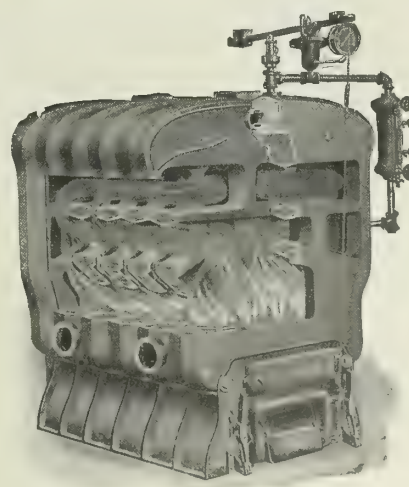
These ratings are based on standard two-pounds pressure at the boiler for steam, and a temperature of 180 degrees water at the boiler for hot water.



THE "WINCHESTER" DOMESTIC SUPPLY HEATER



THE "DRAGON" HEATER



"AJAX" SECTIONAL HEATER

JAMES SPEAR STOVE AND HEATING COMPANY

MANUFACTURERS OF

Ranges, Stoves, Heating Appliances, etc.

1014-1016 Market Street
PHILADELPHIA, PA.

PRODUCTS.

"SPEAR'S" HOTEL and FAMILY COOKING RANGES, "SPEAR'S" TWENTIETH CENTURY LAUNDRY STOVES, "SPEAR'S" NEW WARM-AIR DISTRIBUTOR, "SPEAR'S" ANTICLINKER DOUBLE and SINGLE DRUM WARM-AIR HEATERS, "SPEAR'S" SILVER MOON HEATERS, "SPEAR'S" AIR-TIGHT WOOD STOVES, "GOLDEN SUN" FIREPLACE HEATERS, "SPEAR'S" OPEN GRATES, BACKS and JAMBS, and LAUNDRY DRYERS.

In addition to our regular line of manufactured goods we are jobbers for STEAM and HOT-WATER BOILERS, RADIATORS, VALVES, etc.

COOKING RANGES.

All the castings in our Cooking Ranges are extra heavy and will stand hard usage. They do not require brick flues or a brick foundation; the draft regulator and construction of flues result in a saving of 50 per cent in fuel. These ranges have thermometers in oven doors, large water-back fitting around top of fire, Spear's Anticlinker Grate, and a special broiling arrangement to be used over the fire. Cooking may be done on any part of the range top without having the plates over the fire red hot.

SIZES.

Spear's New Cooking Range is made in the following sizes for family use. The length of the range is the extreme outside measurements and the heights given are the extreme heights. From the floor to the top plate of the range is about 31" of all except the Nos. 18 and 24, and these two sizes are 33". The hotel range can be made any length desired.

SINGLE-OVEN RANGES

No.	Ovens	Length	Depth	Height
7	12" x 17"	2' 9"	24"	4' 3"
8	15" x 20"	3' 2"	28"	4' 6½"
8	20" x 20"	3' 7"	28"	4' 6½"
18	18" x 22"	3' 8"	31"	4' 6½"
24	22" x 22"	4'	31"	4' 6½"

DOUBLE-OVEN RANGES

No.	Ovens	Length	Depth	Height
9/13	13" x 20"	4' 5"	28"	4' 6½"
9/25	15" x 20"	4' 9"	28"	4' 6½"
18	18" x 22"	5' 5"	31"	4' 6½"

The ranges are made in all sizes, single and double oven, from the small family range shown in Fig. 1 to the large hotel range shown in Fig. 2, which can be made with any number of fires and ovens desired, each separately regulated.



FIG. 1. SPEAR'S NEW COOKING RANGE, FAMILY SIZE

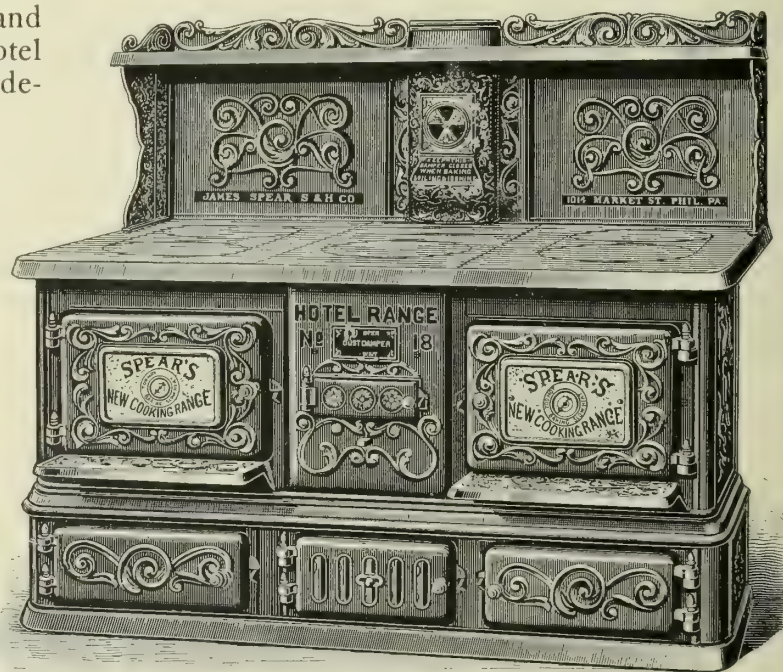


FIG. 2. SPEAR'S NEW HOTEL COOKING RANGE

SPEAR'S NEW
WARM-AIR
DISTRIBUTOR.

ECONOMICAL
IN THE CON-
SUMPTION
OF FUEL.
DIMENSIONS.

SPEAR'S
ANTICLINKER
STEEL-DRUM
WARM-AIR
HEATER.
SPEAR'S
TWENTIETH
CENTURY
LAUNDRY
STOVE.

In making Spear's New Warm-Air Distributor it has been our object to provide a large amount of heating surface capable of caring for an increased quantity of cold air, thereby insuring pleasant, healthful air, of a proper temperature, in sufficient volume to provide fully for all apartments connected to the apparatus.

Every part is made of the best iron and cast heavy, so as to stand severe use, with outside casing of galvanized iron.

Warm-air columns form the fire cylinder and combustion chamber, and three sides of these columns overhang the fire chamber, thus receiving the fullest force of the fire and at the same time allowing no places for the accumulation of soot or dust.

The height of this New Distributor is considerably less than the ordinary heater, thus allowing it to be placed in the cellar without providing a pit, and at the same time giving a very much better elevation to the pipes. This heater may be used in battery form by placing the two heaters together with one common dome or top, and may be used to heat the largest houses, city or country, churches or other public buildings.

No.	Fire-pot	Grate	Casing	Capacity
247	20"	19"	47"	Under 30,000 cu. ft.
253	24"	23"	53"	30— 55,000 cu. ft.
259	28"	27"	59"	50— 75,000 cu. ft.
265	31"	30"	65"	70—100,000 cu. ft.

This heater is made in portable form, or suitable to be set in brick casing. Made in six sizes and twelve styles.

We claim that this is the most perfect laundry stove ever invented.

Figs. 4 and 5 show two styles in which they are made. They can be fitted with water-back, or, where a large amount of hot water is used and return circulation system of plumbing, can be fitted with water-jacket, thus saving an additional hot-water stove.

These stoves are equipped with our improved damper and pipe collar, by which one can check the fire without cooling off the top plate of the stove. This retains all the heat in the stove without burning out the top rings, and saves one half of the fuel.

Prices	With Water- back	With Water- jacket
Style A, \$16.00	\$20.00	\$28.00
Style B, 18.00	22.00	30.00

Floor space required 22" square.

Our printed matter (mailed on application) gives full details of all products, together with prices, sizes, ratings, etc.

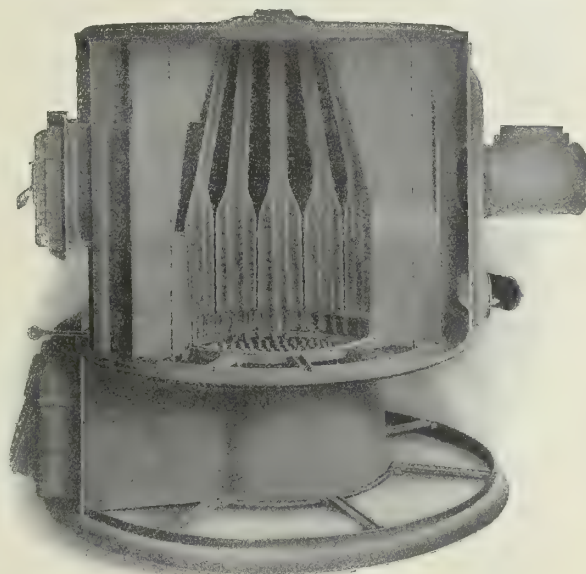


FIG. 3. SECTIONAL VIEW OF SPEAR'S NEW WARM-AIR DISTRIBUTOR



FIG. 4. SPEAR'S TWENTIETH CENTURY LAUNDRY STOVE STYLE "B"

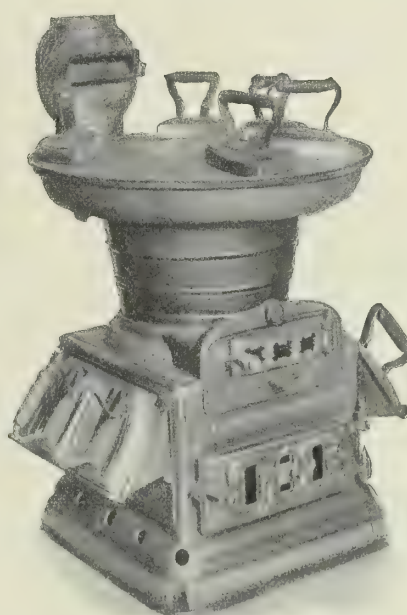


FIG. 5. SPEAR'S TWENTIETH CENTURY LAUNDRY STOVE STYLE "A"

PRICES, SIZES,
RATINGS, ETC.

B. F. STURTEVANT COMPANY

Heating and Ventilation

HYDE PARK, MASS.

BRANCH OFFICES

BOSTON, MASS., 34 Oliver Street
 NEW YORK, N. Y., 50 Church Street
 PHILADELPHIA, PA., 135 North Third Street
 CHICAGO, ILL., 281 South Clinton Street
 CLEVELAND, OHIO, 423 Schofield Building
 CINCINNATI, OHIO, 329 West Third Street
 MINNEAPOLIS, MINN., 707 Phoenix Building



TRADE-MARK

BRANCH OFFICES

PITTSBURG, PA., 711 Park Building
 ST. LOUIS, MO., 419 Fullerton Building
 BUFFALO, N. Y., 456 Norwood Avenue
 ROCHESTER, N. Y., 1108 Granite Building
 HARTFORD, CONN., 58 Capitol Avenue
 WASHINGTON, D. C., 701 Loan and Trust Building
 TORONTO, CAN., Polson Iron Works

PRODUCTS.

We design, manufacture and install HEATING and VENTILATING, DRYING and MECHANICAL-DRAFT APPARATUS; FUEL ECONOMIZERS; FANS and ROTARY BLOWERS and EXHAUSTERS; STEAM ENGINES and STEAM TURBINES; ELECTRIC MOTORS and GENERATORS; FORGES; EXHAUST HEADS; STEAM-TRAPS; DUST COLLECTORS.

SPECIAL SERVICE TO ARCHITECTS AND CONTRACTORS.

We have representatives within immediate calling distance of 90 per cent of all building operations in the country, and we can give you personal suggestions as to just what equipment will give best service in the building you are planning or erecting.

Avail yourselves of this service when you have any heating, ventilating or draft proposition to decide upon and you will save time and unnecessary work.

Write us at Hyde Park or any of our branches.

NOTE—We have representatives in smaller places than those mentioned in the heading.

HEATING APPARATUS.

In the "Sturtevant" Hot-Blast Apparatus (Fig. 1) the fan draws fresh out-door air between and around staggered set steam pipes enclosed in a steel plate casing and then forces this heated fresh air throughout the building as required. The advantages of the "Sturtevant" System are that you get air heated as efficiently as steam alone can do it, without any of the undesirable features of a regular steam system, as all the pipes in the "Sturtevant" System are in a steel casing in the basement and do not go above the ground floor. This means there are no cracking, freezing and leaking pipes or radiators in the rooms and no chance of fire starting from overheated pipes.

With this system you can send throughout a building a gentle, almost imperceptible flow of warm air or a blast of heated air that will warm up a cold church or theater in a short time.

This system is economical, as there are no long steam pipes to lose their heat in running to the radiators, and, in addition, if the fan is run by a steam engine the exhaust can be used to heat the pipes.

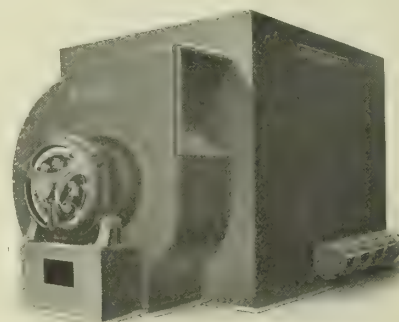


FIG. 1. "STURTEVANT" HOT-BLAST APPARATUS

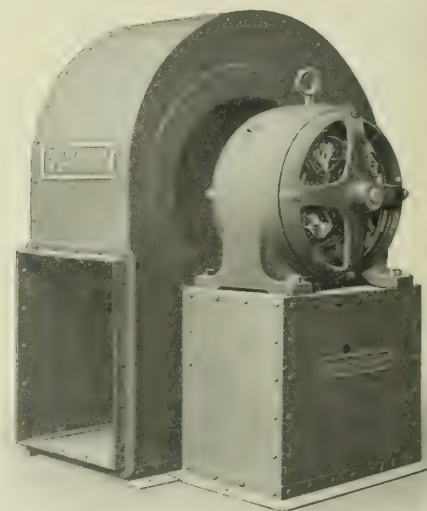


FIG. 2. "STURTEVANT" ELECTRIC-DRIVEN FAN

FANS DRIVEN
BY BELT,
STEAM
ENGINE,
STEAM
TURBINE,
ELECTRICITY.

Fans are driven by belt, steam engine (Fig. 3), steam turbine, and electricity (see Fig. 2). There is hardly a use for which we have not a type of fan that will do the work efficiently, and we make them in all sizes, from a portable set for dwellings to a fan for forcing fresh air down mine shafts, and also for drying, blowing and conveying purposes in manufacturing.

MECHANICAL
DRAFT.

The "Sturtevant" Mechanical Draft increases the draft in poor chimneys or dispenses with stacks altogether, or it can be used as an auxiliary when weather conditions make the stack draw poorly. We show how the equipment in connection with our Fuel Economizer saves fuel, increases the capacity of over-loaded boilers and permits the use of a cheaper coal than can be used with an ordinary chimney draft.

"STURTE-
VANT"
READY-TO-
RUN VENTI-
LATING SET.

This set (Fig. 4) was originated by us and is used for changing air in homes, offices, hotels, stores, etc. It runs from a plug in an electric light socket at a cost of from one to three cents per hour, and can be carried from room to room if desired. By its use basements and stuffy rooms can be made fresh and airy. Every up-to-date home or store needs this equipment. It can be used to exhaust foul air or to blow in fresh air.

Sets, from \$35.00 up. Send for special booklet.

ECONOMIZ-
ERS.

The "Sturtevant" Economizer (Fig. 5) uses the hot gases escaping through the chimney to heat the feed water for the boilers, thus utilizing heat energy usually wasted.

In the construction of the High-Pressure "Sturtevant" Economizers no gaskets are used, all joints being *metal-to-metal*. We guarantee the economizer tight up to 300 pounds working pressure. The staggered arrangement of pipes gives the greatest heat absorbing properties, and pipes and parts are so arranged that, if necessary, any one pipe or section can be removed without disturbing any other section. This system alone or in connection with our mechanical draft is most economical and dependable.

NOTES.

It is impossible to more than merely touch the leaders in our line. We want you to write us for special literature or personal call, letting us suggest the proper equipment for anything you may be figuring on. We design and build machinery for any requirement where air is to be blown or exhausted.

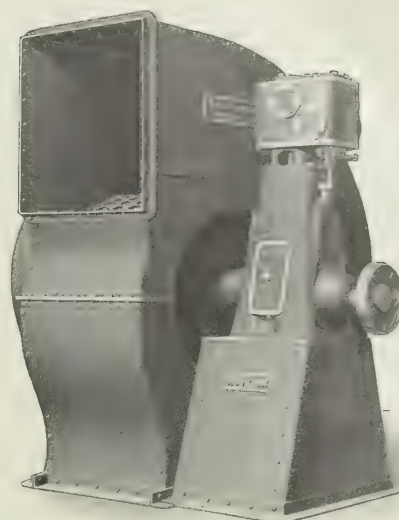


FIG. 3. "STURTEVANT" STEAM-DRIVEN BLOWER

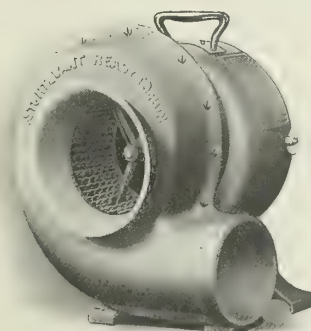


FIG. 4. "STURTEVANT" VENTILATING SET

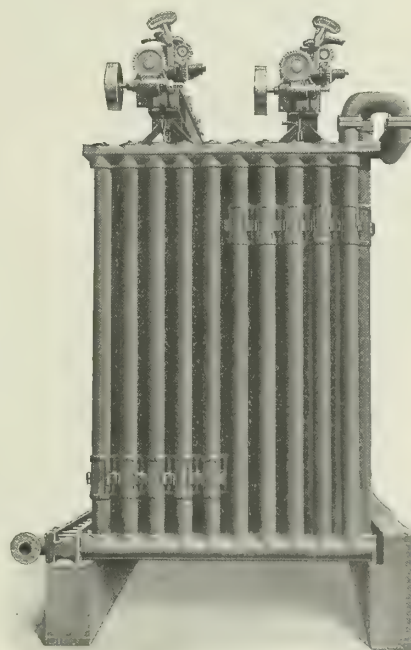


FIG. 5. "STURTEVANT" ECONOMIZER

TUTTLE & BAILEY MANUFACTURING COMPANY

Registers, Ventilators and Grilles

CHICAGO, ILL., 211 Lake Street
BOSTON, MASS., 71 Sudbury Street

NEW YORK, N. Y., 83 Beekman Street
BROOKLYN, N. Y., 83 North Tenth Street

PRODUCTS.

We manufacture REGISTERS, VENTILATORS and GRILLES of Stock Designs, in Brass, Bronze, Cast-Iron, Steel, or Wire. Also SPECIAL DESIGN GRILLES, TABLETS, and ORNAMENTAL BRONZES, for which see general index.

CAST REGISTERS.

We strongly recommend Cast-Iron or Cast-Bronze Registers as by far the best, especially for durability. Many Cast Registers made by us sixty years ago are still in use. We offer a complete line of designs, sizes and finishes.

SEMI-STEEL REGISTERS.

To secure the advantages of the Cast-Iron Face, i. e., ornamental design, large air capacity, strength and durability, with the light weight of the steel bottom, the Semi-Steel Register has been designed. All parts except the face are of wrought steel.

The patent roller movement, similar in principle to the ball bearing, is new. The valves open and close smoothly without any catch or hitch and when fully closed lock automatically. This self-locking feature is extremely important, especially when the Register is used with a blower system, as it is impossible for the draught to open the valves.

Registers (up to size 14" x 14") are only 2 $\frac{1}{4}$ inches deep when open, which permits use in shallow flues. The beveled bottom insures easy setting. The entire Register is substantially constructed, light in weight and unbreakable.

In setting, if the face be removed the bottom is complete in itself, a special arrangement holding all parts in their proper places. No part can fall out or into the flue.

Side-wall or ceiling pulleys can be readily attached in the usual way to operate by cord or chain.

ALL-WROUGHT STEEL REGISTERS.

The All-Wrought Steel Register is lighter in weight than either the Cast or the Semi-Steel, and there is a consequent saving in freight. It is made throughout of wrought steel which prevents breakage and the face is rigidly braced with transverse bars. The bottom and valves are the same as on the Semi-Steel Register as described above. It operates with a roller movement, is self-locking and shallow, being only 2 $\frac{1}{4}$ inches deep when open (up to size 14" x 14"). The design is the Plain Lattice, and the edges of the face are offset to make a close fit against the floor or wall.

GRILLES AND SCREENS.

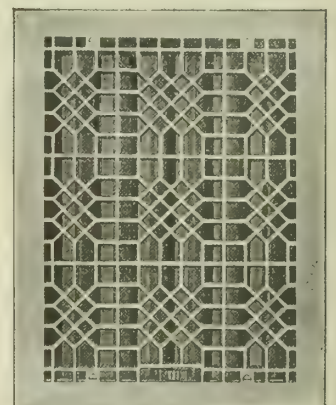
Grilles and Screens of any sizes to cover steam coils or for ventilation are made in any finish, of cast-iron, stamped steel or woven wire.

REFERENCES.

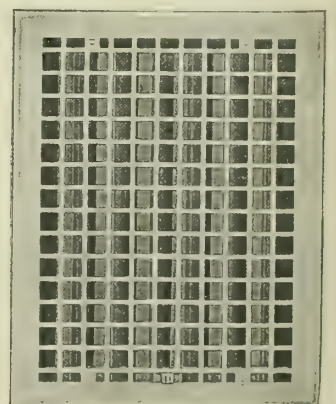
For the last sixty years our Registers have been specified by all leading architects and engineers throughout the world, and our wrought-steel Register is the one now used by the United States Government.



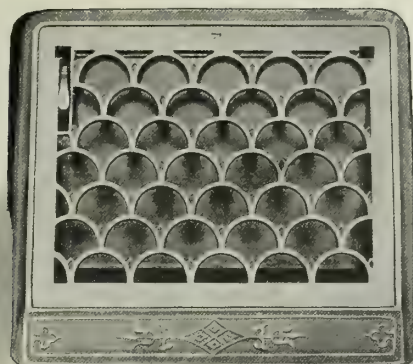
CAST REGISTER, EMPIRE



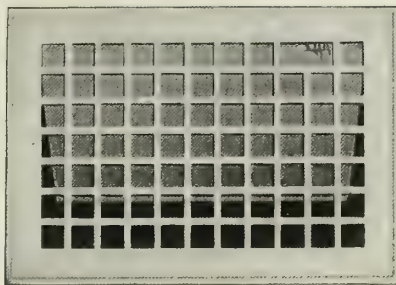
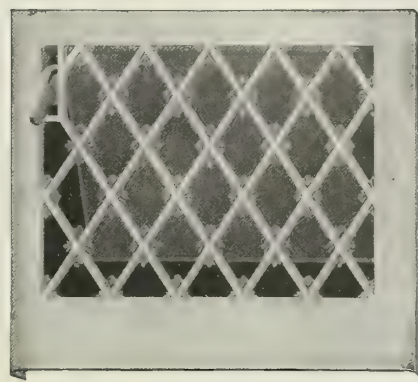
SEMI-STEEL REGISTER,
INDIAN LATTICE



WROUGHT-STEEL REGISTER,
PLAIN LATTICE



"T. & B. Special"

Wrought-Steel Reversible Wafer
BASE-BOARD AND SIDEWALL REGISTERS

"T. & B. Imperial," Style B

BASE-BOARD
AND SIDE-
WALL
HEATING.

The effort to secure a shallow flue register which will admit of the largest possible outlet of heated air has resulted in the construction of Base-board Registers, the main features of which are illustrated.

To cover all requirements for base-board heating the "T. & B. Special" and the "Imperial" Registers have been designed, and the furnace pipe manufacturers, co-operating with us in an effort to standardize, have made their boxes to fit these two styles.

"T. & B.
SPECIAL."

This Register sets on the floor and projects 2 inches from the base-board, taking a supply pipe 3 inches deeper than the studding.

The openings in the face measure $2\frac{1}{2}$ inches each, giving the largest possible air capacity combined with a handsome appearance.

A special wall frame is provided which may be set when the heater pipes are installed and to which the Register is attached by two screws after plastering is finished.

"T. & B.
IMPERIAL."

The "Imperial" Register sets on the floor in the base-board and is made in two styles. A special frame is provided, which may be set when the heater pipes are installed and to which the Register is attached by screws after the plastering is finished. This Register has an extra large air capacity.

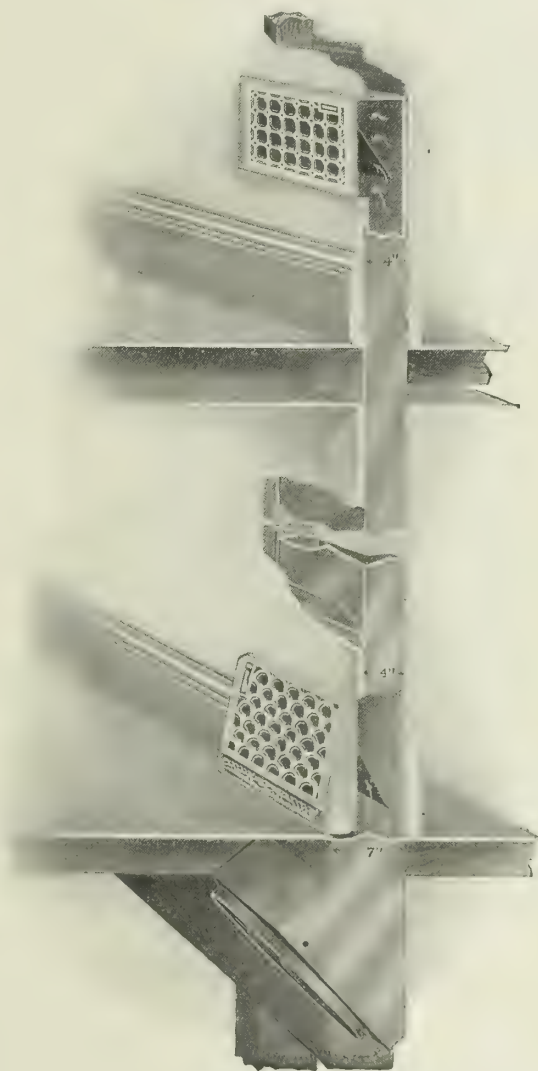
Style A (to set vertically) is used with a regular stackhead, but does not project at the base beyond the base-board. A flange on the side receives the base-board.

Style B (to set horizontally) projects one inch from the base-board and takes a supply pipe two inches deeper than the studding.

REVERSIBLE
WAFERS.

The Reversible Wafer Register is designed for shallow flues and is only one inch deep when closed. By a simple patented device it can be arranged to set either vertically or horizontally, the same movement operating either way.

The cast-iron Moorish design has a rounded rim which makes a good finish against the plaster, while the wrought-steel Plain Lattice design has a flat offset edge for the same purpose. In many cases these Registers are used in second and third stories, owing to their being shallow.

DETAILS OF BASE-BOARD AND SIDEWALL
HEATING

UNITED STATES HEATER COMPANY

Boilers, Radiators, Tank Heaters, and Heating Specialties

GENERAL OFFICES AND WORKS

DETROIT, MICH.

BRANCHES

NEW YORK, N. Y., 129 Worth Street
CHICAGO, ILL., 34 Dearborn Street

OMAHA, NEB., 916 Farnam Street
DETROIT, MICH., 139 Jefferson Avenue

KANSAS CITY, MO., 413 New York Life Building

PRODUCTS.

Manufacturers of "CAPITOL" BOILERS, "CAPITOL" RADIATORS, "CAPITOL" HEATING SPECIALTIES, and "CAPITOL" TANK-HEATERS.

TRADE-MARK.



IMPROVED SERIES BOILERS

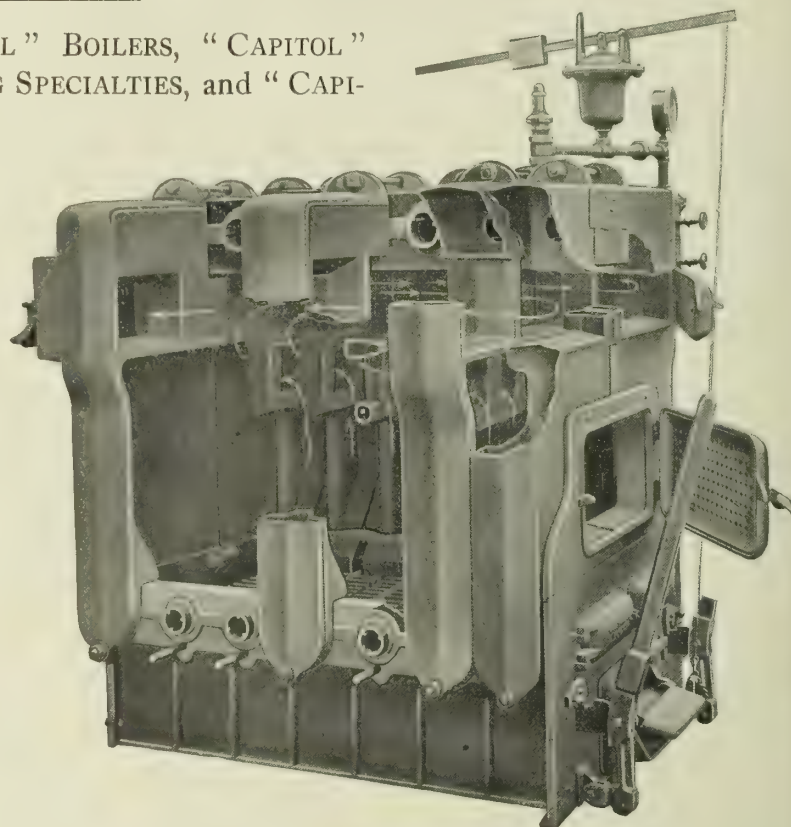
No. of Boiler	Capacity, Dir. Radn., Water	Capacity, Dir. Radn., Steam	Area of Fire Cham.	Length Inc. Smoke Col.	Flows, Inches	Return, Inches
425	875	525	25 x 19	32		
525	1150	700	25 x 25 1/2	38 1/2		
625	1450	875	25 x 32	45		
725	1725	1050	25 x 38 1/2	51 1/2		
825	2025	1225	25 x 45	58		
1425	750	450	25 x 19	32		
1525	1025	625	25 x 25 1/2	38 1/2	2 — 4	2 — 4
1625	1325	800	25 x 32	45		
1725	1600	975	25 x 38 1/2	51 1/2		
1825	1900	1150	25 x 45	58		
537	2475	1500	37 x 30	43		
637	3175	1925	37 x 37 1/2	50 1/2		
737	3925	2375	37 x 45	58		
837	4650	2825	37 x 52 1/2	65 1/2	3 — 4	2 — 4
937	5500	3325	37 x 60	73		
1037	6300	3825	37 x 67 1/2	80 1/2	4 — 4	4 — 4
1537	2225	1350	37 x 30	43		
1637	2800	1700	37 x 37 1/2	50 1/2	2 — 4	2 — 4
1737	3550	2150	37 x 45	58		
1837	4300	2600	37 x 52 1/2	65 1/2	3 — 4	
1937	5075	3075	37 x 60	73		
2037	5900	3575	37 x 67 1/2	80 1/2	4 — 4	4 — 4
648	5225	3175	48 x 42	58		
748	6400	3875	48 x 50 1/2	66 1/2		
848	7550	4575	48 x 59	75	2 — 4	
948	8775	5325	48 x 67 1/2	83 1/2	and	4 — 4
1048	10025	6075	48 x 76	92		
1148	11300	6850	48 x 84 1/2	100 1/2	2 — 6	
1248	12625	7650	48 x 93	109		
1348	14100	8550	48 x 101 1/2	117 1/2	4 — 6	
1748	5850	3550	48 x 50 1/2	66 1/2	4 — 4	
1848	7000	4250	48 x 59	75		
1948	8250	5000	48 x 67 1/2	83 1/2	2 — 4	
2048	9475	5750	48 x 76	92	and	4 — 4
2148	10725	6500	48 x 84 1/2	100 1/2	2 — 6	
2248	11950	7250	48 x 93	109		
2348	13375	8100	48 x 101 1/2	117 1/2	4 — 6	

"CAPITOL" BOILERS.

Important features of Improved "Capitol" Boilers are: Divided sections; countersunk topheader; unequaled amount of prime heating surface; quick action and fuel economy; ease of operation.

RATINGS.

We absolutely guarantee the published ratings of "Capitol" Boilers. See pages 6 and 7 of our catalogue "D."



IMPROVED "CAPITOL" STEAM BOILER
Sectional View, showing Fire Travel and Waterways

98 SERIES BOILERS

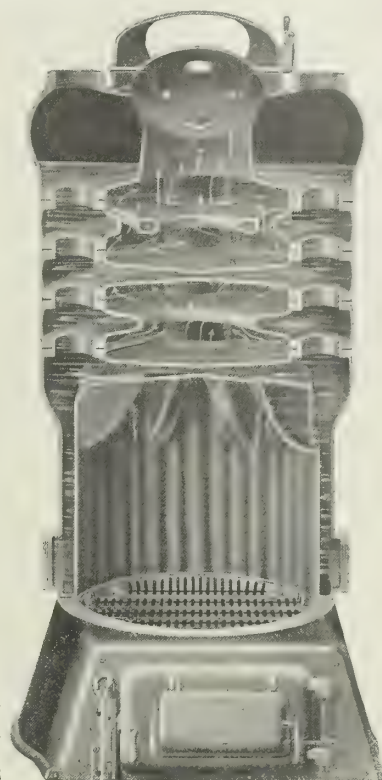
No. of Boiler	Capacity, Dir. Radn., Water	Capacity, Dir. Radn., Steam	Area of Fire Cham.	Depth, Inches	Flows, Inches	Returns, Inches
526	1500	900	30 x 24	32		
626	1850	1125	30 x 30	38		
726	2275	1375	30 x 36	44	2 — 4	
826	2725	1650	30 x 42	50		
926	3175	1925	30 x 48	56		4 — 4
1026	3625	2200	30 x 54	62		
1126	4125	2500	30 x 60	68	4 — 4	
1226	4625	2800	30 x 66	74		
1326	5150	3125	30 x 72	80		
738	5125	3100	44 x 40	62	4 — 4	4 — 4
838	6125	3700	44 x 48	70		Steam
938	7175	4350	44 x 56	78	2 — 4	4 — 4
1038	8250	5000	44 x 64	86	and	Water
1138	9400	5700	44 x 72	94	2 — 6	2 — 4
1238	10575	6400	44 x 80	102		and
1338	11750	7125	44 x 88	110		2 — 6
850	8325	5050	56 x 48	70		
950	9800	5925	56 x 56	78		
1050	11300	6850	56 x 64	86	2 — 4	2 — 4
1150	12875	7800	56 x 72	94	2 — 6	and
1250	14475	8775	56 x 80	102		2 — 6
1350	16125	9775	56 x 88	110		
1450	17825	10800	56 x 96	118		

“CAPITOL” SOLAR BOILER.

The feature which distinguishes the “Capitol” Solar Boiler from other types of round boilers is the third opening in the back of the boiler. This opening connects only the top-header and the fire-pot. The water from the intermediate sections does not enter this passage and is circulated upwards only through the two side nipple openings. The third nipple opening at the rear is for downward circulation only, and takes the place of the unsightly equalizing pipe.

“CAPITOL” SOLAR BOILERS

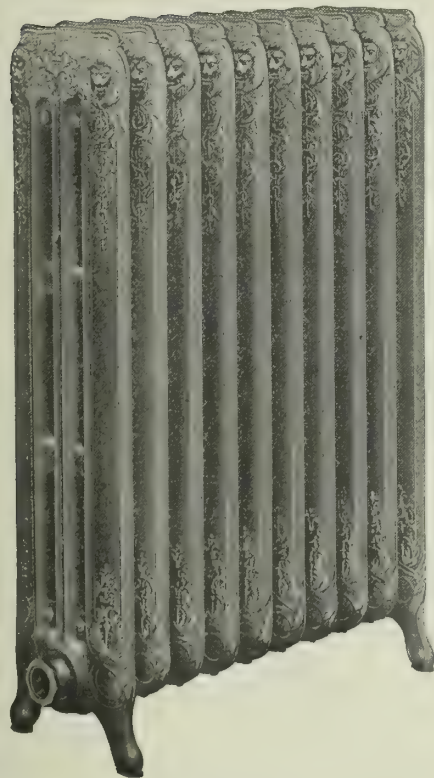
No. of Boiler	Capacity, Direct Radiation	Height to Flow Openings, Inches	No. of Boiler	Capacity, Direct Radiation	Height to Flow Openings, Inches	Height of Water Line, Inches	Outside Diameter Fire-Pot, Inches	Flows, Inches, Returns, Duplicate	Diameter Smoke Pipe, Inches
216W	375	42	216S	225	45 3/4	40 3/4	17 7/8	2-2 1/2	7
316W	450	48	316S	275	51 1/2	46 1/2	17 7/8	2-2 1/2	7
416W	525	53 3/4	416S	325	57 3/8	52 3/8	17 7/8	2-2 1/2	7
220W	525	43	220S	325	48 1/4	42	21 7/8	2-2 1/2	8
320W	625	48 1/4	320S	375	53 3/8	47 3/8	21 7/8	2-2 1/2	8
420W	700	53 1/2	420S	425	59	52 3/4	21 7/8	2-2 1/2	8
520W	775	58 3/8	520S	475	64 1/4	58	21 7/8	2-2 1/2	8
223W	775	45 1/4	223S	475	51 1/4	44 3/8	24 3/4	2-3	9
323W	875	50 1/2	323S	525	56 3/8	50	24 3/4	2-3	9
423W	950	55 3/4	423S	575	62	55 1/4	24 3/4	2-3	9
523W	1025	61 1/8	523S	625	67 1/4	60 1/2	24 3/4	2-3	9
326W	1025	51 1/4	326S	625	58 1/4	49 3/4	28 1/8	2-3 1/2	9
426W	1125	56 1/2	426S	675	63 5/8	55 1/8	28 1/8	2-3 1/2	9
526W	1250	61 3/8	526S	750	69	60 1/2	28 1/8	2-3 1/2	9
626W	1400	67 1/4	626S	850	74 1/4	65 3/4	28 1/8	2-3 1/2	9
329W	1500	52 3/8	329S	900	59 3/8	51 1/4	32	2-4	10
429W	1700	57 3/4	429S	1025	64 3/4	56 1/2	32	2-4	10
529W	1875	63	529S	1125	70	61 7/8	32	2-4	10
629W	2000	68 1/4	629S	1200	75 1/4	67 1/4	32	2-4	10



“CAPITOL” RADIATORS.

“Capitol” Radiators are assembled with extra heavy zinc-coated, rust-proof, steel slip nipples. Can also be furnished with right and left hand screw nipples. Can be assembled in bay window, curved corner, and window-seat; also, high detachable legs (standard height 7 inches) for use as wall radiators; also, with “Capitol” indirect boxes for indirect heating.

“CAPITOL” SOLAR BOILER



“CAPITOL” RADIATOR, FLORENTINE DESIGN

DATA TABLES FOR “CAPITOL” RADIATORS
Number of Feet Per Section “Capitol” Radiators
Florentine Design, 1, 2, 3, and 4 Column
Puritan Design 1, 2, 3, 4, and 5 Column

Height, Inches	45	44	38	32	26
1 Col.	..	..	3	2 1/2	2
2 Col.	5	..	4	3 1/3	2 2/3
3 Col.	..	6	5	4 1/2	3 3/4
4 Col.	..	10	8 1/2	7	5 1/2
5 Col.	..	..	..	..	..

Height, Inches	22	20	18	17	14
1 Col.	1 2/3	..	1 1/3	..	..
2 Col.	2 1/4	..	1 3/4	..	..
3 Col.	3	..	2 1/4	..	..
4 Col.	4 1/2	..	3 1/2	..	..
5 Col.	..	5 1/2	..	4 3/4	4



“CAPITOL” RADIATOR, PURITAN DESIGN

WARREN WEBSTER & COMPANY

Air Washers and Humidifiers, and Modulation System of Steam Heating

MAIN OFFICE AND WORKS

CAMDEN, N. J.

ESTABLISHED 1888
INCORPORATED 1895

OFFICES AND REPRESENTATIVES
IN THE PRINCIPAL CITIES

PRODUCTS.

We manufacture "WEBSTER" FEED-WATER HEATERS; "WEBSTER" STEAM and OIL SEPARATORS; SPECIAL "WEBSTER" APPARATUS for use in connection with the "WEBSTER" SYSTEM of STEAM CIRCULATION for HEATING PURPOSES; also, the "WEBSTER" MODULATION SYSTEM.

We also manufacture the "WEBSTER" AIR WASHER AND HUMIDIFIER and the "WEBSTER" HUMIDIFYING PROCESS for automatically controlling the humidity in buildings.

"WEBSTER" AIR WASHERS.

The "Webster" Air Washer is superior to others in the two vital points: spray device and eliminator baffle-plates.

The patented spray-head is non-cloggable and extremely efficient, producing two to four sheets of water having a combination "rain and spray" effect.

The eliminator plates are horizontal in form, preventing recontact of the moisture removed with the lower strata of air entering the apparatus.

The "Webster" Air Washer is substantially constructed of non-corroding material, and consists of spray chamber, eliminator, water tank, which may be made of concrete if desired, double brass strainer for the pump suction, centrifugal pump, etc.

CO-OPERATIVE SERVICE.

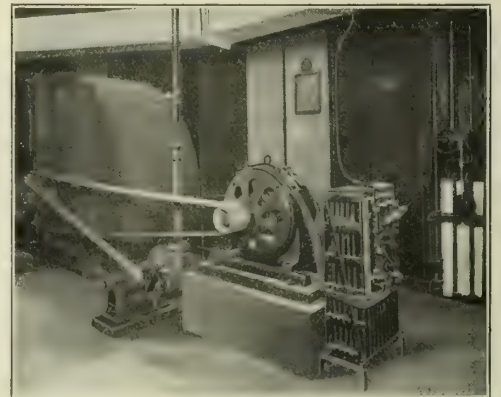
Our Air Washer department is in charge of experts in this line, and is prepared to co-operate in the preparation of plans and specifications covering the installation of Air Washers or Humidifying Systems. Inquiries are cordially invited.

GUARANTEE.

We guarantee 98 per cent removal of dust, dirt and soot, this guarantee being established by test if desired; we also guarantee 100 per cent removal of entrained spray water.

"WEBSTER" MODULATION SYSTEM.

This system is used with low pressure steam and is adapted to a wide variety of buildings. Certain well tried "Webster" Specialties described on the following page are used. The system is extremely simple. No vacuum pump is necessary.



"WEBSTER" AIR WASHER AND HUMIDIFIER. COMPLETE INSTALLATION WITH FAN, MOTOR, AND PUMP CONNECTIONS



"WEBSTER" AIR WASHER AND HUMIDIFIER. VIEW THROUGH SPRAY CHAMBER, SHOWING HORIZONTAL ELIMINATOR PLATES

ENGINEERING
FEATURES
AND
ADVANTAGES.

Steam is circulated at low pressure through the supply lines and radiators. No pressure is carried in the returns, these being open to the atmosphere. Steam is prevented from entering them by the "Webster" Water-Seal Motors. The Modulation feature gives all the advantages of hot water heating without its disadvantages. The main objections to steam heating, viz.: water-hammer, air binding and lack of temperature control, are eliminated. Smaller piping than customary with low-pressure heating is used. There is a saving here. The "Webster" devices take the place of the ordinary radiator valves and the air valves. A fuel saving is accomplished.

"WEBSTER"
MODULATION
VALVE.

Connected with supply ends of radiators, at the top. Radiators of hot-water type. Handle and dial permit admitting semi-automatically the proper amount of steam to secure the desired room temperature

"WEBSTER"
WATER-SEAL
MOTOR.

Placed at return end of radiators. Ejects air and water of condensation. Prevents escape or loss of steam into return line. Automatic in operation. Self-adjusting. One hundred and fifty thousand in use in "Webster" Vacuum System installations.

"WEBSTER"
VENT-VALVE.

Placed in return line. Prevents the return of air after being expelled from system. Never more than atmospheric pressure in returns.

"WEBSTER"
DAMPER
REGULATOR.

Regulates boiler draft. Made with very large diaphragm and is extremely sensitive. Renders the system highly efficient and economical.

ADAPTABILITY.

Adaptable to almost any size of building, engineering details being varied to suit local conditions. Especially suitable for apartment houses, small hotels, Y. M. C. A. buildings, hospitals, schools, stores, office buildings, and residences.

INSTALLA-
TION.

Any practical steam fitter can easily install the system satisfactorily. Any janitor can operate it with the simple instructions that are necessary.

CO-OPERATION,
ESTIMATES,
ETC.

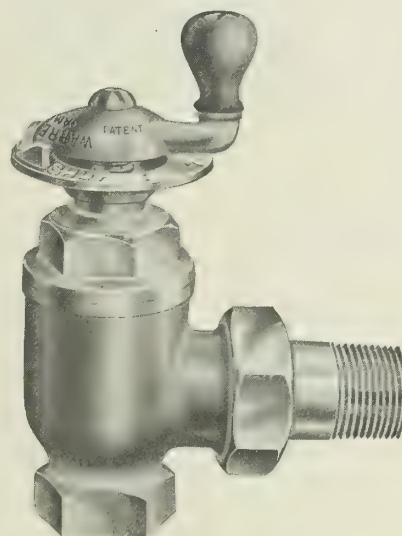
We co-operate with architects, contractors, and heating engineers in the preparation of plans and specifications, when desired, and will gladly answer inquiries as to prices, etc.

GUARANTEES.

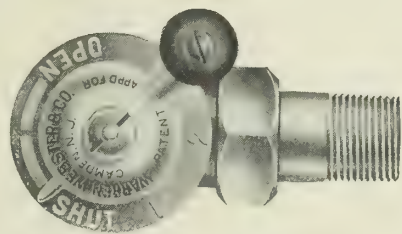
"Webster" Specialties are fully guaranteed as to workmanship and material. The system as a whole is guaranteed as to performance.

REFERENCES.

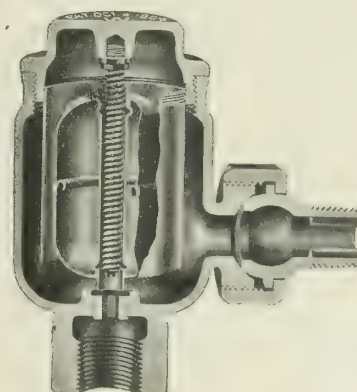
The "Webster" Modulation System is not an experiment, but a thoroughly tried method of heating, backed by a company with twenty-one years' experience. Numerous installations in all parts of the country already in operation or under contract.



"WEBSTER" MODULATION
VALVE



"WEBSTER" MODULATION
VALVE, TOP VIEW



"WEBSTER" WATER-SEAL
MOTOR, INTERIOR VIEW

WILLIAMSPORT RADIATOR COMPANY

WILLIAMSPORT, PA.

NEW YORK OFFICE
99 BEEKMAN STREET
TELEPHONE, 4903 BEEKMAN



TRADE-MARK

PRODUCTS.

Sole manufacturers of the "CRAIG" SECTIONAL STEAM BOILERS, "CRAIG" SECTIONAL HOT-WATER HEATERS, "KORAN" STEAM RADIATORS and "KORAN" HOT-WATER RADIATORS, of sizes to meet all requirements.

"CRAIG"
SECTIONAL
STEAM
BOILERS.

The "Craig" Boiler is a sectional water-tube boiler made of cast-iron. Its construction gives a positive vertical and semihorizontal circulation with the least possible friction. Our screw-nipple construction permits the removal of any section at will. The grate is easily operated and very durable. All parts are interchangeable. Flue surfaces are easily cleaned through large clean-out doors. The boiler has a deep fire-box, large combustion-chamber, and is economical in consumption of fuel. Built for hard or soft coal. The ash-pit is large and deep; ample space is allowed for air for combustion. This boiler has the proper amount of direct-fire surface, together with the best proportioned flue surface of any boiler made. The "Craig" Boiler is made of the very best grade of cast-iron under our personal supervision, at our own works, and is tested to 80 pounds hydraulic pressure before shipping.

The "Craig" Boiler is the easiest to erect, all parts being interchangeable; sectional in form; can be taken through any door or window; machine work is perfect.

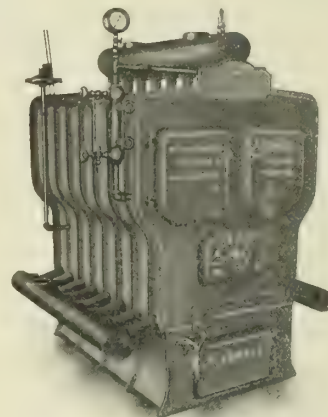
The "Craig" ratings are conservative and can be depended upon.

SALIENT
ADVANTAGES.

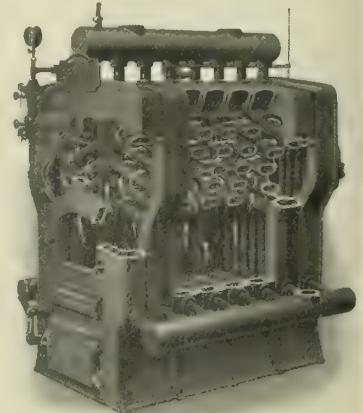
The following salient points of advantage will be noted by the accompanying illustrations: All fire surface is surrounded by water; extensive direct-fire surface; efficient flue surface; attractive appearance; low in height.



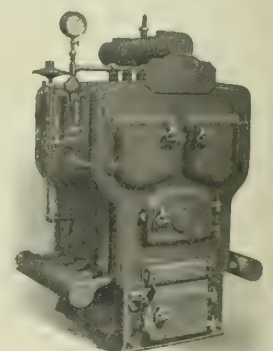
"CRAIG" SECTIONAL STEAM BOILER,
70 SERIES



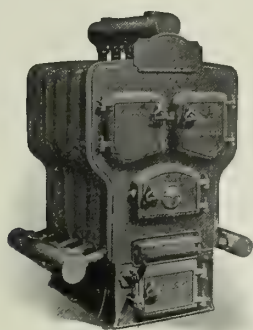
Exterior View
"CRAIG" SECTIONAL STEAM BOILER, 50 SERIES



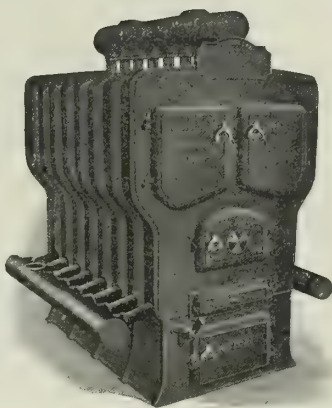
Interior View
"CRAIG" SECTIONAL STEAM BOILER, 50 SERIES



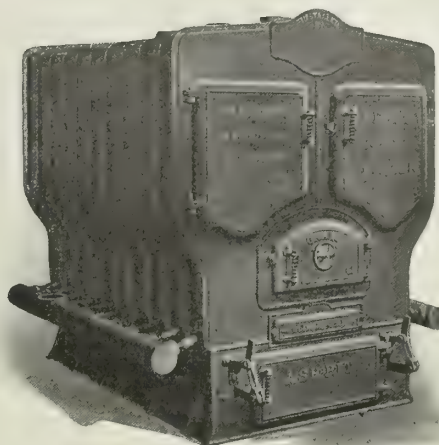
"CRAIG" SECTIONAL
STEAM BOILER,
30 SERIES



20 Series



40 Series



60 Series

"CRAIG" HOT-WATER HEATERS

The construction of each section gives the "Craig" Hot-Water Heater a positive vertical and semihorizontal circulation in all parts with the least possible friction.

"CRAIG"
SECTIONAL
HOT-WATER
HEATERS,
DIMENSIONS
AND RATINGS.

Steam Boiler, Number	Water-Heater, Number	No. Sections	Dimensions of Grate	Dimensions of Foundations	Length of Boiler and Smoke-Box	Diameter of Smoke-Pipe	Tapping for Steam or Water Outlets	Tapping for Return Steam or Water Inlets	Steam Rating, Square Feet	Hot Water Rating, Square Feet
30	20	4	18 x 20	24 x 27	48	8	2-2 1/2	2-2 1/2	400	675
31	21	5	18 x 26	24 x 33	54	8	2-2 1/2	2-2 1/2	525	875
32	22	6	18 x 32	24 x 39	60	10	2-3	2-3	650	1,075
33	23	7	18 x 38	24 x 46	67	10	2-3	2-3	775	1,275

50	40	5	24 x 26	33 x 33	57	10	2-3	2-3	850	1,400
51	41	6	24 x 32	33 x 39	63	10	2-3	2-3	1,000	1,650
52	42	7	24 x 38	33 x 45	70	10	2-3	2-3	1,200	1,950
53	43	8	24 x 44	33 x 51	76	12	2-3 1/2	2-3 1/2	1,400	2,300
54	44	9	24 x 50	33 x 57	82	12	2-4	2-4	1,600	2,650
55	45	10	24 x 56	33 x 63	88	12	2-4	2-4	1,800	3,000

70	60	7	36 x 38	45 x 45	73	14	2-4	2-4	2,000	3,309
71	61	8	36 x 44	45 x 51	79	14	2-4	2-4	2,400	4,000
72	62	9	36 x 50	45 x 57	86	14	3-4	3-4	2,800	4,700
73	63	10	36 x 56	45 x 63	92	16	3-4	3-4	3,225	5,400
74	64	11	36 x 62	45 x 70	98	16	3-4	3-4	3,650	6,100
75	65	12	36 x 68	45 x 76	104	16	3-4	3-4	4,100	6,800
76	66	13	36 x 74	45 x 82	111	20	4-4	4-4	4,550	7,500
77	67	14	36 x 80	45 x 89	117	20	4-4	4-4	5,000	8,200

Height of water line	30 Series	46 inches
" " " " 50 "	"	52 "
" " " " 70 "	"	59 "
" of 30 and 20 Series	"	62 "
" " 50 " 40 "	"	70 "
" " 70 " 60 "	"	71 "
Width " 30 " 20 "	"	45 "
" " 50 " 40 "	"	51 "
" " 70 " 60 "	"	65 "

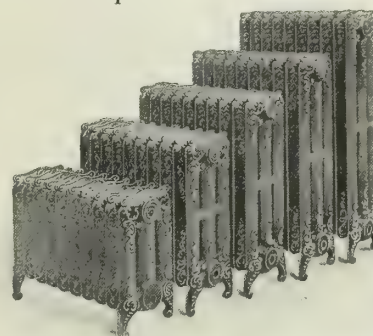
We furnish full set of trimmings with our Steam Boilers; also, Hoe, Poker and Flue Brush.
Boilers can be set in battery for larger work.
Use one size larger Boiler or Heater for soft coal than for hard coal.

"KORAN"
RADIATORS,
DIMENSIONS
AND RATINGS.

The "Koran" Radiator is of neat, plain design; has very smooth castings and large air-space. It is positively tested before shipment and is tight. Made in two and three columns, plain and ornamental.

We will be pleased to furnish catalogues of Boilers and Radiators upon application.

CATALOGUE.



"KORAN" RADIATORS, TWO AND THREE
COLUMN
TWO-COLUMN RADIATORS
LIST OF SIZES

No. Sec-tions	Length	45 in. High	38 in. High	32 in. High	26 in. High	23 in. High	20 in. High
	Inches	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.
1	2 1/2	5	4	3 1/3	2 2/3	2 1/3	2
2	5	10	8	6 2/3	5 1/3	4 2/3	4
3	7 1/2	15	12	10	8	7	6
4	10	20	16	13 1/3	10 2/3	9 1/3	8
5	12 1/2	25	20	16 2/3	13 1/3	11 2/3	10
6	15	30	24	20	16	14	12
7	17 1/2	35	28	23 1/3	18 2/3	16 1/3	14
8	20	40	32	26 2/3	21 1/3	18 2/3	16
9	22 1/2	45	36	30	24	21	18
10	25	50	40	33 1/3	26 2/3	23 1/3	20

Each section is 7 1/8 inches wide.
Width of legs, 8 inches.
Height from floor to center of tapping 5 inches.

THREE-COLUMN RADIATORS
LIST OF SIZES

No. Sec-tions	Length	45 in. High	38 in. High	32 in. High	26 in. High	23 in. High	20 in. High
	Inches	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.
1	2 1/2	6 1/2	5 1/2	4 3/4	4	3 1/2	3 1/4
2	5	13	11	9 1/2	8	7	6 1/2
3	7 1/2	19 1/2	16 1/2	14 1/4	12	10 1/2	9 3/4
4	10	26	22	19	16	14	13
5	12 1/2	32 1/2	27 1/2	23 3/4	20	17 1/2	16 1/4
6	15	39	33	28 1/2	24	21	19 1/2
7	17 1/2	45 1/2	38 1/2	33 1/4	28	24 1/2	22 3/4
8	20	52	44	38	32	28	26
9	22 1/2	58 1/2	49 1/2	42 3/4	36	31 1/2	29 1/4
10	25	65	55	47 1/2	40	35	32 1/2

Each section is 9 1/2 inches wide.
Width of legs, 10 3/8 inches.
Height from floor to center of tapping 5 3/8 inches.

UNITED STATES RADIATOR CO.

BRANCH OFFICES

NEW YORK, N. Y.
WASHINGTON, D. C.MINNEAPOLIS, MINN.
CHICAGO, ILL.

DUNKIRK, N. Y.

BRANCH WAREHOUSES

CHICAGO, ILL.

JERSEY CITY, N. J.
MINNEAPOLIS, MINN.

PRODUCTS.

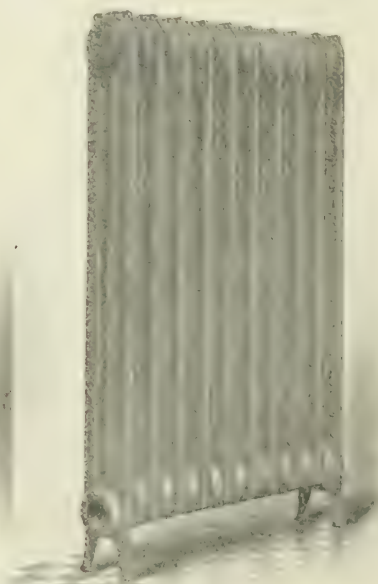
Manufacturers of "TRITON" one, two, three, four, and five column WALL and FLUE RADIATORS; also, "CHAUTAUQUA" RADIATORS, Plain and Ornamental, DIRECT-INDIRECT RADIATORS, "PERFECT PIN" INDIRECT RADIATORS, PLAIN "TRITON" RADIATORS, any of which can be made in special shape to suit all requirements for steam or hot water.

POLICY
FOLLOWED.

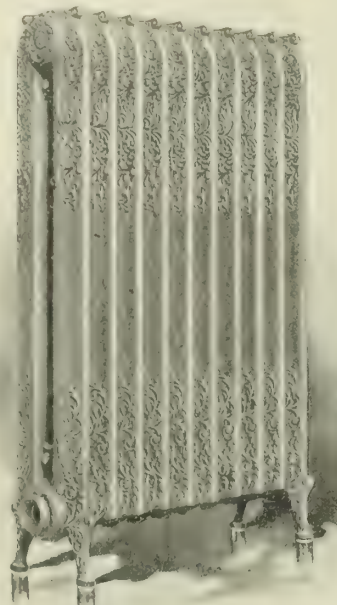
For the past nineteen years we have been manufacturing Radiators exclusively, devoting our entire time and energy to a production that could not be excelled in general appearance, smooth castings, efficiency and excellence of construction. Therefore it goes without saying that our factory is fully equipped with the best modern machinery to enable us to maintain the high grade we have established for our product.

"TRITON"
RADIATORS.

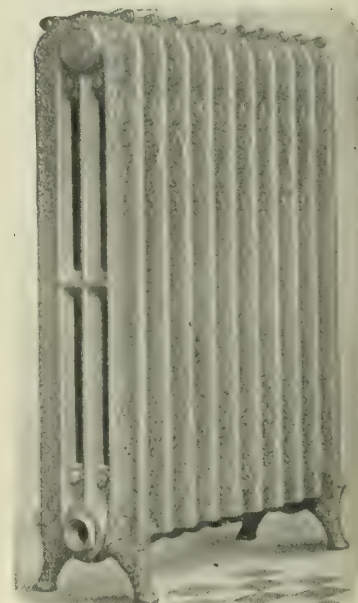
The "Triton" Radiator is made in one, two, three, four, and five column wall and flue patterns in all heights, all bearing the same design and decoration and it is the most complete and largest line of uniform patterns in the world. We shall be pleased to furnish complete detail information upon request.



"TRITON" ONE-COLUMN

For Steam or Water
Also made in plain

"TRITON" TWO-COLUMN

For Steam or Water
Also made in plain

"TRITON" THREE-COLUMN

For Steam or Water

LIST OF SIZES, ONE COLUMN

No. Sections	Length	35 In. High	32 In. High	26 In. High	23 In. High	20 In. High
	Inches	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.
1	2½	3	2½	2	1½	1½
2	5	6	5	4	3½	3
3	7½	9	7½	6	5	4½
4	10	12	10	8	6½	6
5	12½	15	12½	10	8½	7½
6	15	18	15	12	10	9
7	17½	21	17½	14	11½	10½
8	20	24	20	16	13½	12
9	22½	27	22½	18	15	13½
10	25	30	25	20	16½	15

LIST OF SIZES, TWO COLUMN

No. Sections	Length	44 In. High	38 In. High	32 In. High	26 In. High	23 In. High	20 In. High	18 In. High
	Inches	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.
1	2½	5	4	3½	2½	2½	2	1¾
2	5	10	8	6½	5½	4½	4	3½
3	7½	15	12	10	8	7	6	5¼
4	10	20	16	13½	10½	9½	8	7
5	12½	25	20	16½	13½	11½	10	8¾
6	15	30	24	20	16	14	12	10½
7	17½	35	28	23½	18½	16½	14	12¼
8	20	40	32	26½	21½	18½	16	14
9	22½	45	36	30	24	21	18	15¾
10	25	50	40	33½	26½	23½	20	17½

LIST OF SIZES, THREE COLUMN

No. Sections	Length	44 In. High	38 In. High	32 In. High	26 In. High	23 In. High	20 In. High	18 In. High
	Inches	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.
1	2½	6	5	4½	3¾	3	2¾	2¼
2	5	12	10	9	7½	6	5½	4½
3	7½	18	15	13½	11¼	9	8¼	6¾
4	10	24	20	18	15	12	11	9
5	12½	30	25	22½	18¾	15	13¾	11¼
6	15	36	30	27	22½	18	16½	13½
7	17½	42	35	31½	26¼	21	19¼	15¾
8	20	48	40	36	30	24	22	18
9	22½	54	45	40½	33¾	27	24¾	20¼
10	25	60	50	45	37½	30	27½	22½

Each section is 4½ inches wide.

Width of legs, 5½ inches.

Allow one half inch in length of radiator for each bushing.

Height from floor to center of tapping 4½ inches for push-nipple connection and 4¾ inches for screw-nipple connection.

Each section is 7½ inches wide.

Width of legs, 8½ inches.

Allow one half inch in length of radiator for each bushing.

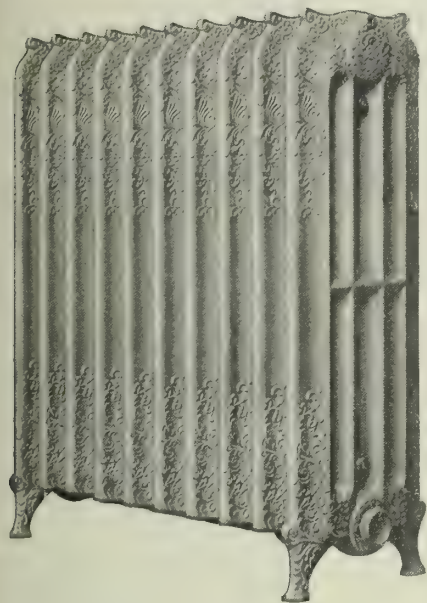
Height from floor to center of tapping 4½ inches for push-nipple connection and 4¾ inches for screw-nipple connection.

Each section is 9½ inches wide.

Width of legs, 10½ inches.

Allow one half inch in length of radiator for each bushing.

Height from floor to center of tapping 4½ inches for push-nipple connection and 4¾ inches for screw-nipple connection.

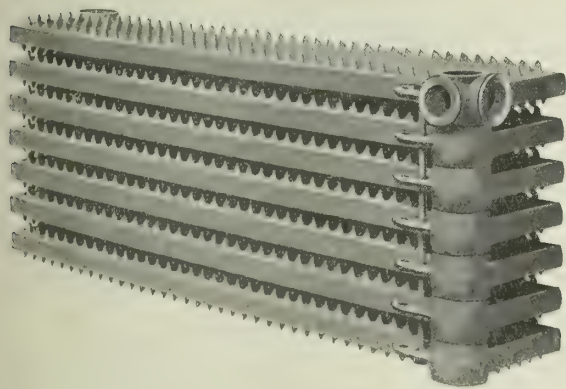


"TRITON" FOUR-COLUMN
Also made in plain

LIST OF SIZES

No. Sections	Length	44 in. high	38 in. high	32 in. high	26 in. high	23 in. high	20 in. high	18 in. high
	In.	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.
1	3	9 1/4	8	7	5 2/3	4 1/2	4	3 1/2
2	6	18 1/2	16	14	11 1/3	9	8	7
3	9	27 3/4	24	21	17	13 1/2	12	10 1/2
4	12	37	32	28	22 2/3	18	16	14
5	15	46 1/4	40	35	28 1/3	22 1/2	20	17 1/2
6	18	55 1/2	48	42	34	27	24	21
7	21	64 3/4	56	49	39 2/3	31 1/2	28	24 1/2
8	24	74	64	56	45 1/3	36	32	28
9	27	83 1/4	72	63	51	40 1/2	36	31 1/2
10	30	92 1/2	80	70	56 2/3	45	40	35

Each section is 12 3/4 inches wide.
Width of legs 13 3/4 inches.
Allow one half inch in length of radiator for each bushing.
Height from floor to center of tapping 4 1/2 inches for push-nipple connection and 4 3/4 inches for screw-nipple connection.



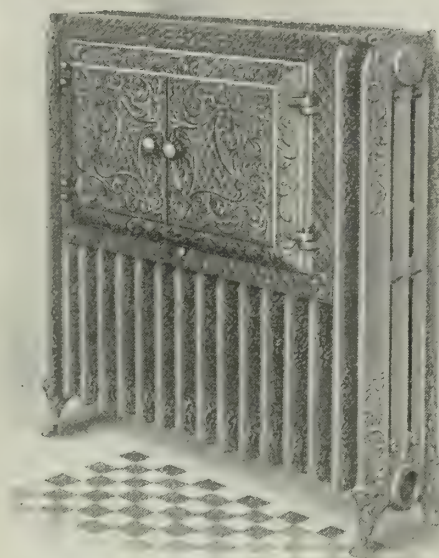
"PERFECT PIN" INDIRECT

DIMENSIONS OF "PERFECT PIN" INDIRECT RADIATORS

Section	Length	Width of Body	Width of Hubs	Centers
20 ft.	41 3/4 in.	12 in.	14 in.	3 3/4 in.
12 ft.	41 3/4 in.	7 1/2 in.	10 3/4 in.	2 3/4 in.

TAPPING LIST

All openings will have right-hand threads, unless otherwise ordered.

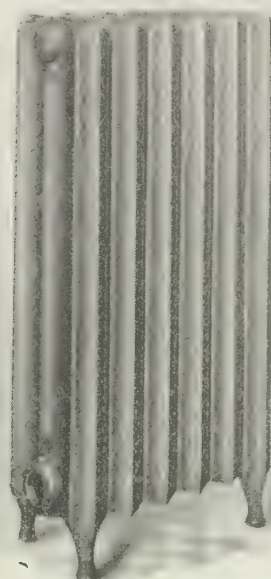


"TRITON" THREE-COLUMN DINING-ROOM RADIATOR

Made for "Chautauqua," "Triton" Two-Column and "Triton" Three-Column

DIMENSIONS OF OVEN PART ONLY

Length.....2 feet 6 inches
Depth 12 1/2 inches
Height 17 1/2 inches
Projection from rear face of radiator for "Chautauqua" or "Triton" Two-Column 5 1/2 inches
Projection from rear face of radiator for "Triton" Three-Column..... 3 1/2 inches

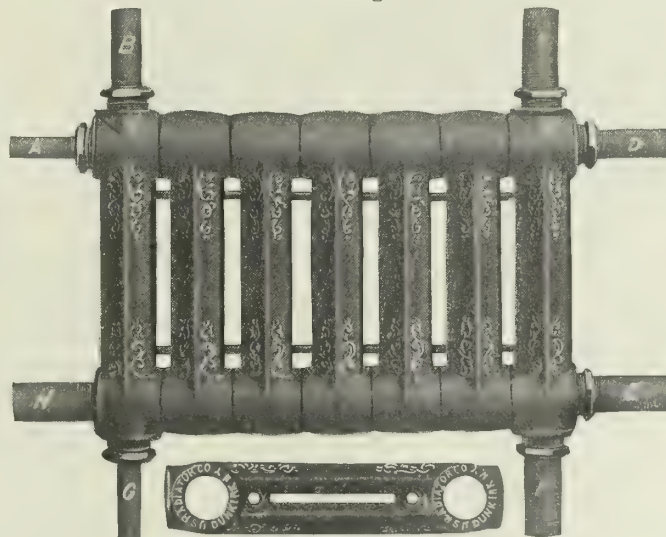


"TRITON" FLUE

LIST OF SIZES

No. Sections	Length	38 inches high	32 inches high	26 inches high	20 inches high
	Inches	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.
1	3	7	5 1/4	4 1/2	3 1/4
2	6	14	11 1/2	9	6 1/2
3	9	21	17 1/4	13 1/2	9 3/4
4	12	28	23	18	13
5	15	35	28 3/4	22 1/2	16 1/4
6	18	42	34 1/2	27	19 1/2
7	21	49	40 1/4	31 1/2	22 3/4
8	24	56	46	36	26
9	27	63	51 3/4	40 1/2	29 1/4
10	30	70	57 1/2	45	32 1/2

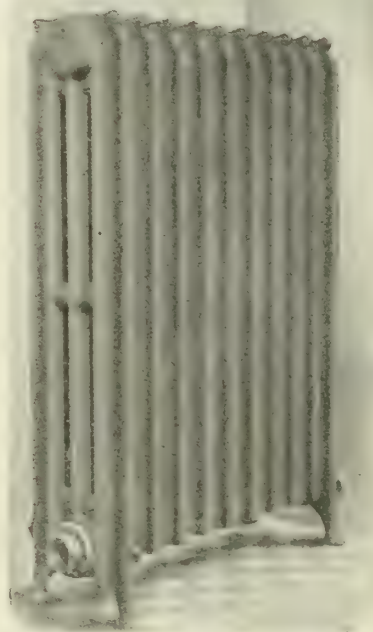
Width of section, 9 1/2 inches.
Width of legs, 9 1/2 inches.
Height from floor to center of opening 5 1/2 inches for slip of screw nipple.
Allow one half inch in length of radiator for each bushing.



"TRITON" WALL
For Steam or Water

This illustration shows seven one-foot sections assembled and the end of a single section. The lettered pipes show in how many different places piping can be connected.

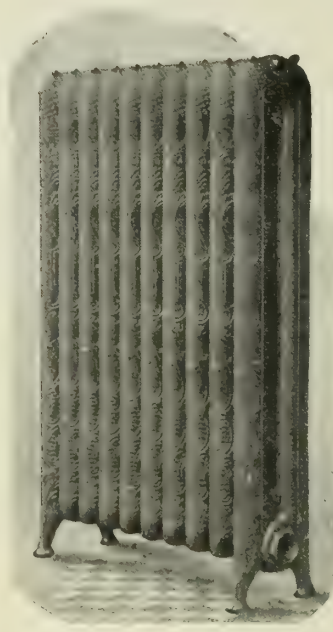
Each section is 14 1/2 inches high, 3 inches wide, and 3 inch centers, and contains one square foot of heating surface. Can be assembled in units of any size and units may be connected either horizontally or vertically, by means of hexagon center right and left screw nipples. Openings A, D, E, and H are tapped 1 1/2 inch and bushed or plugged as desired; B, C, F, and G are tapped only on order.



"TRITON" THREE-COLUMN
PLAIN

For Steam or Water

We also make "Triton" Plain
in one and two column



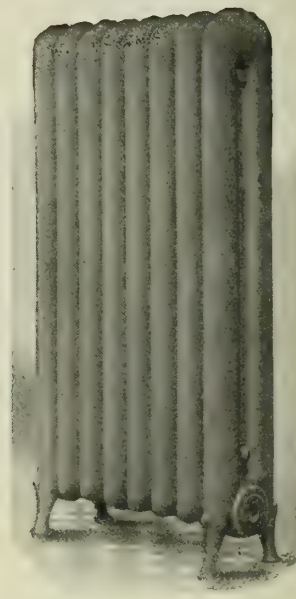
"CHAUTAUQUA" ORNAMENTAL

For Steam or Water

45, 38, 32, 26, and 20 inches high

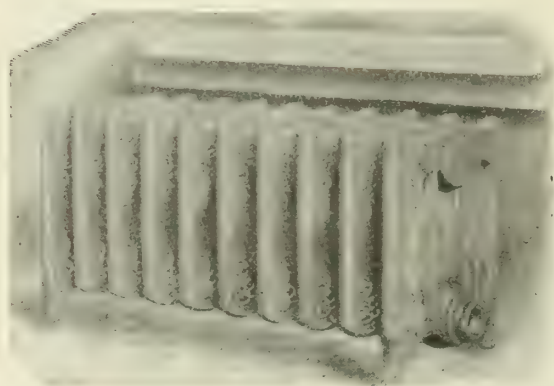
All dimensions are the same as "Triton"
Two-Column table for corresponding heights

Except distance from floor to center of
opening, which is $4\frac{1}{8}$ inches for slip nipple and
 $4\frac{1}{2}$ inches for screw nipple



"CHAUTAUQUA" PLAIN

For Steam or Water



"TRITON" FIVE-COLUMN

Also made in plain

No. Sections	Length.	20 $\frac{1}{2}$ Inches High	16 $\frac{1}{2}$ Inches High	14 $\frac{1}{2}$ Inches High	12 $\frac{1}{2}$ Inches High
	Inches	Sq. ft.	Sq. ft.	Sq. ft.	Sq. ft.
1	3	5	4	3 $\frac{1}{2}$	3
2	6	10	8	7	6
3	9	15	12	10 $\frac{1}{2}$	9
4	12	20	16	14	12
5	15	25	20	17 $\frac{1}{2}$	15
6	18	30	24	21	18
7	21	35	28	24 $\frac{1}{2}$	21
8	24	40	32	28	24
9	27	45	36	31 $\frac{1}{2}$	27
10	30	50	40	35	30

Each section is 12 $\frac{3}{4}$ inches wide.

Width of legs, 12 $\frac{3}{4}$ inches.

Allow one half inch in length of radiator for
each bushing.

Height from floor to center of tapping for push-
nipple or screw-nipple radiators, 3 inches.

REGULAR TAPPING

Unless otherwise specified, all radi-
ators will be tapped as follows:

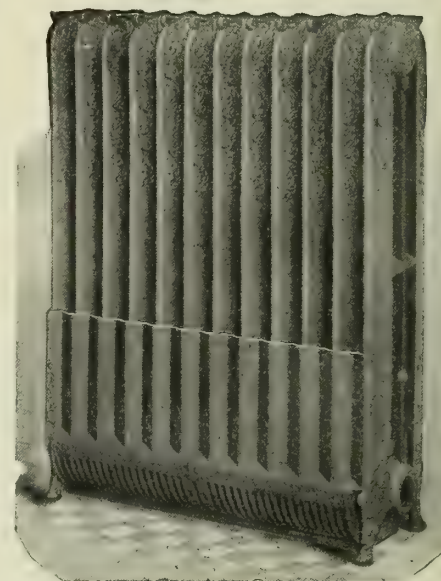
Steam	Double Pipe
Up to and including 48 feet	1 x $\frac{3}{8}$ inch
From 48 to 96 feet.....	1 $\frac{1}{4}$ x 1 inch
Above 96 feet	1 $\frac{1}{2}$ x 1 $\frac{1}{4}$ inch

Steam	One Pipe
Up to and including 24 feet	1 inch
From 24 to 60 feet.....	1 $\frac{1}{4}$ inch
From 60 to 100 feet.....	1 $\frac{1}{2}$ inch

Water	Double Pipe
Up to and including 40 feet	1 inch
From 40 to 72 feet.....	1 $\frac{1}{4}$ inch
Above 72 feet.....	1 $\frac{1}{2}$ inch

The following specialties are made
for all the radiators shown:

Circle, High Legs, Curved, Dining-
Room Ovens, Corner, Screen Tops for
2- and 3-column, Stairway, Wall
Brackets, Window, Pedestals, Fitted for
Marble Tops, Wall Boxes.



"TRITON" THREE-COLUMN

With Box Base applied for direct-indirect

MEASUREMENTS ON BOX BASE

Opening at back for fresh air inlet to wall box
 $3\frac{5}{16}$ inches wide, one inch above floor

LENGTH

12 sections, 25 $\frac{1}{4}$ inches	7 sections, 12 $\frac{3}{4}$ inches
11 sections, 22 $\frac{3}{4}$ inches	6 sections, 10 $\frac{1}{4}$ inches
10 sections, 20 $\frac{1}{4}$ inches	5 sections, 7 $\frac{3}{4}$ inches
9 sections, 17 $\frac{3}{4}$ inches	4 sections, 5 $\frac{1}{4}$ inches
8 sections, 15 $\frac{1}{4}$ inches	

All the above are outside measurements.

The damper arrangement is such that when
cold air is brought through the floor, separate
floor dampers are not required. Make floor
opening same size as for wall opening.

THE DONALDSON COMPANY

MANUFACTURERS OF

Air-Conditioning Apparatus, Air-Washers, Injectors and Coolers

7333 Wentworth Avenue

CHICAGO, ILL.

LONG DISTANCE TELEPHONE, WENTWORTH 1309

PRODUCTS.

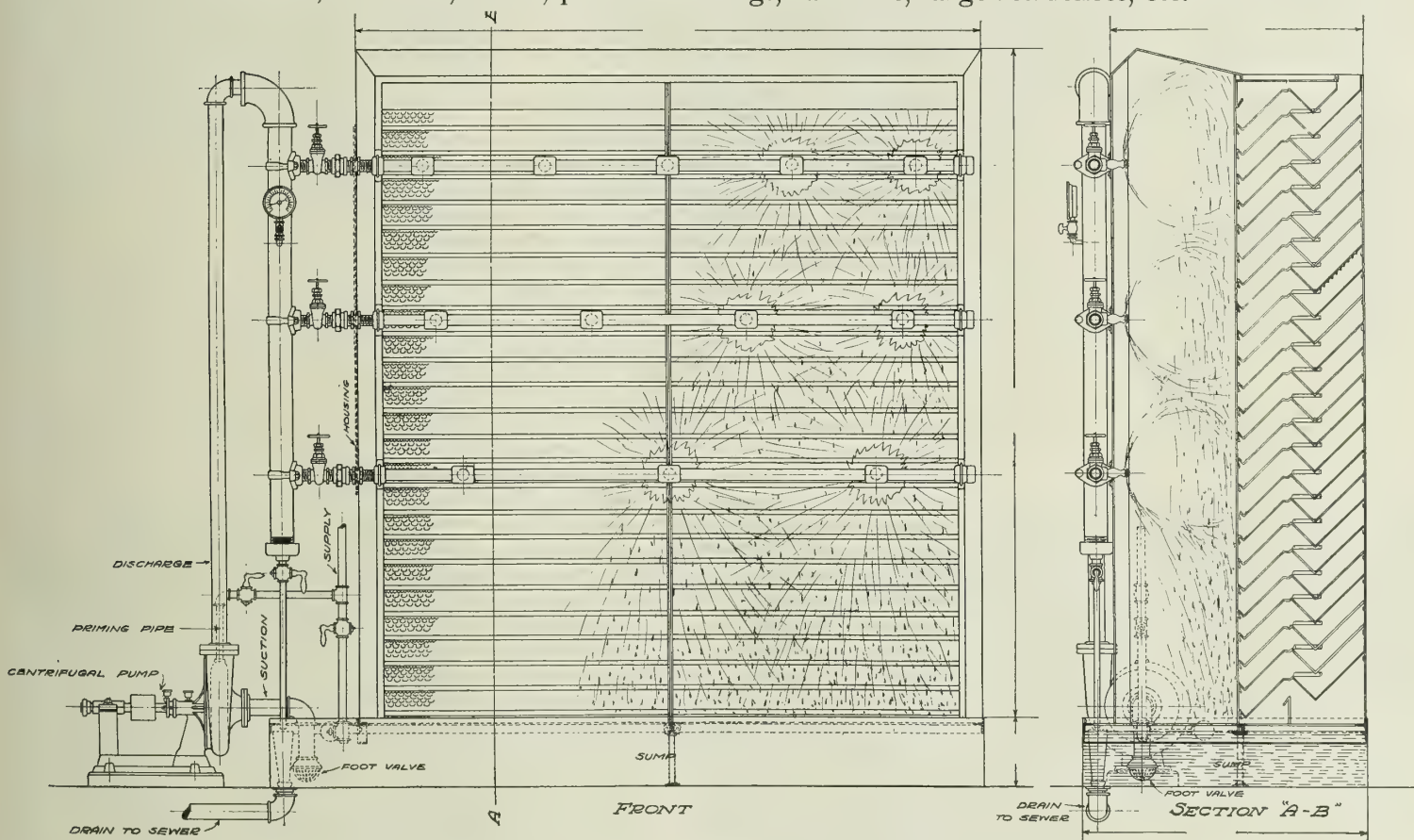
We manufacture "ECLIPSE" AIR-WASHERS, INJECTORS and COOLERS, made of Galvanized Sheet-Iron and Copper; AUXILIARY WATER-HEATERS, made of Cast-Iron. Covered by United States and Canadian Patents.

"ECLIPSE" AIR-WASHER.

This is an apparatus for cleaning, cooling, humidifying and de-humidifying air to insure its absolute purity. The mere removal of foul air from rooms and the replacing of same by the so-called fresh air from the street, laden with every form of dust, is a very imperfect mode of ventilation.

DESCRIPTION.

To purify air thoroughly it must be passed through a sheet of spray to catch and precipitate all dirt and to humidify it; it must then be broken up by drawing it through a metal screen, thus further cleaning and vitalizing it by friction. This process abstracts heat and also removes all excess of humidity, sending the air forth pure and cool in summer and it can be adjusted for use in winter to supply air in a moderately moist condition, which is the most healthful and agreeable. This is our apparatus. It is adapted for schools, hospitals, theaters, churches, hotels, public buildings, factories, large residences, etc.



"ECLIPSE" AIR-WASHER

COST,
ESTIMATES,
CIRCULAR.
GUARANTEE,
REFERENCES.

The cost is according to capacity, kind and quality of sheet metal in the eliminator and the style of sump. Estimates promptly furnished; also, circulars with data of capacities, etc.

We guarantee to remove 98 per cent of the dirt and 100 per cent of the entrained water. Duplicate installations for several Boards of Education is evidence of efficiency. References will be mailed upon request.

ACORN BRASS MANUFACTURING CO.

"Acorn" System of Natural Ventilation

OFFICES AND FACTORY

CHICAGO, ILL.

BRANCH OFFICES

WASHINGTON, D. C., CONSOLIDATED SALES CO.
 PORTLAND, ORE., F. C. COOK
 DULUTH, MINN., CHRISTIE LITHOGRAPH & PRINTING CO.
 TOLEDO, OHIO, BOSTWICK-BRAUN CO.
 SAN FRANCISCO, CAL., WILLKOMM BUILDING & SUPPLY CO.
 INDIANAPOLIS, IND., VONNEGUT HARDWARE CO.

PITTSBURG, PA., A. L. OTTO & Co.
 LOUISVILLE, KY., BELKNAP HARDWARE & MFG. CO.
 BOSTON, MASS., H. E. HOLBROOK & Co.
 CINCINNATI, OHIO, CHAS. L. MYERS
 MINNEAPOLIS, MINN., MILLER-DAVIS PRINTING CO.
 COLUMBUS, OHIO, R. D. LAMB

PRODUCTS.

Manufacturers of "ACORN" NATURAL WINDOW VENTILATORS, for Banks, Offices, Public Buildings, Schools, Churches, Hospitals and Homes; also, ELECTRIC VENTILATING FANS. We make everything in BRASS.

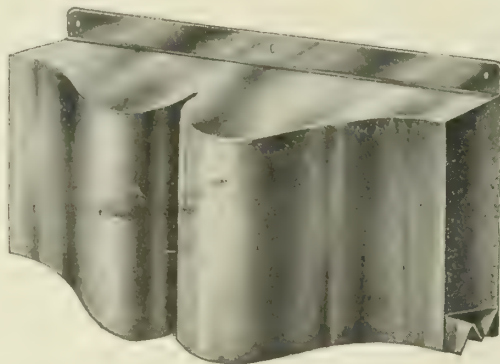


FIG. 1. OUTSIDE VIEW OF INTAKE HOOD

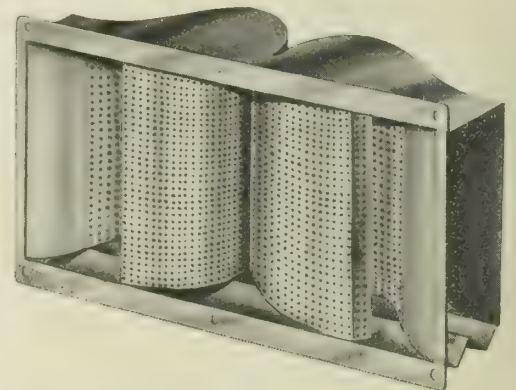


FIG. 2. INSIDE VIEW OF INTAKE HOOD
 Showing the Perforated Partitions and Dust Gutters

"ACORN" NATURAL VENTILATORS.

The "Acorn" Natural Ventilator consists of two units, the Outside Intake Hood (Figs. 1 and 2) and the Inside Diffusion Box (Figs. 3 and 4). The Outside Hood contains a series of perforated brass partitions so located that the currents of air strike and pass through the perforations, the dust and dirt remaining outside and the air-currents being broken up and the air diffused.

Located on the inside of the Diffusion Box is a double-mesh removable screen which ensnares the dirt, dust, soot and foreign matter that may have escaped the outer hood. This screen is removable. The Diffusion Box regulates the supply of air by an adjustable lid.

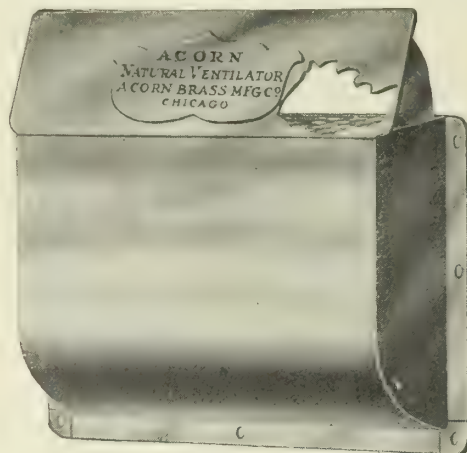


FIG. 3. DIFFUSION BOX

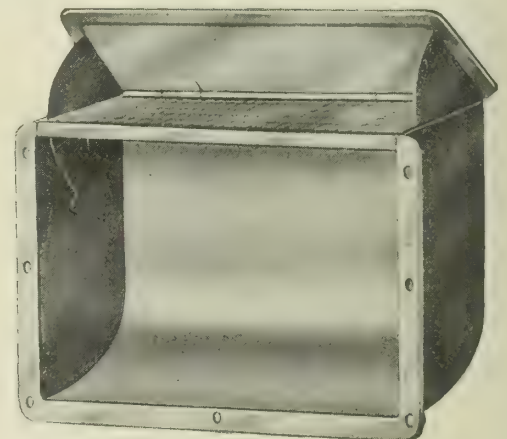


FIG. 4. INSIDE OF DIFFUSION BOX

MATERIAL AND FINISH.

All vents are made of 24-gauge brass and are finished in either copper, bronze, oxidized brass, or black lacquered.

INSTALLATION.

In double-hung windows ventilators may be mounted on portable panels, glazed or unglazed. (See Figs. 5 and 6.) Prices of panels on application.



FIG. 5. INSIDE VIEW OF CABINET PANEL
Showing 5-inch Ventilator



FIG. 6. OUTSIDE VIEW OF CABINET PANEL
Showing 5-inch Ventilator

TOP-EXHAUST REGULATOR.

Air exhaust can be facilitated by use of Top-Exhaust Regulator (Fig. 7). Taken in conjunction with bottom intake vents and upper exhausts to remove vitiated air, an almost perfect circulation is secured.

FOR STATIONARY WINDOWS.

In stationary windows ventilators are mounted in the various ways shown in Figs. 8, 9 and 10.

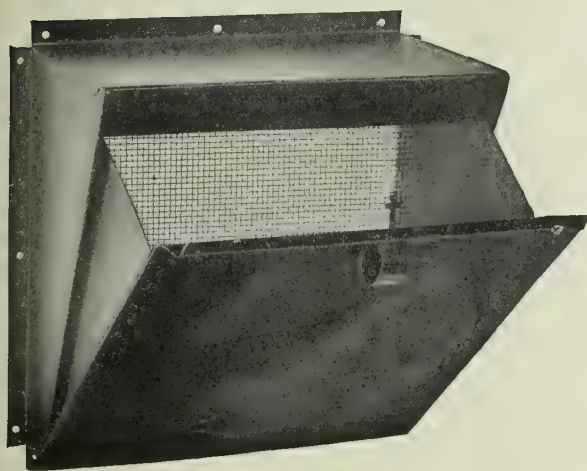


FIG. 7. TOP-EXHAUST REGULATOR

SIZES AND PRICES OF VENTILATORS

Boxes	Hoods	Price per Set
3" x 6" long	3" x 8" long	\$3.00
5" x 7" "	5" x 10" "	3.25
7" x 7" "	7" x 10" "	4.00
9" x 9" "	9" x 10" "	4.50
2" x 8" "	2" x 8" "	1.80

Special discounts on quantity orders.



FIG. 8. ONE OF MANY METHODS OF INSTALLING EXHAUST VENTILATORS INTO "LUXFER" PRISM LIGHTS OR TRANSOMS
Exterior and Interior Views



FIG. 9. PANEL EQUIPMENT SET INTO TRANSOM WINDOWS,
AUTOMATIC ELECTRIC CO., CHICAGO, ILL.



FIG. 10. UPPER AND LOWER INSTALLATIONS IN BRICK WALL,
RUBBER PAINT CO., W. VAN BUREN STREET, CHICAGO, ILL.
FRANCIS L. BARTON, Architect

PLANS, ETC.
USERS.

Blue-prints furnished architects on request. Send for our catalogue.
A thousand names of users will be furnished on application.

ACME VENTILATING COMPANY

Window and Car Ventilators; Electric Fans and Blowers
Ventilating Systems Installed

Fisher Building
CHICAGO, ILL.

PRODUCTS.

Manufacturers of and dealers in "PACKER" NATURAL WINDOW VENTILATORS, "ACME" CAR VENTILATORS, EXHAUST FANS and BLOWERS.

DESCRIPTION.

The "Packer" Ventilator, patented February 4, 1908, consists:

(1) Of a cylinder with longitudinal openings in upper and outer walls.

(2) A semi-cylindrical shutter on interior of cylinder adapted to swing on its axis and to open and close the longitudinal opening in upper wall of shell. By this shutter the admission of air to room is regulated.

(3) A deflector plate within cylinder and attached to the outer longitudinal opening directs air currents downward and against the interior line of cylinder. The air currents then follow upward along the inner wall of cylinder and are forced through an upper longitudinal opening, taking a directly upward course along window glass. The control of the air currents is positive.

(4) An adjustable outer hood with screen attached, preventing the admission of dust, rain and snow.

MATERIAL AND FINISH.

Ventilators are made of the best material obtainable, half-hard brass or copper, and will be finished to match interior hardware when so specified.

Wooden panels are made of oak or birch and given a fine cabinet finish in either natural wood, enamel or stain.

CAPACITY.

The ventilation capacity of the "Packer" Ventilator is as follows:

18-inch cylinder, 24 square inches.

24-inch cylinder, 33 square inches.

30-inch cylinder, 42 square inches.

36-inch cylinder, 51 square inches.

In panels over 48 inches in width cylinders of the required length may be used, thus giving ventilation the full width of the window.

The capacity of the "Packer" Ventilator is not affected by the use of a screen, the opening in hood to which screen is attached (see Fig 6) being sufficiently large to provide for screen resistance and still give full capacity of inside opening.

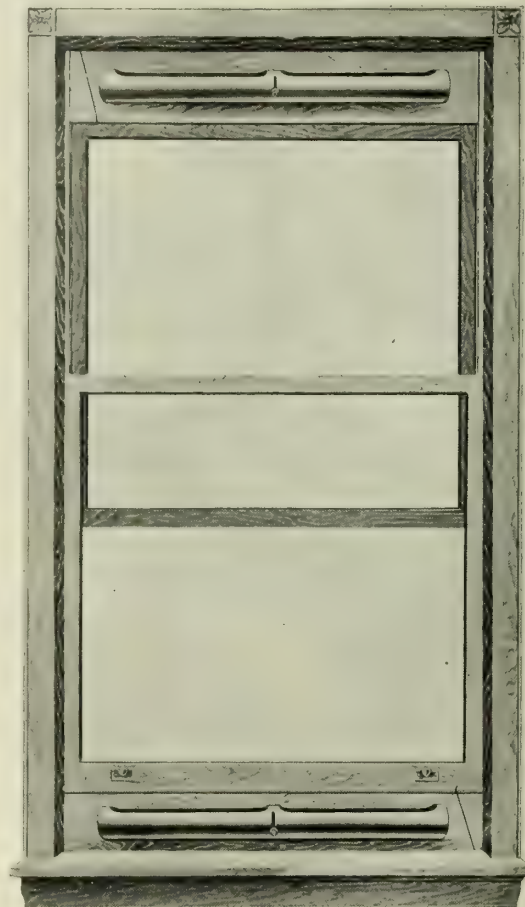


FIG. 1. TOP AND BOTTOM PANEL INSTALLATION

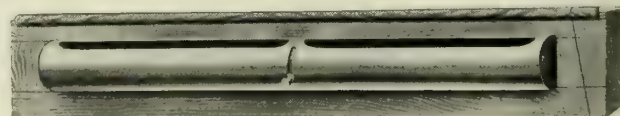


FIG. 2. INSIDE VIEW, PANEL INSTALLATION

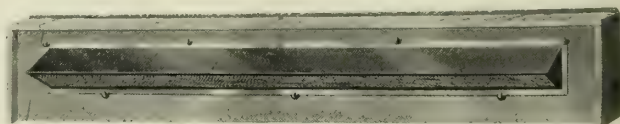


FIG. 3. OUTSIDE VIEW, PANEL INSTALLATION



FIG. 4. METAL CYLINDER AND OUTER HOOD

METHODS OF
INSTALLATION.

PANEL INSTALLATION—Fig. 1 illustrates panel method of applying this device; the adjustable end makes it a simple matter to remove and replace panel. These are supplied for both top and bottom installation, as illustrated.

SASH RAIL INSTALLATION—The construction of the "Packer" Ventilator is such that a cylinder of full capacity (3 inches diameter) and the desired length may be installed in lower sash rail having a height of $5\frac{1}{2}$ inches. This is an ideal method of installation for new buildings. See Figs. 5 and 6.



FIG. 5. INSIDE VIEW, SASH RAIL
INSTALLATION

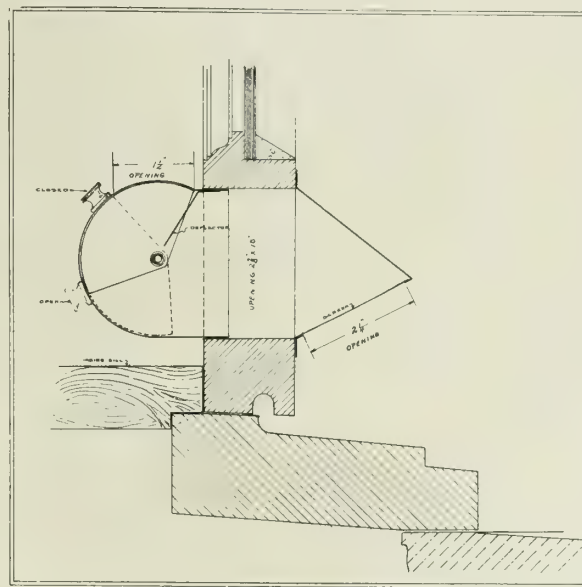


FIG. 6. SECTIONAL VIEW, SASH RAIL
INSTALLATION

PLATE GLASS INSTALLATION—A desirable application to plate glass windows is the insertion of the ventilators in a skeleton panel, the plate glass being shortened to accommodate the same. This method is equally applicable to buildings both old and new.

BRICK WALL INSTALLATION—Fig. 7 shows sectional view of ventilator permanently constructed in wall and back of radiators, the heat from the radiators serving to increase the flow of fresh air from without; and as air supply enters the room it passes over the radiator, the temperature is equalized, the possibilities of draft eliminated and a constant supply of fresh air assured. This is one of the most efficient and most economical systems that may be devised.

DISTINCT
ADVANTAGES.

This ventilator is neat, attractive and ornamental in any parlor, and has greater capacity than any other, the full width of window being utilized for ventilation if desired. No movable parts to annoy or become inoperative; overcomes drafts absolutely. With adjustable outer hood the cleaning of cylinder is a simple matter. It is made of best material and is indestructible. Can be applied to windows without interfering with window screens. No miniatures are made for sash rail installation; the full capacity cylinder may be applied.

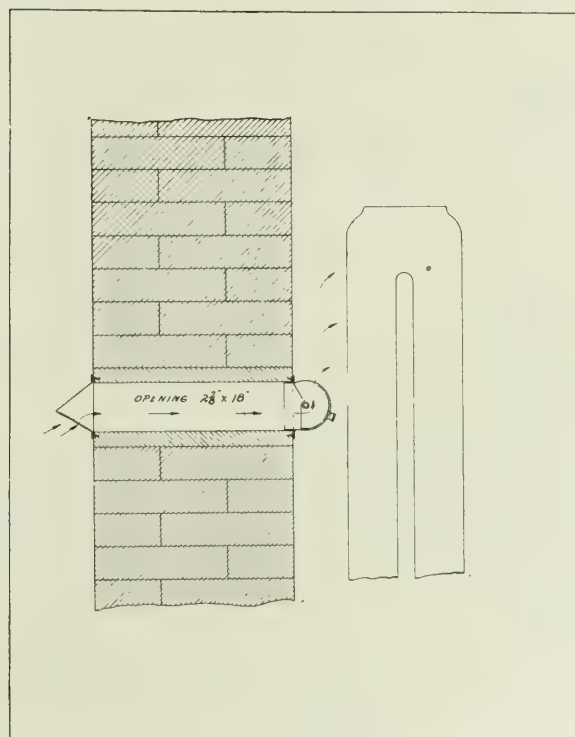


FIG. 7. SECTIONAL VIEW, BRICK WALL
INSTALLATION

AMERICAN BLOWER COMPANY

Heating and Ventilating Apparatus and Steam-Engines

"SIROCCO"

TRADE-MARK

GENERAL OFFICES
DETROIT, MICH.

WORKS
DETROIT, MICH.
TROY, N. Y.

NEW YORK, N. Y.
PHILADELPHIA, PA.

PITTSBURG, PA.
ATLANTA, GA.

SALES OFFICES

CHICAGO, ILL.
ST. LOUIS, MO.

SAN FRANCISCO, CAL.
SEATTLE, WASH.

PRODUCTS.

HEATING, VENTILATING, COOLING, DRYING and MECHANICAL DRAFT APPARATUS; VOLUME and PRESSURE BLOWERS; CENTRIFUGAL, TURBINE, PROPELLER and CONE FANS; HIGH, MEDIUM, and LOW PRESSURE STEAM-ENGINES; HOT-BLAST or MECHANICAL-INDIRECT HEATERS; SEPARATING and AUTOMATIC RETURN-STEAM TRAPS; BLAST GATES and MILL DAMPERS.

TRADE-MARKS.

The goods manufactured under the trade-marks "A B C" and "SIROCCO" are well known to be the "standard of excellence." Architects can specify them with the full assurance of thereby securing the best.

ENGINEERING, CONSULTATION, CATALOGUES.

By our recent consolidation with the Sirocco Engineering Company two of the strongest and most experienced engineering forces in this field were brought together. The services of our experts are at the disposal of the architect or engineer. Sectional catalogues sent upon application.

FAN SYSTEM OF VENTILATION AND HEATING.

Architects and engineers are aware of the great necessity of ventilation for both health and comfort. Its need extends from the home to the school, office, theater, church, factory.

The Fan System, sometimes known as the Blower System or Plenum System, provides absolute air changes, producing positive ventilation, and as a complete heating and ventilating system, allows automatic control of temperature without restricting the flow of fresh warmed air.

"SIROCCO" FANS.

The "Sirocco" Fan is absolutely unequalled for installation in public buildings, school and church basements; in tunnels, subways, boiler rooms, etc.

The distinguishing features reside in the blast-wheel (Fig. 3). Note the drum form and large number of long narrow blades, curved forward.

The advantages over former types are as follows—Increased efficiency resulting in power saving of 20 per cent; increased capacity of fan for same power, 25 per cent; increased capacity for same space occupied, 40 per cent (or smaller space occupied for same capacity); slower speed, resulting in quiet operation.

It is good practice to specify "Sirocco" Fans.

PORTABLE ELECTRIC FANS.

"Sirocco" Fans, with electric motors attached, are built in small sizes (down to a three-inch diameter wheel) and make ideal ventilators for offices, telephone booths, sleeping-rooms, baths and toilets, theater dressing-rooms, steamer state-rooms, kitchens, etc. These small fans are superior to the so-called Buzz Fan, as these do not provide positive ventilation. Furnished complete, ready for attachment to any electric-light socket.



FIG. 1. TYPICAL FAN SYSTEM HEATING AND VENTILATING APPARATUS

Showing heater in casing, and bypass mixing damper

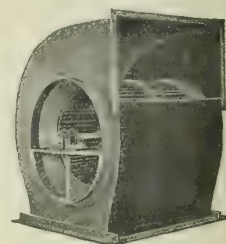


FIG. 2. "SIROCCO" DOUBLE-INLET FULL-HOUSED BLOWER

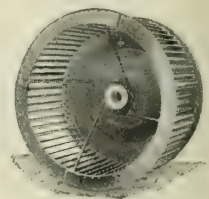


FIG. 3. "SIROCCO" WHEEL (Patented)

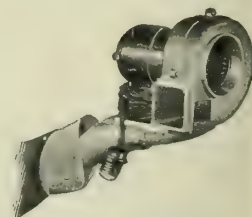


FIG. 4. PORTABLE ELECTRIC FAN

THE BURT MANUFACTURING COMPANY

High-Grade Ventilators

600 Main Street

AKRON, OHIO

GEO. W. REED & CO., Montreal, Sole Manufacturers of "Burt" Ventilators for Canada

PRODUCTS.

Manufacturers of the "BURT" GLASS-TOP VENTILATOR, a combination Skylight and Ventilator, and the "BURT" METAL-TOP VENTILATOR, for automatically removing impure air, hot air, smoke, steam or gas out of any building without any expense other than the first cost of the ventilators. Also, OIL FILTERS and EXHAUST HEADS.

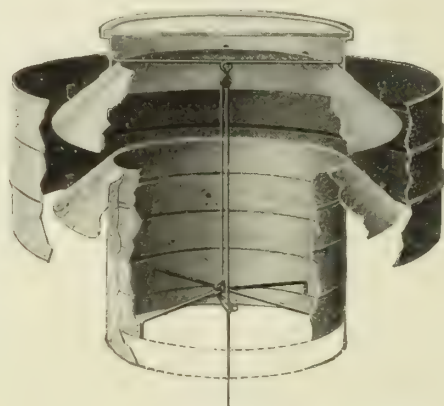


FIG. 1. SECTIONAL VIEW OF "BURT" GLASS-TOP VENTILATOR

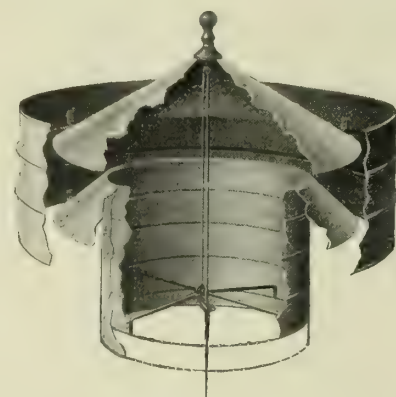


FIG. 2. SECTIONAL VIEW OF "BURT" METAL-TOP VENTILATOR

THE "BURT" GLASS-TOP VENTILATOR.

The "Burt" Glass-Top Ventilator (Fig. 1) has a most important characteristic in that it constitutes both a skylight and ventilator. In most cases this makes unnecessary any other form of skylight. It is sometimes advisable to close a ventilator, in which case the "Burt" can be entirely closed without in the slightest degree obstructing the passage of daylight through it.

The "Burt" is the only ventilator on the market having this valuable feature, which is fully protected by our patents.

In every other make of ventilator in which a glass top is used the common flat damper is employed, and when that damper is closed the light is wholly shut off.

We furnish the glass top in all sizes up to and including the 72-inch size. We use heavy wired glass of ample weight for each size.

THE "BURT" METAL-TOP VENTILATOR.

The "Burt" is made with a metal top instead of a glass top, when required (Fig. 2). With the exception of the top, both styles are precisely alike in construction and operation, but the metal-top style is a ventilator solely, and does not admit light. We furnish the sliding-sleeve damper in all metal-top ventilators, the same as in the glass-top style, without additional charge.

EXCLUSIVE FEATURES.

The "Burt" possesses the following features not found in any other ventilator:

- (1) The telescopic or sliding sleeve damper.
- (2) A combination ventilator and skylight, in which the light is never shut out.
- (3) The air-shaft is unobstructed, and the air current never deflected downward.
- (4) The temperature of the building can be easily and exactly regulated by the use of the sliding-sleeve damper.
- (5) A trough or lip (patented) placed below the glass collects all condensation, making it impossible for water to drop down into the building.
- (6) An especially designed band (patented) fastens the glass so that it can be shipped separately, and easily placed in position. If glass is broken it can be replaced without

taking down the ventilator. No water can remain on the glass, and the ventilator is guaranteed absolutely storm-proof.

THE PATENTED DAMPER.

The patented sliding-sleeve damper used on all "Burt" Ventilators is not affected by air currents, requires no attention after it has been installed, and, having no flat surface, does not collect dust or refuse, to be shaken off into the building, as is the case with all other dampers.

The sliding-sleeve damper is operated from below by means of a cord and pulley, and can be readily adjusted by the special attachment (See Figs. 1 and 2) by which the rope is forced between the spring, and held permanently in place. It is not necessary to fasten the cord to a nail, hook, or post, as is the case where the common flat damper is installed, and there is nothing in the "Burt" Ventilator to interfere with the operation of machinery, a frequent occurrence where the flat-damper method is used.

CONSTRUC- TION.

The "Burt" Ventilator is made only in the round pattern, of galvanized iron, brass, or copper.

Great care is exercised in making the air-shaft round; the sliding sleeve, being also perfectly round, slides easily up and down without friction. When the sleeve is at its highest point it is in contact with the top and completely closes the ventilator.

METHOD OF OPERATION.

The "Burt" Ventilator is so constructed that the air-shaft remains always free and unobstructed, whether the ventilator is closed or not. In other ventilators when the flat damper commonly used is partly closed the air current strikes the damper (Fig. 4) and is reflected back into the room, while in the "Burt" (Fig. 3), the air-shaft being always open, the air current flows unobstructed to the top of the air-shaft, where it escapes from the ventilator. Thus the "pulling power" of the "Burt" is far greater than that of any other stationary ventilator.

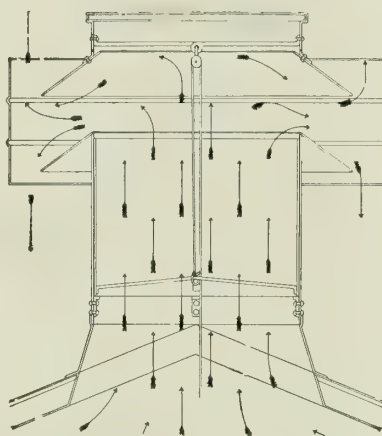


FIG. 3.

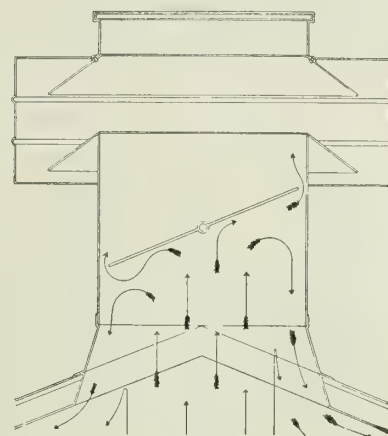


FIG. 4.

PRICES, DIMENSIONS, WEIGHTS AND GAUGE OF IRON OF "BURT" VENTILATORS.

Diameter of Neck	Price with Sliding-sleeve Damper	Gauge of Iron	Diameter of Outside Rim or Band	Height of Glass Top Without Base	Height of Metal Top Without Base	Length of Neck from Bottom to Lower Rim of Wind Shield	Net Weight Metal Top Without Crating	Net Weight Glass Top Without Crating	Area of Diameter in Square Inches
12 inch	\$5.00	22	22 in.	14	17	4 1/4 in.	17 lbs.	20 lbs.	113.10
14 "	7.50	22	24 "	15	17 1/2	4 1/2 "	20 "	24 "	153.94
16 "	10.00	22	26 "	15 1/2	19	5 "	24 "	30 "	201.06
18 "	12.50	20	29 "	16	21	5 1/3 "	28 "	34 "	254.47
20 "	15.00	20	32 "	18	23	6 "	33 "	42 "	314.16
24 "	18.00	20	38 "	22	26	6 1/2 "	45 "	56 "	452.39
30 "	25.00	18	46 "	24	30	7 "	90 "	105 "	706.85
36 "	37.50	18	54 "	27	36	8 1/2 "	130 "	155 "	1017.88
40 "	50.00	18	64 "	33	40	10 "	175 "	200 "	1256.00
42 "	54.00	18	68 "	34	42	11 "	190 "	225 "	1386.00
48 "	60.00	18	78 "	36	46	12 "	300 "	320 "	1809.00
54 "	70.00	18	86 "	40	51	13 1/2 "	350 "	400 "	2390.00
60 "	80.00	16	94 "	43	54	15 "	430 "	480 "	2827.00
66 "	90.00	16	102 "	46	55	16 1/2 "	500 "	550 "	3456.00
72 "	100.00	16	110 "	51	66	18 "	560 "	610 "	4071.00

Prices are f. o. b. Akron, Ohio.

Ventilator bases are charged for extra, for which prices will be quoted on receipt of specifications.

SPECIFICA- TION.

"Furnish and set up 'Burt' (glass or metal top) Ventilators with adjustable sliding sleeve damper and clip for holding damper, of the size and number shown on plans, all to be made of gauge iron and manufactured by THE BURT MANUFACTURING COMPANY of Akron, Ohio."

DOWMAN-DOZIER MFG. CO.

MANUFACTURERS OF

Ventilators and Skylights

ATLANTA, GA.

PRODUCTS.

"DIXIE" VENTILATORS, METAL SKYLIGHTS and CORNICES in galvanized iron or copper; GALVANIZED-IRON WALL PLUGS, WALL TIES, CORNER BEADING, RAIN-WATER PIPES, LEADER HEADS, GUTTERS and FITTINGS, CRESTINGS, FINIALS, VOLUTES.

METAL CEILINGS, METAL SHINGLES, GALVANIZED TANKS, BLOW PIPE, SMOKE-STACKS, TIN ROOFING, CORRUGATED-IRON ROOFING, SLATE ROOFING, TILE ROOFING, GRAVEL and SLAG ROOFING.

PATENT METAL WINDOW FRAMES for WIRED GLASS and METAL-CLAD DOORS and SHUTTERS, for which see General Index.

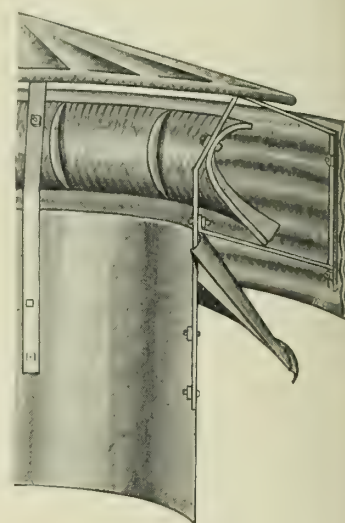
THE "DIXIE" VENTILATOR.

The illustrations given show the unequalled merits of this proven extractor of foul air so well that only a few words of explanation are required. We draw attention to the curved deflector which is unique with the "Dixie"; to the strong manner in which the different parts are carried by the band irons; to the ribs stamped into the solid sheet by special dies to obtain the shape and curvature, instead of by the cutting-out of pieces and soldering the seams together.

The "Dixie" is positively storm-tight and proof against down-drafts, while the shield and curved deflector convert the up-drafts into a strong "suction action," thus assisting the ventilation.



Home of the "Dixie" Ventilator



Half Cross-Section



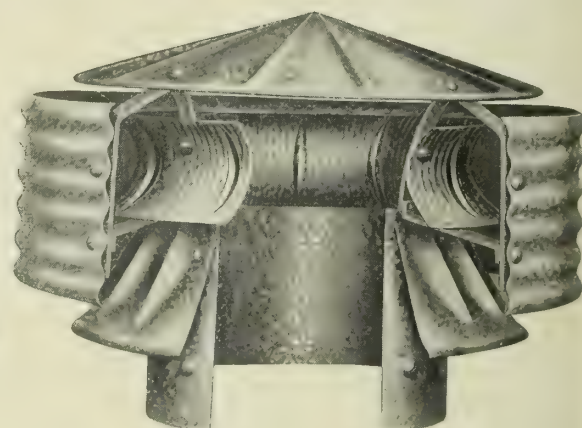
Outside View



Deflector



The "Dixie" Cap



Interior View

ILLUSTRATIONS OF THE "DIXIE" VENTILATOR

SIZES, PRICES,
SHIPMENTS.

The "Dixie" is guaranteed to do the work for which it is sold. All inquiries regarding the size required, prices, etc., are answered promptly. Immediate shipment can be made of standard sizes.

HITCHINGS & CO.

Sash-Operating Apparatus for Ventilation

MAIN OFFICE AND WORKS

Spring and Louisa Streets

ELIZABETH, N. J.

TELEPHONE, 890 ELIZABETH

FACTORY
ELIZABETH, N. J.

PRODUCTS.

We manufacture SELF-LOCKING SASH-OPERATING DEVICES for opening and closing sash hung at top, bottom, or side, with hinges or pivots.

DESCRIPTION.

Our Self-Locking Sash-Operating Device is made in various sizes, extra strong and powerful, for long runs of sash in mills, foundries, power plants, pier sheds, etc., or small and neat for banks, offices, hospitals, and steamships, where compactness and nicety of finish count.

It is adaptable to operating with either hand-wheel and rod or chain attachment.

It consists mainly of a rocking or line shaft, usually made of one-inch steel tubing, supported by bearings securely bolted or screwed to frame work of the building, and extending in length to just beyond the last sash to be opened in the line. One line of shafting is required for each line of sash.

Arms and rods are secured to the shafting by set screws or by clamps when required. The length of arms and rods is governed by the size of sash, location of shaft, and the distance sash is to be opened.

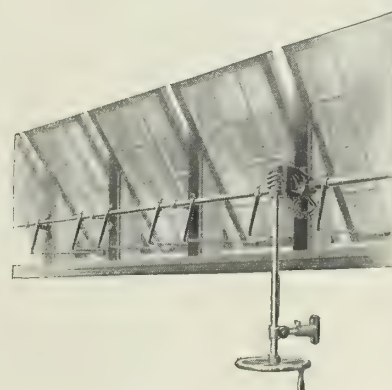
The shaft is rocked by a worm and gear wheel held in place by an adjustable fork bolted to a stationary main bearing with an operating rod of $\frac{3}{4}$ -inch solid, round, cold rolled steel, extending down from the gear and secured to the post or wall by cast-iron adjustable standards with a hand-wheel or crank at the bottom of rod. The operating rod can be offset or carried either in a horizontal or slanting direction by the use of miter gears or universal joints at the angles.

Gears can be provided with a sprocket wheel and chain operator where required for special conditions.

Short lines of sash at different angles may be operated by one set of gearing by connecting the rocking shaft at the angles with a universal joint or miter gear.

We now manufacture a new type of apparatus for operating runs of sash up to 300 feet long. In this type the shafting is of $\frac{3}{4}$ -inch solid, square steel which moves lengthwise in operating the sash.

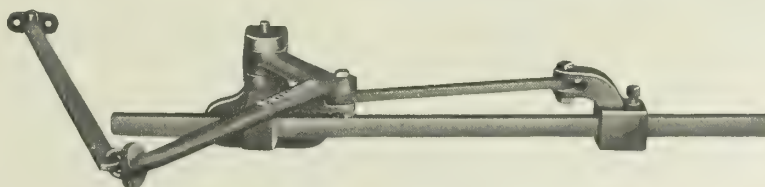
For further information see our new catalogue.



"HITCHINGS" VENTILATING APPARATUS



"HITCHINGS" VENTILATING APPARATUS
AS USED IN NEW YORK PUBLIC BATHS,
EAST 23RD STREET



DETAIL OF NEW LONG-RUN DEVICE
Showing sliding shaft, arms and rods used

NEW TYPE
APPARATUS
FOR
LONG RUNS.

GLOBE VENTILATOR COMPANY

203 River Street

TROY, N. Y.

PRODUCTS.

We are manufacturers of the "GLOBE" VENTILATORS and CHIMNEY-CAPS, "GLOBE" LAMP-JACKS, and "GLOBE" VENTILATED RIDGING.

DESCRIPTION OF "GLOBE" VENTILATORS.

The "Globe" Ventilator is simple and strong in construction, absolutely storm-proof, effective in operation, and symmetrical in design. By their use smoky chimneys are cured, sluggish flues corrected, and attics rendered comfortable.

In Fig. 2 is shown a sectional view of the "Globe" Ventilator, from which it will be seen that the air in striking the upper or lower dome from any direction is deflected by the turned edges, which form an exhaust for the ventilator, compelling the air in the pipe to rush toward the head to fill the vacuum. The band of the ventilator not only prevents any air from the sides from entering the cap, but as it is raised a short distance above the edge of the upper, and extended below the edge of the lower dome, the air is deflected in like manner in producing the same effect. The arrows in the illustration indicate the currents of air.

USES.

The "Globe" Ventilator is specially adapted for removing excessive heat and foul air from churches, schoolhouses, public buildings, residences, and storehouses; for exhausting steam and gas from mills, foundries, and factories; and for ventilating sewer pipes they will be found indispensable.

INSTALLA- TIONS.

The "Globe" Ventilators are being specified by leading architects all over the country, and many prominent buildings are equipped with them in this and other lands.

MATERIALS AND SIZES.

"Globe" Ventilators are made in copper and galvanized iron, with dome or glass tops, in all sizes from 2 inches to 84 inches in diameter.

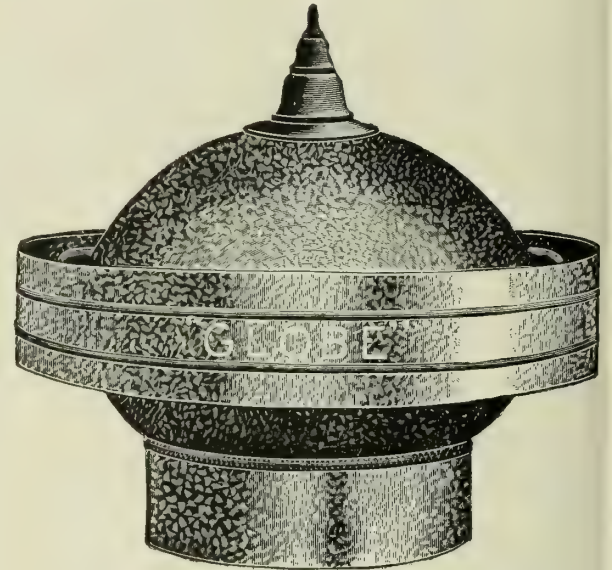


FIG. 1. "GLOBE" VENTILATOR, WITH DOME

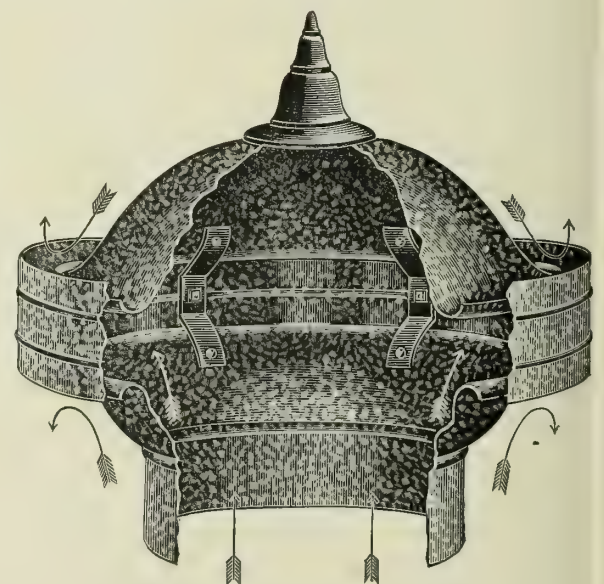


FIG. 2. "GLOBE" VENTILATOR
Sectional View

GLASS TOP
VENTILATOR.

The "Globe" Glass Top Ventilators (Fig. 3) are the most shapely, durable, and effective of any on the market. They are designed for use where it is desired to secure the greatest degree of ventilation and the largest area of light, and as the "Globe" is absolutely storm-proof it is not necessary to close the damper to keep out the snow and rain, and thereby shutting off the light. They are strongly built, firmly braced, and in many cases serve the purpose and save the expense of a skylight.

APPLICATION.

Fig. 4 shows the application of the "Globe" Ventilator to a chimney and its graceful appearance when so applied.

In building base care should be taken to guard against dead air spaces. It should be made to fit securely over the chimney and then to taper gradually to dimensions of pipe to which the cap is attached, thus allowing a free exit for smoke and gases.

Where a chimney has two or more flues, a separate cap should be used, each independent of the other, but two or three flues may be covered with one base having separate pipes and caps for each flue, as shown in Fig. 5.

PRICES.

Prices of our galvanized-iron ventilators are given below. Discounts will be furnished upon application. If bases are required, they are charged extra. Prices of glass top and copper ventilators will be forwarded upon request.

2 inch....\$1.00	5½ inch....\$2.85	11 inch....\$6.20	18 inch...\$27.00	30 inch.. \$65.00	54 inch..\$300.00
2½ " 1.00	6 " 3.40	12 " 6.75	19 " ... 30.00	32 " .. 80.00	60 " .. 360.00
3 " 1.50	6½ " 3.70	13 " 9.00	20 " ... 33.00	34 " .. 100.00	64 " .. 400.00
3½ " 1.50	7 " 4.00	14 " 13.00	22 " ... 36.00	36 " .. 120.00	72 " .. 480.00
4 " 1.75	8 " 4.65	15 " 16.00	24 " ... 40.00	40 " .. 180.00	
4½ " 2.00	9 " 5.20	16 " 20.00	26 " ... 50.00	44 " .. 200.00	
5 " 2.50	10 " 5.75	17 " 23.00	28 " ... 56.00	48 " .. 240.00	

CO-OPERATIVE
SERVICE.

We shall be pleased to correspond with interested persons regarding the "Globe" Ventilators and will supply all information required, models, blue-prints, and printed literature pertaining to them, upon application.

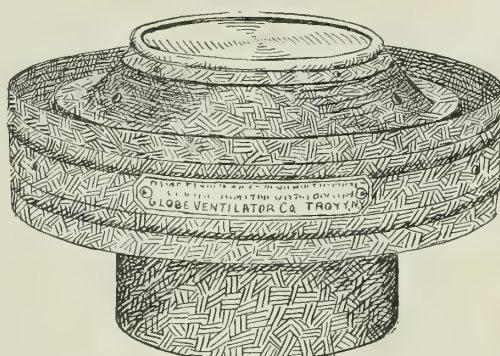


FIG. 3. GLASS-TOP VENTILATOR

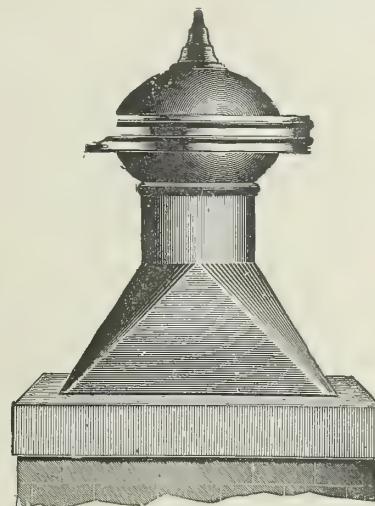


FIG. 4. "GLOBE" VENTILATOR
APPLIED TO CHIMNEY

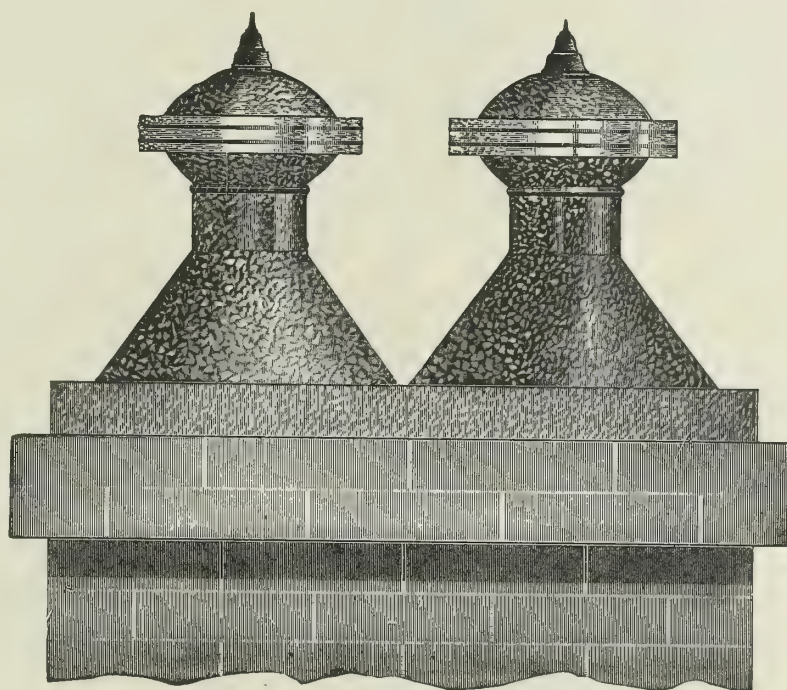


FIG. 5. SEPARATE CAPS FOR EACH FLUE

ILG ELECTRIC VENTILATING CO.

MANUFACTURERS OF

Ventilating and Cooling Apparatus

20 West Kinzie Street

CHICAGO, ILL.

TELEPHONE, CENTRAL 5622

BRANCHES

NEW YORK, N. Y., 145 Chambers Street
TELEPHONE, 3812 WORTH

PHILADELPHIA, PA., 1109 Arch Street
TELEPHONES—FILBERT 39-91
RACE 14-12

CLEVELAND, OHIO, 1408 West 3rd Street
TELEPHONE, BELL MAIN 2931

AGENCIES

COLUMBUS, OHIO, ERNER & HOPKINS Co.
DENVER, COLO., HENDRIE & BOLTHOFF MFG. & SUPPLY CO.

MINNEAPOLIS, MINN., R. M. LAIRD
GALT, ONT., CAN., SHELDONS LIMITED

SEATTLE, WASH., KILBOURNE & CLARK Co.

PRODUCTS.

Manufacturers of a complete line of DIRECT-CONNECTED ELECTRIC PROPELLER and DISC FANS, EXHAUST FANS, STEEL PLATE FANS, VENTILATING FANS, BLOWERS and EXHAUSTERS, any size, any current, any voltage; MECHANICAL VENTILATING SYSTEMS; AUTOMATIC LOUVERS of any size.

"ILG" SELF-COOLED PROPELLER FANS.

Fig. 1 shows the general appearance of the "Ilg" Self-Cooled Protected-Type Propeller Fan. Motors are enclosed and made dust-proof. The motor is of the round body type fitted closely into a circular ring. The arms supporting the motor are forged steel. The motor and all parts are interchangeable. The two bearings of the motor are connected so as to allow uniform oiling from one point. Fig. 2 is a sectional view of the Fan showing the cooling of the motor. The air AA is being drawn into the Fan to take the place of that blown outward at B; C is a current of cool, clean air drawn from outside the premises through the tube connected with the motor. The air after ventilating motor is mingled and carried away with the general exhaust of the Fan at B.



FIG. 1. "ILG" SELF-COOLED PROTECTED-TYPE PROPELLER FAN

Showing air being drawn through ventilating pipe, cooling motor

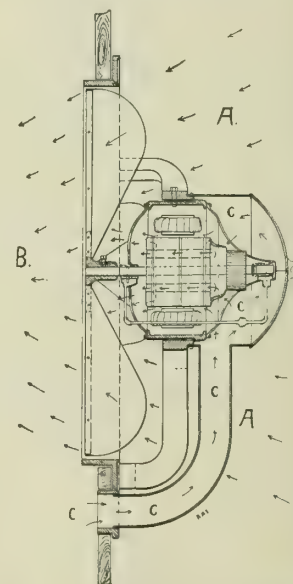


FIG. 2. SECTIONAL VIEW

CAPACITIES AND PRICES.

Type Size	Air Capacity per Min.	Speed	DIRECT CURRENT		
			110 Volt	220 Volt	500 Volt
18 A	2530	900	\$ 45.00	\$ 47.00	
18 B	3860	900	57.00	59.00	
20 B	5000	900	75.00	77.00	\$ 79.00
24 A	6000	800	90.00	92.00	94.00
24 B	8100	800	108.00	110.00	112.00
30 A	9200	700	125.00	127.00	130.00
30 B	11000	700	142.00	144.00	147.00
36 A	12500	600	150.00	152.00	155.00
36 B	15000	600	170.00	172.00	175.00
42 A	18000	500	203.00	207.00	212.00
48 A	26400	450	240.00	245.00	250.00
54 A	33500	400	297.00	304.00	310.00
60 A	40000	360	340.00	345.00	357.00

Speeds are subject to 5 per cent. variation.

Variable speed controllers are furnished with all direct-current Fans.

Type Size	Air Capacity per Min.	SPEED		PRICE	
		60 Cycle	40 Cycle	110 Volt	220 Volt
18 B	4000- 3800	1200	800	\$ 65.00	\$ 67.00
24 B	8000- 7000	900	600	121.00	124.00
30 B	10000- 8000	600	400	172.00	176.00
36 B	15000-13500	600	400	220.00	225.00

Alternating-current Fans can only be operated at full speed, starting direct from switch.

For vertical running Fans equipped with lower ball bearings, apply for special price.

Price net f. o. b. Chicago.

SPECIFICATIONS.

Furnish and erect one inch "Ilg" Direct-Connected Propeller Fan, speed R.P.M. under free circulation. Motor to be wound for (110, 220, 500) volts direct current (single phase, two phase, three phase) Cycle alternating current. Motor to be enclosed and automatically air cooled. All parts to be readily accessible for oiling and inspection. Bearings to be adjustable and self-oiling. Arms supporting motor to be forged steel. Motor to be interchangeable, self-aligning and to run continuously without attaining a temperature greater than 40° Cent. over that of the surrounding air.

"ILG"
AUTOMATIC
LOUVERS.

The "Ilg" Automatic Louver, for use with Exhaust Fans (Fig. 3), consists of several horizontal aluminum slats, pivoted into a rigid frame, and hanging free in front of exhaust vent.

The slats are so arranged that when hanging down they overlap each other, fitting closely, thus effectually preventing the ingress of sweeping winds, draughts or rain that otherwise frequently cause annoyance by blowing in through unprotected vent when the Fan is at rest.

The Louver opens with the force of the air current from the Fan, and drops shut automatically by gravity. No attention need be given them; they take care of themselves.

The "Ilg" Louver is also invaluable where automatic vents are desirable, allowing foul and overheated air to escape and preventing the ingress of the outside air, or *vice versa*.

CONSTRUC-
TION.

The frame is made of angle iron, heavily enameled. Rods are of Bessemer steel, copper-plated. Slats are made of aluminum and are not affected by any kind of weather or salty atmosphere; consequently do not corrode. All working parts are of phosphor bronze.

SIZES AND
PRICES.

Type Size	Net Prices
18-inch	\$ 9.00
20-inch	10.00
24-inch	12.00
30-inch	15.00
36-inch	18.00
42-inch	21.00
48-inch	25.00

Prices for larger and special sizes on application.

"ILG"
BLOWERS
AND EX-
HAUSTERS.

Fig. 4 represents our Universal Type Direct-Connected Blowers and Exhausters. The motor is machined circular and fits into a supporting ring which is supported by forged arms. This construction permits the direction of the discharge being changed to any angle. By removing the legs from housing and cap bolts from the supporting ring the discharge can be swung to any desired angle, the motor staying in position by sliding in the supporting ring. This combines all the different discharges into the one Blower. The bearings are combined so as to allow uniform oiling from one point. Motors are furnished either open, semi- or fully-enclosed.

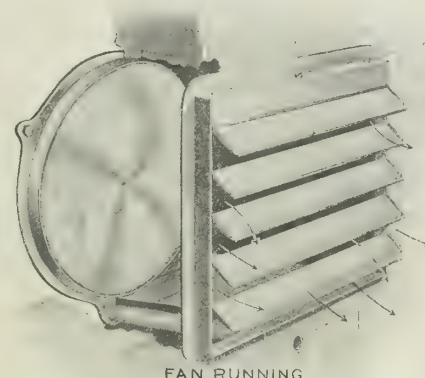
Estimates will be furnished upon application. Give full information regarding class of work the apparatus is intended to perform and specify voltage and current.

The services of our Engineering department are at the command of purchasers to solve any problem that may arise.

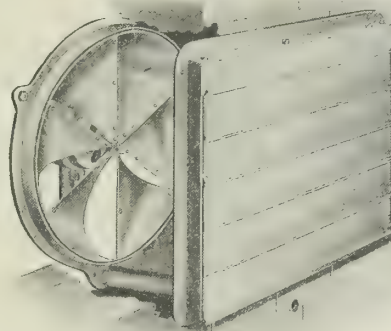
All our product is guaranteed against mechanical or electrical defects for the period of one year from date of sale.

ESTIMATES
AND
CO-OPERATIVE
SERVICE.

GUARANTEE.



FAN RUNNING



FAN NOT RUNNING

FIG. 3. "ILG" AUTOMATIC LOUVERS

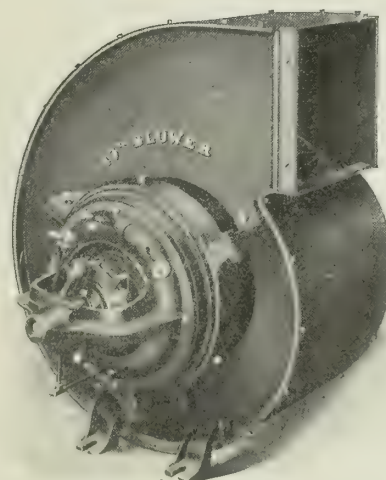


FIG. 4. "ILG" BLOWER AND EXHAUSTER

THE IDEAL MANUFACTURING CO.

Manufacturers of Sash Ventilators

ERIE, PA.

PRODUCTS.

The "IDEAL" VENTILATOR, a Ventilator for any Window Sash, old or new.

DESCRIPTION.

The "Ideal" Ventilator is made of 19-gauge $\frac{1}{2}$ hard sheet brass, and consists of an inside plate 2 inches wide by 9 inches long, to which is attached a shutter with wings, which is held in desired position by releasing springs formed of and connected with the inside plate which works into indentation on the wings of shutter, giving an opening of 8 square inches. The opening on the outside of sash rail is covered with a brass plate 2 inches by 9 inches, fitted with brass wire-cloth of fine mesh, which is in no way connected with the inside plate, and may be used in any sash $1\frac{3}{8}$ inches or more in thickness.

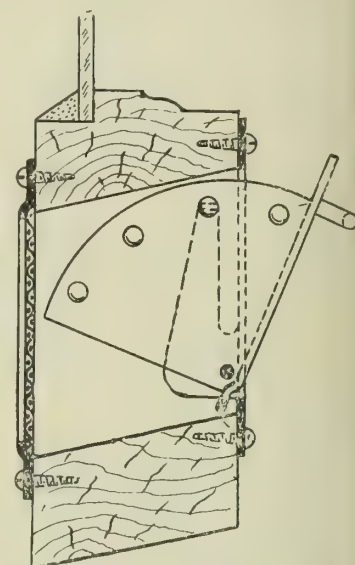
ADVANTAGES, ECONOMY AND COST.

When installed there are no projections to interfere with other screens which may be in the window and it allows the upper and lower sashes to pass, thus permitting the dusting and washing of case-work without annoyance. It has the largest air-space for the size of cut in sash of any ventilator on the market. It does not require a mechanic to install—any one can do it in a few minutes.

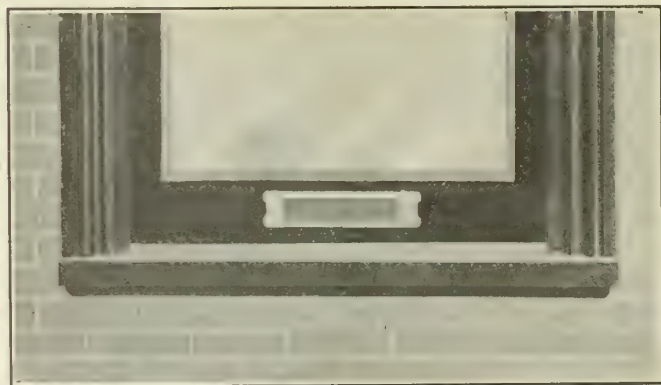
This Ventilator can be used in any window sash and the window can be kept in place and locked at all times. It is neat and attractive on both sides, can not get out of order or break down, costs but little to install and nothing to maintain.

NATURAL VENTILATION.

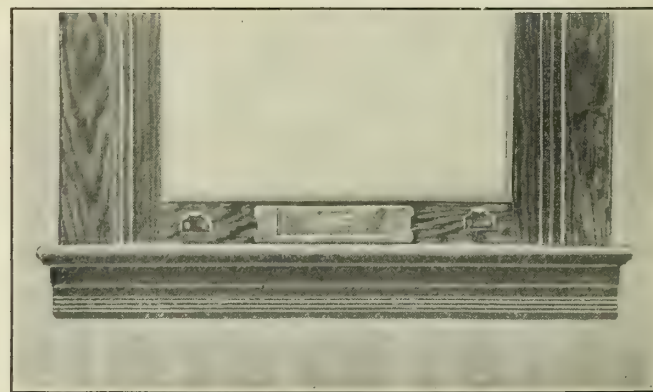
When the Fresh Air is brought in in small quantities through "Ideal" Ventilators and distributed in different parts of the room, it accomplishes that which no mechanical system can—perfect natural distribution.



VENTILATOR PARTLY OPEN
Sectional View Showing Cut in
Sash



Outside View



Inside View

"IDEAL" VENTILATOR INSTALLED

ADAPTABILITY.

It is specially adapted for Offices, Hospitals, Schools, and Dwellings.

INSTALLATION.

To install the "Ideal" Ventilator, a hole is cut in sash rail 7 inches long by $1\frac{5}{16}$ inches wide with a $\frac{1}{8}$ -inch slant to the exterior of the sash. The outside of sash opening being $\frac{1}{8}$ -inch lower than the inside, and being in conjunction with the inside shutter, forms a combination to keep out storms and moisture, breaks the direct draught, and keeps the air in the room pure and free from poisonous gases.

PRICES.

Prices will be furnished on application.

NATIONAL VENTILATING COMPANY

1 Madison Avenue
NEW YORK, N. Y.

CABLE ADDRESS, "NATIVENT"
TELEPHONE, 5499 GRAMERCY

FACTORY
HARRISON, N. J.

PRODUCTS.

Manufacturers of "NATIONAL" VENTILATING DEVICES, including WINDOW VENTILATORS, ROOF and other EXHAUST VENTILATORS, and "NATIONAL" STEEL PUTTYLESS SKYLIGHTS. For "National" Steel Puttyless Skylights see General Index under "Skylights," for our pages.

"NATIONAL" WINDOW VENTILATORS.

These Ventilators consist of two parts, the hood (Fig. 1) and the air-diffusion box (Fig. 2). The hood, which projects into the open air, is provided with a two-winged valve pivoted at its center. When a current of air strikes either wing of the valve that end of the hood immediately closes and the opposite end opens; thus, the windward end of the hood is closed and the air is admitted indirectly through the leeward end. The air passes from the hood to the air-diffusion box and is deflected upward and diffused without draft, and practically free from dust, dirt, and moisture. The air-diffusion box is provided with a piano-hinge shutter by which the air supply can at all times be regulated and controlled at will.

HOW MOUNTED.

One or more sets of these devices are mounted either on removable glazed panels (Figs. 1 and 2), corresponding in length with the width of the windows and finished to harmonize with the trim thereof, or installed directly, either in the sash-rail or in the glass itself.

NUMBER AND SIZE OF DEVICES.

The number and size of the devices depend upon the number and width of windows, size of room, and average number of occupants. The hoods are 2, 4, 5, or 6 inches wide by 10½ inches long, made of 20-gauge steel or copper, finished as desired. The air-diffusion boxes are of corresponding width, 8 inches long by 3 inches deep, made of 20-gauge steel, brass or copper, finished as desired—either oxidized, polished, drop-black, or verd-antique.

QUALITY AND PRICES.

We claim for our window devices superiority over all others in efficiency, capacity, and durability, while our prices, quality considered, are the lowest.

CATALOGUE.

For description of the Ventilating Devices, send for our illustrated 64-page catalogue, which will be forwarded, with quotations, upon application.

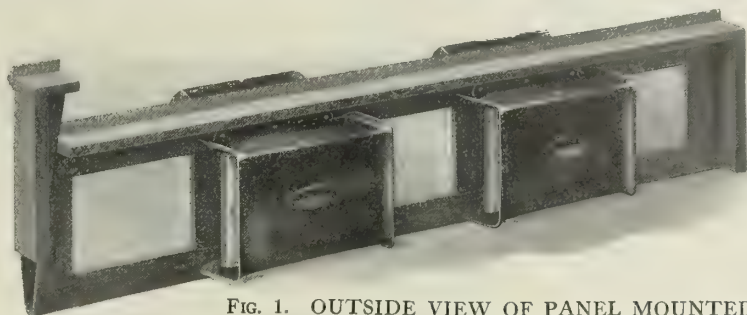


FIG. 1. OUTSIDE VIEW OF PANEL MOUNTED WITH "MOBILE" VENTILATING HOODS. Patented Dec. 23, 1902

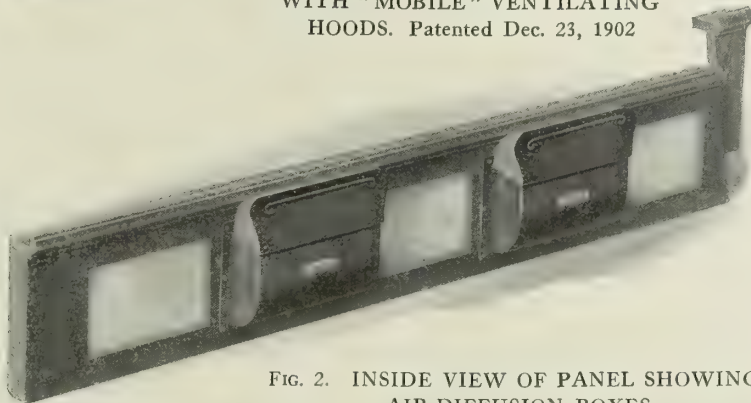


FIG. 2. INSIDE VIEW OF PANEL SHOWING AIR-DIFFUSION BOXES

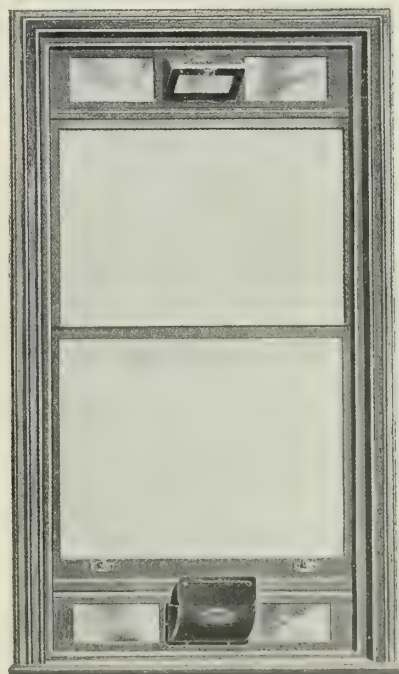


FIG. 3. INSIDE VIEW OF "MOBILE" AND "VICTOR" VENTILATORS

Applied to new construction. Devices mounted on glazed panels, finished to harmonize with the woodwork of the window, inside and out

ROYAL VENTILATOR & MFG. CO.

MANUFACTURERS OF

Special Designs of "Royal" Ventilators

415 Locust Street
PHILADELPHIA, PA.

PRODUCTS.

Manufacturers of "ROYAL" VENTILATORS of Galvanized Steel, Charcoal Iron, and Cold-Rolled Copper, including GLASS-TOP VENTILATORS, RECTANGULAR and SQUARE VENTILATORS with fire-dampers and fusible links, SMOKE-JACK and COMBINATION VENTILATORS, SKYLIGHT VENTILATORS with glass and metal tops, INSECT-PROOF VENTILATORS with wire screen, for Hospital and Government use; CHIMNEY CAPS, round and rectangular, sizes 2" to 10'.

QUALITY.

Value, not price, is the real test; not how cheap, but how good. Cope & Stewardson and many other careful architects always specify the "Royal" (Henvis patent), because it is the best example of the ventilator art that scientific construction, long experience and skilled workmen can produce. The "Royal" Ventilator will exhaust more air than any other ventilator on the market, and will do it under conditions that put the "just as good" kind out of business. Storm-proof, too, and built to last. Our Ventilator Book ought to be on file in your office. May we send it?

DOUBLE- CONE VENTILATOR.

The Double-Cone "Royal" Ventilator will outlast any single-cone ventilator, because the gases and fumes can come in contact with only one side of the metal. This is the part that rusts out the quickest.

INSECT-PROOF VENTILATOR.

The "Royal" Copper-Screen, Insect-Proof, Double-Cone Ventilator is specially adapted for hospitals, powder mills, etc., and "locks out the mosquito criminals."

EXAMINA- TION.

Critically examine the construction of the "Royal" Ventilators and you will specify them. See illustrations on the following page.

ORDERS.

Orders received by mail will be made and shipped with the same promptness and fidelity, and just as low a price will be made, to parties by correspondence as though they personally visited our factory.

SUB- STITUTION.

Manufacturers of so-called ventilators have thought that without any effort worth mentioning they could appropriate as much as possible of our patents, enterprise and expenditure, and the law could not touch them. Has it ever occurred to the architect to inquire, if the above are willing to defraud the manufacturer of the genuine article, what they will do regarding the rest of their contract?

INFRINGE- MENT AND SPECIFICA- TION.

All infringements on the "Royal" will be prosecuted. To avoid complications always specify the "Royal" Ventilators manufactured by the ROYAL VENTILATOR & MFG. COMPANY, Philadelphia, Pa.

REFERENCES.

The "Royal" Ventilators have been specified by leading architects and engineers, and shipments have been made to West Australia, Japan and Porto Rico, from Maine to California and throughout the entire United States, for mills, factories, and buildings of all kinds. The success of the "Royal" is permanent and certain. A partial list of installations is given:

Manila Electric Railroad & Light Co., Manila, Philippine Islands
United States Government Buildings, Grand Junction, Col., and Klamath Agency, Ore., James H. Owen, Contractor
Maxwell-Brisco Motor Car Co., New Castle, Ind.

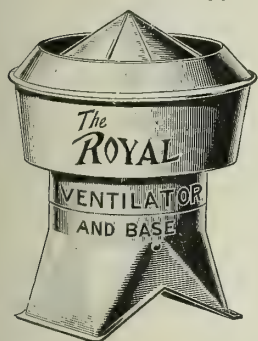
Capitol Traction Co., Washington, D. C.
Municipal Hospital, Philadelphia, Pa., Harris & Richards, Architects
Fayette R. Plumb Co.'s Buildings, Philadelphia, Pa., Dodge & Day, Engineers
And hundreds of others from Maine to Manila and Japan

APPROXIMATE
WHOLESALE
PRICES OF
"ROYAL"
VENTILATORS
WITH BASES.

Size	Gauge Iron	Price	Gauge Copper	Price
16 in.	No. 24	\$8.50	16 oz. C. R.	\$20.00
18 "	" 24	9.50	" " "	25.00
20 "	" 24	10.50	" " "	30.00
22 "	" 24	12.50	" " "	35.00
24 "	" 22	15.00	" " "	40.00
26 "	" 22	18.00	" " "	45.00
28 "	" 20	20.00	" " "	50.00
30 "	" 20	22.50	" " "	55.00
32 "	" 20	24.00	" " "	65.00
34 "	" 20	27.50	" " "	67.50

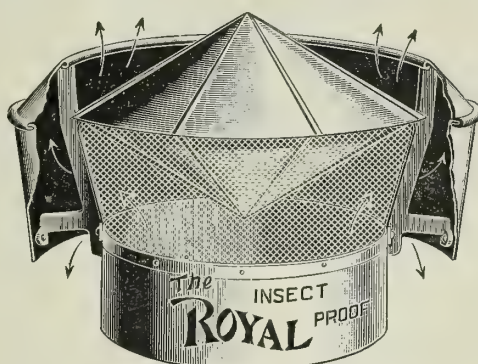
Size	Gauge Iron	Price	Gauge Copper	Price
36 in.	No. 20	\$30.00	18 oz. C. R.	\$70.00
40 "	" 20	35.00	" " "	90.00
42 "	" 20	40.00	" " "	100.00
44 "	" 20	45.00	" " "	125.00
48 "	" 20	50.00	20 " "	145.00
54 "	" 20	65.00	" " "	175.00
60 "	" 18	80.00	24 " "	200.00
66 "	" 18	90.00	" " "	250.00
72 "	No 16 and 18	100.00	" " "	300.00

Less trade discount 10 to 20 per cent

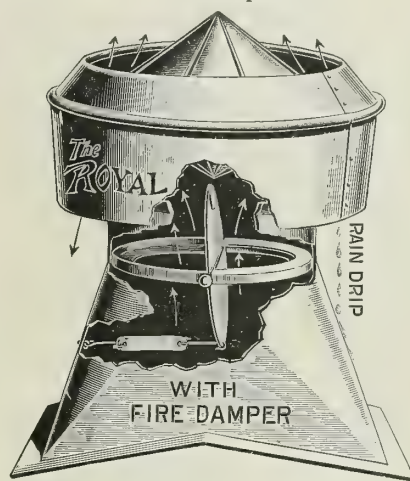


VENTILATOR WITH
BASE

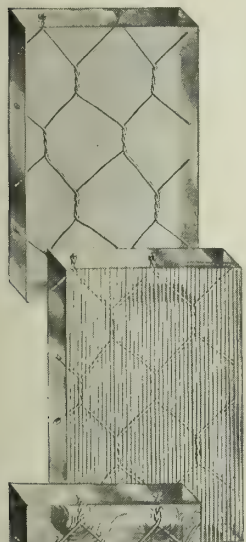
Absolutely storm-proof; al-
ways ventilating, day and
night, rain or shine



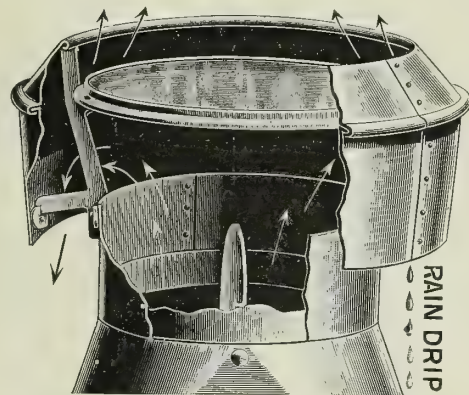
INSECT-PROOF VENTILATOR
Absolutely storm-proof



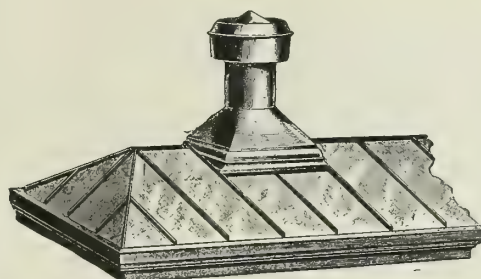
VENTILATOR WITH FIRE-DAMPER
Fusible link



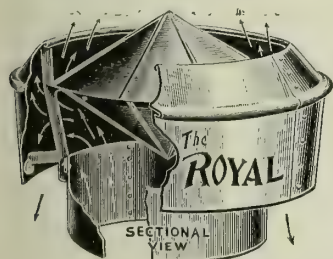
WIRE-GLASS ROUGH,
RIBBED, AND MAZE
Used in "Royal" Ventilators



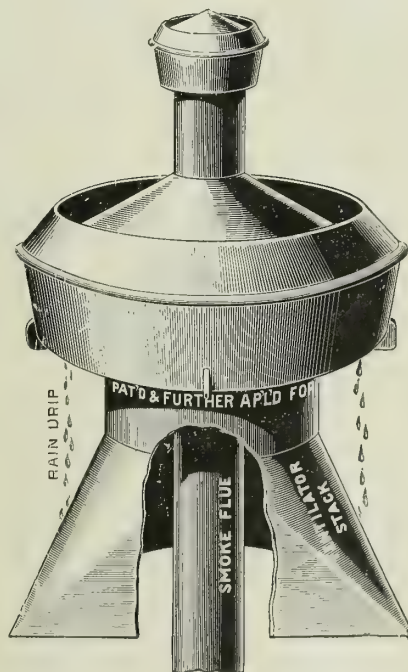
GLASS-TOP VENTILATOR WITH GLASS
DAMPER



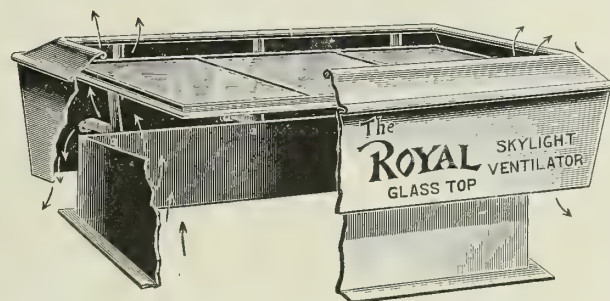
SKYLIGHT VENTILATOR



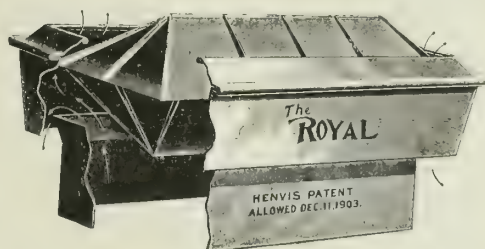
ROYAL VENTILATOR
Absolutely storm-proof



COMBINATION SMOKE-JACK
AND VENTILATOR



"ROYAL" RECTANGULAR SKYLIGHT VENTILATOR



RECTANGULAR VENTILATOR

THOMAS & SMITH, INC.

"Acme" Air-Cooling, Purifying and Humidity-Regulating System "Economy" Hot-Air Pumping Engines

116 and 118 North Carpenter Street
CHICAGO, ILL.

TELEPHONE, MONROE 2190

432 Hudson Street
NEW YORK, N. Y.

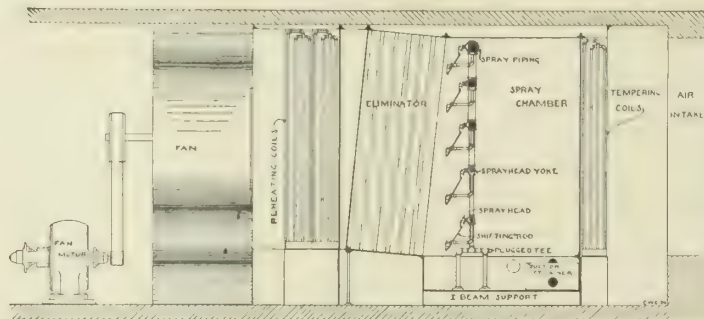
TELEPHONE, SPRING 2504

PRODUCTS.

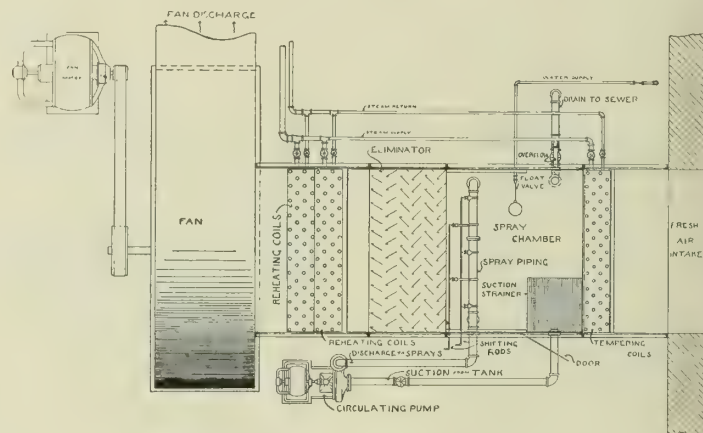
Manufacturers of the "ACME" SYSTEM of AIR-COOLING, PURIFYING and HUMIDITY-REGULATING APPARATUS; also, manufacturers of "ECONOMY" HOT-AIR PUMPING ENGINES and POWER-HOUSE EQUIPMENTS.

INSTALLATION.

We design, manufacture, and install the "Acme" System complete. The "Acme" System of air-cooling is the only satisfactory and economical system now on the market, and is the only system of air purification by water by which the humidity in the buildings can be held at any desired percentage.



Sectional Elevation



Section

THOMAS' "ACME" AIR-PURIFYING AND COOLING SYSTEM

APPARATUS REQUIRED.

The above cut shows the arrangement of machinery required by the "Acme" System. The apparatus consists of a spray chamber, a storage and settling tank and eliminator, with a pump and system of water-circulating pipes. The action of the apparatus is self-evident. (See illustration.) The outside air first passes through the spray chamber, which contains a number of specially designed nozzles placed in such relation to each other that no air can pass through without being washed.

STANDARD SPECIFICATIONS.

For the benefit of architects and others who desire to use the "Acme" System we give herewith our standard specifications, which may be used with or without modifications as occasion may demand:

"For cleansing the air introduced into the building through the heating system there shall be installed a Thomas' 'Acme' Purifier, Type.....having a capacity of.....cubic feet of air per minute, consisting of a horizontal air-chute or passage opening directly into a spray chamber so arranged that the air passes through the water curtains and spray chamber horizontally without making any swerves or turns—the water striking the air transversely. The series of bar-lock circular spoon nozzles to be of the Thomas' 'Acme' No. 6, set in such relation to each other that the velocity of the air through the several water curtains will be even and uniform; to the end that each cubic foot of air will come in contact with the required quantity of water to render the saturation as nearly complete as possible.

"In connection with the air purifier there shall be included a Humidity-Regulating Apparatus comprising all necessary appliances for automatically maintaining the humidity at any desired percentage, irrespective of temperature or outdoor atmospheric conditions. The apparatus to consist of a storage and settling tank; a spray chamber or wash box; an eliminator designed as to currents, velocities, expansions, etc., consisting of a vertical smooth surface, forward-edge bent plates, set at oblique angles; a system of spray piping with automatic heads; a suction strainer of a pattern ten times the area of the suction pipe; discharge and supply pipes; a flush-out pipe to sewer, and water-supply pipe with automatic cut-off and all valves on the pipe connection; also, a pressure gauge on the discharge. To arrest large pieces of paper, shavings, feathers and other kindred matter, a screen of $\frac{3}{4}$ -inch mesh shall be placed across the air intake.

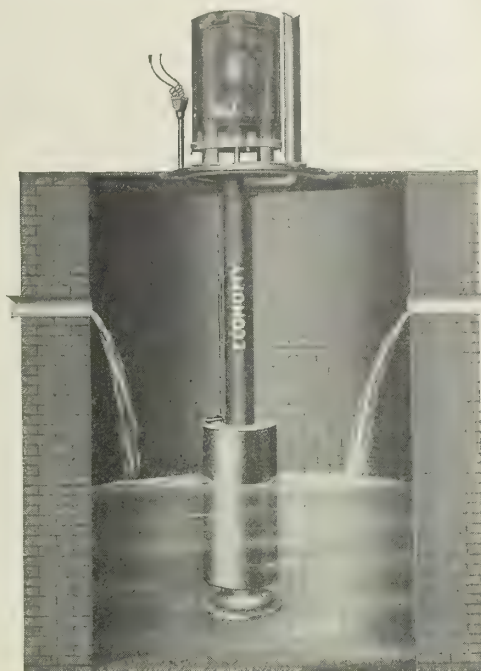
"The contractor will provide and set on substantial foundation a suitable centrifugal circulating pump having the required capacity per minute, driven from fan shaft or motor. All connections to be made with pump complete and the same to be tested and left in running order to the satisfaction of the engineers or their representatives.

"The general construction of the purifier as to the size and all details shall be in accordance with the detailed plans and specifications provided by the manufacturers, and must be built of iron or copper of such gauge as specified by the manufacturers. The eliminator, spray chamber, storage tank, etc., shall be built up on 1½-inch angle and tee iron frames thoroughly riveted and seamed, soldered and made water-tight, after which the contractor will paint the same, if required.

"The settling and storage tanks shall be set immediately below the spray chamber and shall be of the full area given in plan as said spray chamber, which will be supported from the top of same bolted to an angle iron which edges the top of the tank; the eliminator will join the spray chamber at the rear side and be attached thereto by means of angles and tees bolted and packed to make tight joints. The eliminator shall be supported at the rear end by pipe columns.

"The work shall be left complete in every particular and in perfect working order.

"The apparatus must have a guaranteed air-cleansing efficiency of 98½ per cent, and shall be capable of reducing the temperature of the air that has been taken through the purifying system, so that at the face of the machine it will be within three degrees of the temperature of the water used, and shall maintain the normal state of humidity."



"ECONOMY" SEWAGE AND BILGE PUMP

COOLING BY
REFRIGER-
ATING
AUXILIARY.

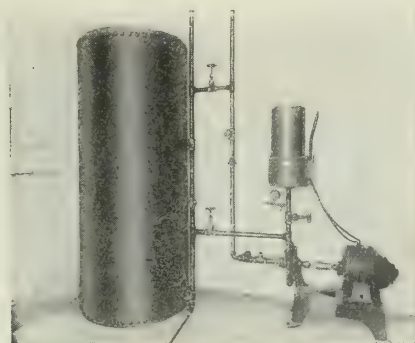
Where greater cooling is required than can be obtained by water at natural temperature, special apparatus under different specifications will be supplied.

"ECONOMY"
PUMPING
MACHINERY.

The "Economy" Electric Sewage or Bilge Pump is an automatic pumping ejector, occupying small floor space. It is for use in elevating sewage and drainage, is self-contained, heavily constructed and is made of various capacities.

AUTOMATIC
ELECTRIC
WATER
SYSTEM.

This system is designed to furnish automatically an abundant supply of clean, aerated water, for schools, flat buildings, suburban homes, office buildings, large hotels and factories without the use of a roof or large storage tank.



AUTOMATIC ELECTRIC WATER
SYSTEM

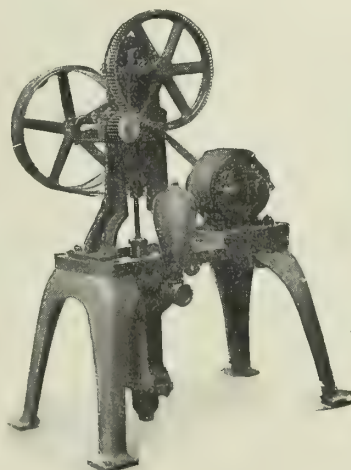
HOT-AIR
PUMPING
ENGINE.

Particular attention has been given to the mechanical details in order to produce a system that will withstand the most severe service for long periods of time without skilled care.

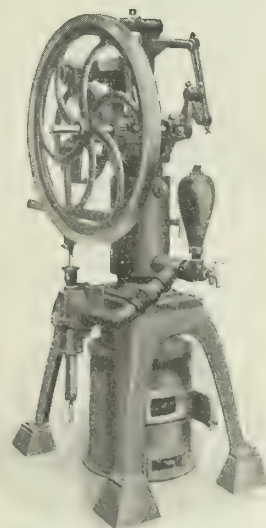
It will raise water from any depth and force to any height. Designed for suburban and rural homes, etc., where municipal water service is not available.

"ECONOMY"
POSITIVE-
ACTING
ELECTRIC
PUMP.

Made for all depths and all elevations.



"ECONOMY" POSITIVE-ACT-
ING ELECTRIC PUMP



"ECONOMY" HOT-AIR
PUMPING ENGINE

THE OHIO BLOWER COMPANY

"Swartwout" Gravity Closing Ventilators

324-332 Prospect Avenue, N. W.

CLEVELAND, OHIO

AGENTS IN ALL PRINCIPAL CITIES

PRODUCTS.

Manufacturers of "SWARTWOUT" GRAVITY CLOSING VENTILATORS.

"SWARTWOUT" GRAVITY CLOSING VENTILATOR.

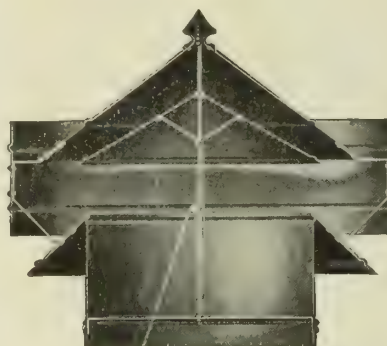
The adjustable damper forms an inherent part of the "Swartwout" Gravity Closing Ventilator. This damper is conical in shape, stiffened by an inverted cast-iron cone, and of such diameter as to materially overhang the edge of the pipe. This prevents inward leakage or shaking down of dust. It is centrally balanced by means of a vertical guide which insures accuracy of movement and absolute tightness when closed. Adjustment of height is easily secured by the pulley and chain arrangement. It can be opened only by pulling the chain; it closes by gravity when the chain is slackened. The ventilator is absolutely weather-proof, the working parts are completely enclosed, and there is entire absence of noise or possibility of binding. A fusible link may be placed in the chain so as to insure opening or closing in case of fire.

GUARANTEE.

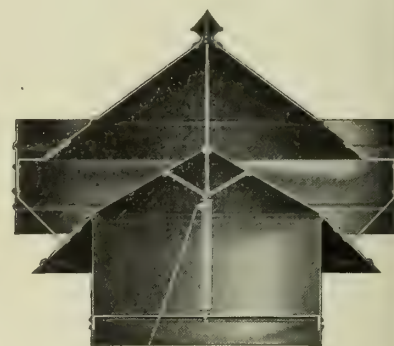
We agree to repair or replace any Ventilator of our make that is found at any time to be defective in material or workmanship.



Exterior View
"SWARTWOUT" GRAVITY
CLOSING VENTILATOR



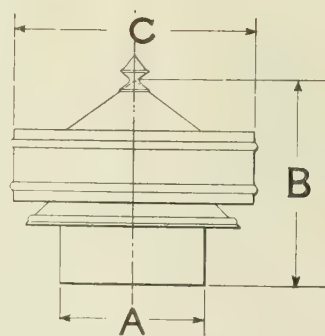
Open



Closed

"SWARTWOUT" GRAVITY CLOSING VENTILATOR
(Patented)

PRICE-LIST AND PRINCIPAL DIMENSIONS IN INCHES



"SWARTWOUT" GRAVITY
CLOSING VENTILATOR

A	DIAMETER OF TUBE B	C	Net Weight without crating	Gauge of Iron	Price with Damper
12	17 $\frac{1}{4}$	20	19	22	\$10.00
14	20 $\frac{3}{8}$	23 $\frac{1}{2}$	22	22	15.00
16	24 $\frac{3}{8}$	26 $\frac{3}{4}$	26	22	20.00
18	26	30	31	22	25.00
20	29 $\frac{1}{2}$	33 $\frac{1}{2}$	37	20	30.00
24	34 $\frac{1}{2}$	40	50	20	35.00
30	43	50	100	20	50.00
36	52 $\frac{3}{4}$	60	145	18	75.00
42	60 $\frac{1}{2}$	70	200	18	105.00
48	69	80	330	18	120.00
54	77 $\frac{1}{2}$	90	390	16	140.00
60	86 $\frac{1}{4}$	100	470	16	160.00
66	94 $\frac{3}{8}$	110	550	16	180.00
72	103 $\frac{1}{2}$	120	625	14	200.00

All Ventilators are supplied with 6 feet of chain. Additional chain will be furnished at a nominal cost.

HILL DRYER COMPANY

Manufacturers of Hill's Clothes Dryers

MAIN OFFICES AND FACTORY

340-350 Park Avenue

WORCESTER, MASS.

TELEPHONES

WORCESTER, No. 2213

NEW YORK, 3022 MADISON SQUARE

NEW YORK OFFICE

1133 BROADWAY

PRODUCTS.

We are the sole manufacturers of "HILL'S" FAMOUS CLOTHES DRYERS, for Lawn, House-Top, Balcony, or Fire-Escape; also, the famous "HUSTLER" (Rotary) ASH SIFTER, for Furnace or Range, used on barrel, the "UNIVERSAL" (Rotary), and SHAKER SIFTERS for Flues and Chutes.

DESCRIPTION.

"Hill's" Clothes Dryers, which are made in a variety of designs and sizes, for use on the lawn, fire-escape, window, balcony and roof, need no lengthy description, as they are well known to all architects, and are in a class by themselves.

BALCONY DRYERS.

These dryers are acknowledged by all architects, builders and contractors to be the most convenient clothes-drying arrangement for apartment houses, flats or private dwellings.

They may be hung from the balcony post, as shown in Fig. 3, or from the side of the building, as in Fig. 4, and they swing in, so that every line is easily reached, and when the lines are filled are swung out clear from the piazza, fire-escape or balcony.

They are made of steel, and if properly put up will support a ton.

The dryer tops are fastened open, and locked to the post by a patented device which makes it impossible for the tops to be blown off. The castings are galvanized, and the arms are painted a light chrome yellow. The regular Balcony Dryers have arms 5 feet 6 inches long and hold 110 feet of line.

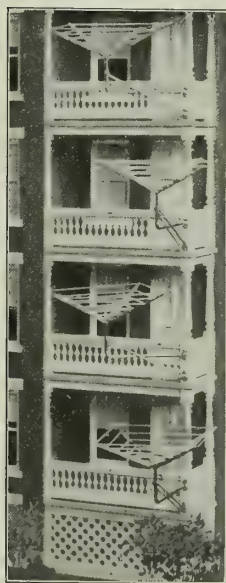


FIG. 3. HILL'S BALCONY DRYERS AS ATTACHED TO PIAZZAS

To work to best advantage opening should be 8 feet 6 inches or more

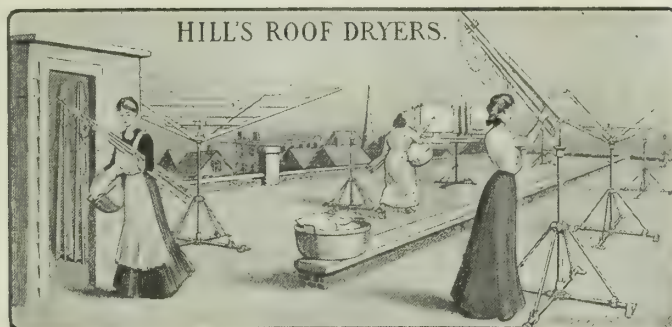


FIG. 1. "HILL'S" ROOF DRYERS

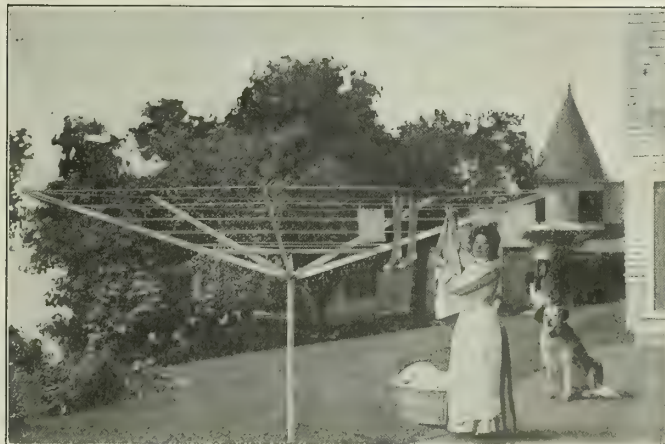


FIG. 2. "HILL'S" LAWN DRYERS



FIG. 4. HILL'S BALCONY DRYERS AS ATTACHED TO SWING TO FIRE-ESCAPE

LAUNDRY DRYERS.
PRICES.

We are connected with the "Hill-Canton" Dryer Company and manufacture the "Hill-Canton" Laundry Dryers. For further particulars see General Index.

Prices of our products, together with complete descriptive catalogues, will be furnished upon application.

THE HILL-CANTON DRYER CO.
 Manufacturers of The "Hill-Canton" Sanitary Clothes Dryer
 1133 Broadway, NEW YORK, N. Y.
 CANTON, OHIO WORCESTER, MASS.



TRADE-MARK

PRODUCTS.

CLOTHES-DRYING APPARATUS of every description for Private Residences, Apartment Houses, Hospitals, Laundries, etc.

SIZE OF DRYER.

The standard size of the Drying Cabinet is 7 feet high, 7 feet long. The width depends on the number of racks in the cabinet. Drying cabinets are made any size or style desired:

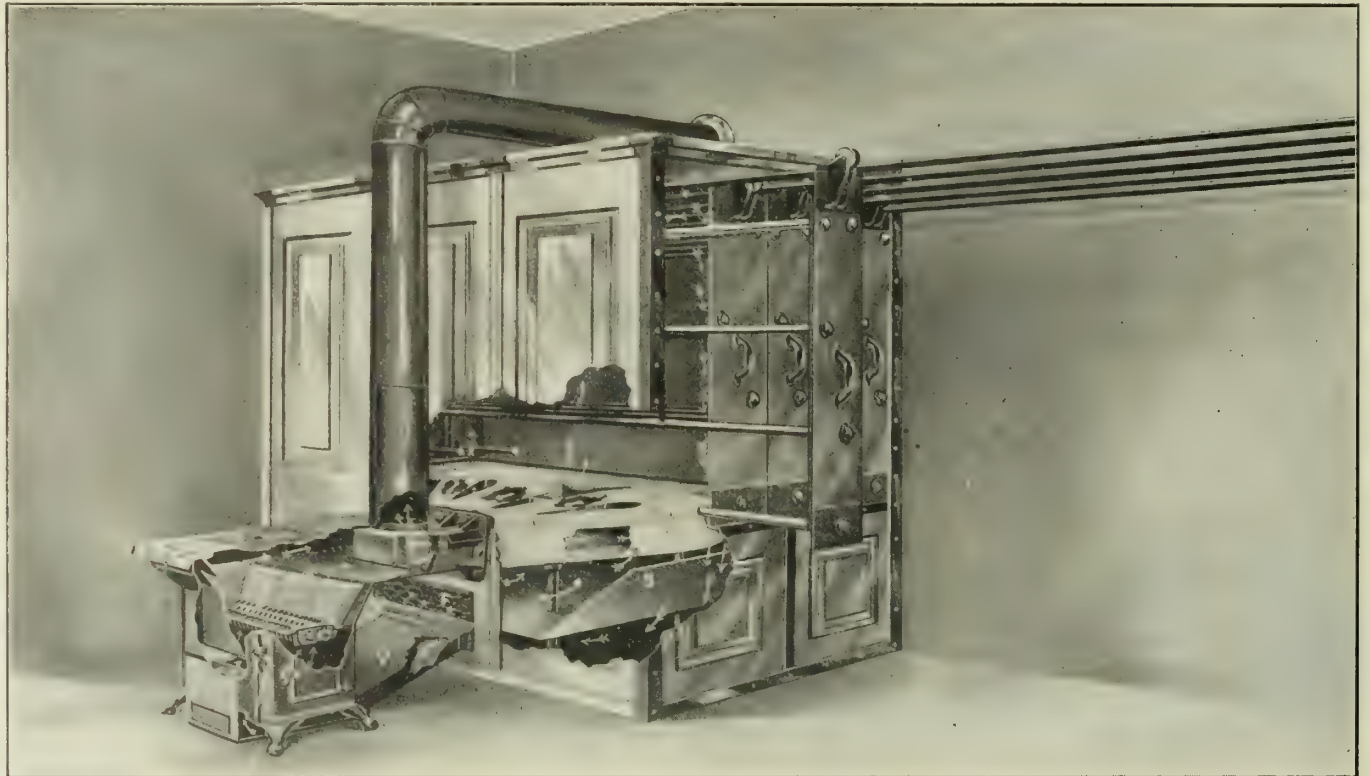


FIG. 1. SECTIONAL VIEW OF DRYING CABINET AND LAUNDRY STOVE

F—Fresh Air Inlet; V—Ventilating Duct through which the impurities are drawn from Cabinet; S—Separating Plate

DRYING CABINET.

As shown in the sectional view (Fig. 1), the heated air, as it rises to the top of cabinet, drives the moisture from the clothes. Double drying and the proper ventilation of cabinet is accomplished by the same heated air which the down draft brings back through the clothes, carrying the moisture-laden air under separating plate, through ventilating duct V, into the laundry stove, then through the fire and out of the chimney.

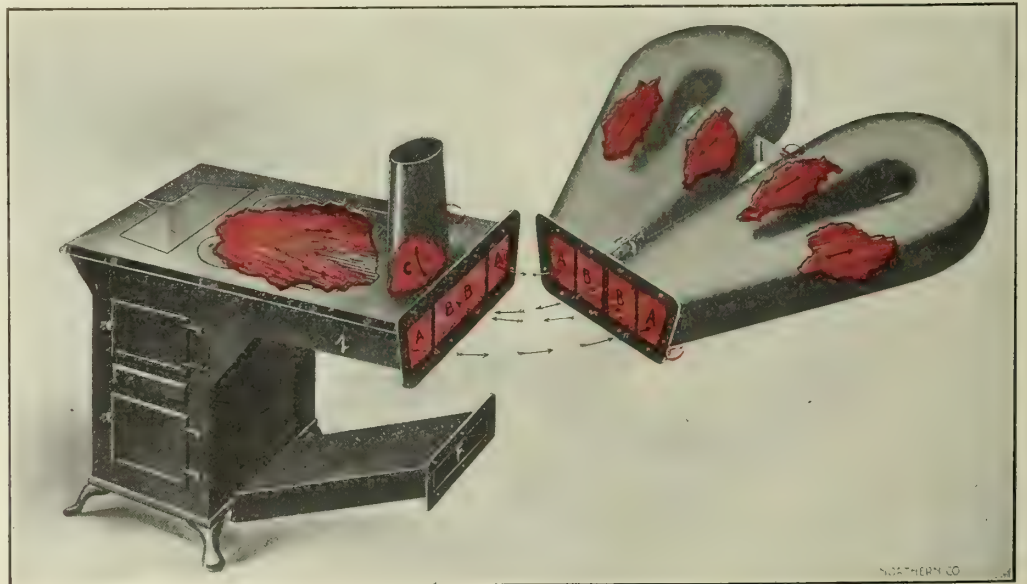


FIG. 2. DISCONNECTED VIEW OF STOVE AND RADIATORS

STOVE AND
RADIATORS.

In Fig. 2 it will be seen that the heat from the Laundry Stove is drawn through the side openings A,A, then into corresponding openings A,A, in the cast-iron radiators. The chimney draft draws the heat to the ends of the radiators and back to the opposite opening, B,B in the Laundry Stove, then out through the draft pipe C, to chimney.

This is the only drying cabinet with cast-iron radiators which can not burn out or rust through. Examine other dryers and you will find that the radiators which extend into the cabinet and form part of the laundry stove are made of stove-pipe material.

LARGE DRYERS
WITH LOCK-
ING BARS.

The cabinet can be divided into single-rack sections if desired, making a separate and complete private compartment of each division.

In our steam dryers (Fig. 3) the lower part of cabinet is divided into two sections by a separating plate. The fresh air is drawn in above and the impure air is forced, driven and drawn out at the bottom of cabinet through ventilating duct below the separating plate mentioned.

As the system of heating and ventilating embodied is the same as in the stove and gas heated cabinets, the results are in every way as satisfactory.



FIG. 3. ONE OF OUR LARGER-SIZE STEAM-HEATED DRYERS EQUIPPED WITH LOCKING BARS

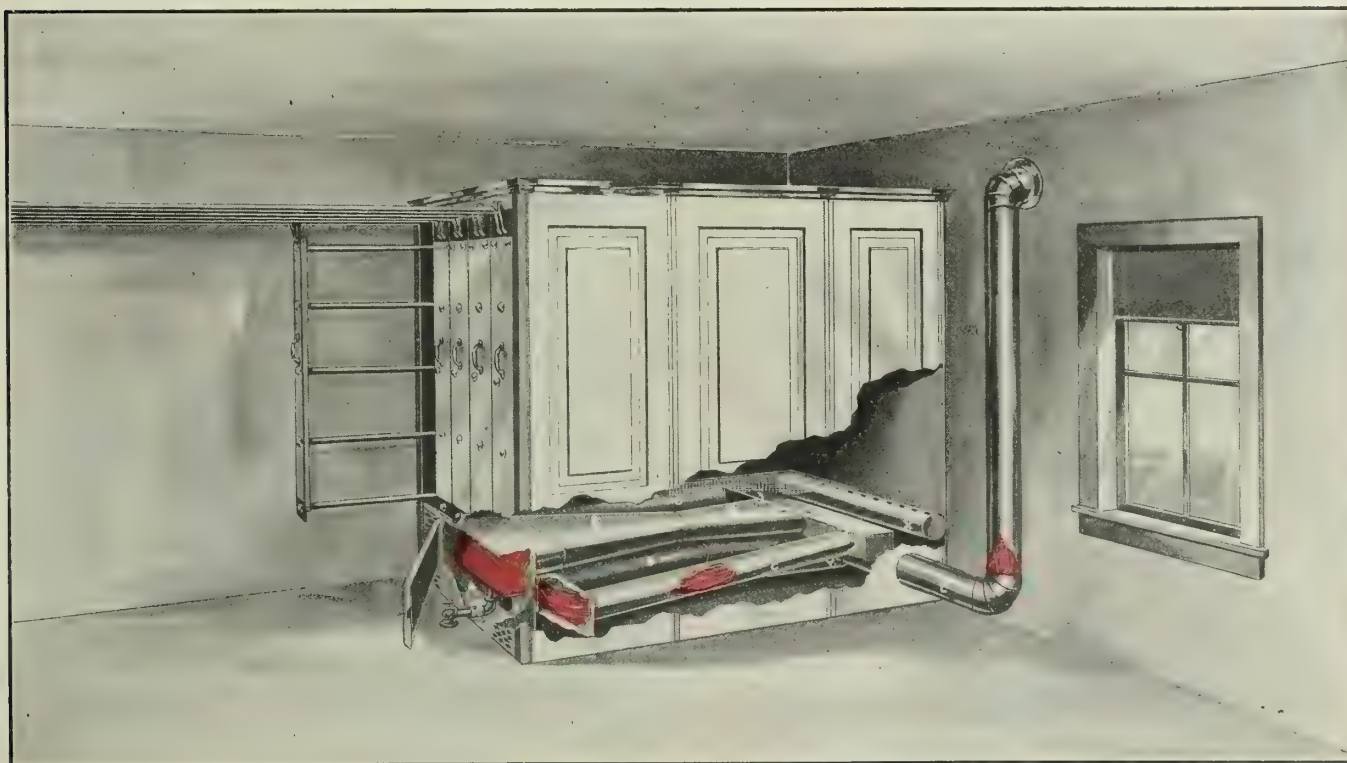


FIG. 4. SECTIONAL VIEW OF GAS DRYER WITHOUT LAUNDRY STOVE

Gas Dryers are made in any size desired. Natural or artificial gas can be used, and the results are satisfactory and economical.

If Dryer is desired for apartment buildings, cabinet can be provided with locking bars and divided into separate sections, of two or more racks each.

Each separate division can be heated and ventilated independently—making it unnecessary to heat the entire cabinet if the use of but a single section or only part of cabinet is required.

As shown in Fig. 4 the heat from burner box A is drawn to end of pipe B into side pipes C, which extend to front of cabinet, then into center pipe D, and out through the draft pipe E, to chimney.

The impurities are drawn into ventilating pipe X, and conducted through pipe Y, which leads into burner box A, below gas burner at point Z.

The cold air, steam and moisture pass through and over the gas flame, and being converted into heated air take the same course to chimney as the gas fumes and products of combustion.

Correspondence solicited, and estimates furnished promptly upon request.

GAS DRYER
WITHOUT
LAUNDRY
STOVE.

ESTIMATES.

AMERICAN IRONING MACHINE CO.

GENERAL OFFICE AND SALESROOM

26-28 East Lake Street

CHICAGO, ILL.

LONG DISTANCE TELEPHONE, RANDOLPH 1064

CABLE ADDRESS, "Aimco, Chicago"

PRODUCTS.

Manufacturers of "SIMPLEX" HOUSEHOLD IRONING MACHINES and HOTEL and INSTITUTION IRONING MACHINES, heated by Gas, Gasoline or Electricity.
We also install complete LAUNDRY EQUIPMENTS.

"SIMPLEX" IRONER.

The distinctive feature of the "Simplex" Ironer is a padded roller operated under adjustable pressure by two springs set against an accurately machined and highly polished ironing shoe having a concave face and presenting a large ironing contact to the roll. This ironing shoe is heated by a burner placed in the back of the shoe, the burner being protected by a metal shield. Perfect combustion of the gas burned and consequent fuel economy are secured by a plentiful supply of air along the entire length of the burner. A special point in the "Simplex" is the method of removing the padded roller from contact with the hot iron by the dropping of the feed board. This makes possible the immediate withdrawal of any piece after it has entered the ironer and greatly prolongs the life of the padding; it also enables the operator to leave the ironer for a short space of time without danger of scorching the goods.

Our machines are constructed of the best materials and workmanship throughout.

POWER.

The ironer requires but a small amount of power. It may be operated by hand, belt-power, or attached motor. The latter is mounted so that it can be used to drive other laundry machines at the same time. The belt-drive machine can be run direct from motor without the use of a countershaft.

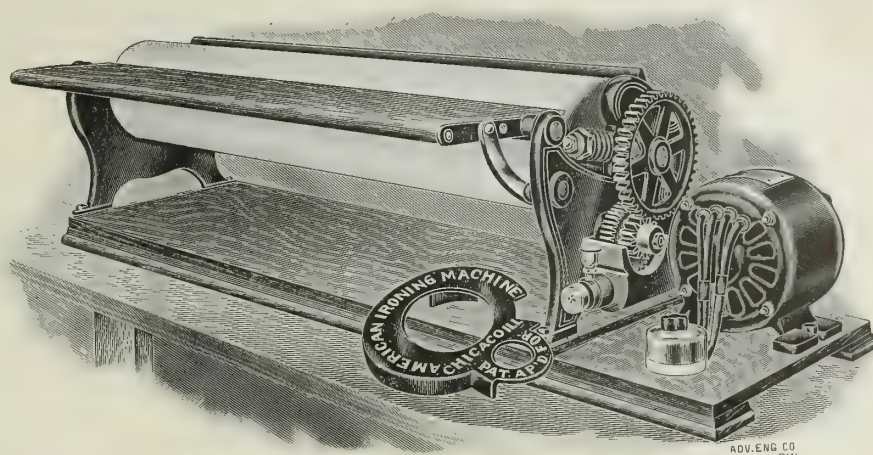
HEATING.

The gas burner is furnished for either natural gas, ordinary illuminating gas or gasoline gas, as supplied by any of the prominent gas machines on the market. The gasoline burner is furnished



"SIMPLEX" IRONER. DESIGN OF 48-INCH MODEL
Showing method of feeding and delivery board adjusted to return goods to feeding side of machine

for use either with a gravity tank or with a pressure tank located outside the building. For electric heating the coils are constructed to produce three different degrees of heat in the ironing shoe, and are designed for 110 volts pressure and either direct or alternating current.



"SIMPLEX" IRONER. DESIGN OF 26, 37 AND 42 INCH MODEL WITH ATTACHED MOTOR

Gear casing removed to show worm drive

SAFETY.

By reason of these machines being operated mostly by women and very often by servants with little knowledge of machinery, their construction is made exceedingly simple and proof against wilful derangement. There is no possibility of accident or personal injury in operating them.

SIZE
ADAPTED
TO WORK.

The "Simplex" Ironer is made in 26", 37", 42" and 48" ironing widths. The size best adapted for a given case is governed mainly by the width of the bed and table linen to be ironed.

It is especially desirable to iron the latter with a single fold to obtain the best and quickest work.

DIMENSIONS, DETAILS OF EQUIPMENT, WEIGHTS AND PRICES

Sizes of Ironers		26"	37"	42"	48"
Roll Length, inches		26	37	42	48
Roll Diameter, inches		7	7	7	8½
Ironing Shoe Face, inches		8	8	8	9
Ironing Contact, inches		5	5	5	6
Fuel consumed	Gas, cubic feet per hour	15	20	23	27
	Gasoline, pints per hour	3¼	1	1½	1½
Electric Current for Heating	High Heat, kilowatts per hour	2	3	4	5
	Medium Heat, kilowatts per hour	1.3	2	2.7	3.4
	Low Heat, kilowatts per hour	0.75	1	1.3	1.7
Ironing Speed, feet per minute		7	7	7	8½
Pulley	Flat, for 1 inch belt, dia., inches	4	4	4	4
	Grooved, for ¾" round belt, dia., inches	6	6	6	8
	Revolutions per minute	580	580	580	370
Motor, size in horse-power		½	½	¾	1
Current consumed for Driving, watts per hour		180	180	220	300
Space	Table, actual, in inches	36 x 14	47 x 14	52 x 14	.....
	Table, motor attached, in inches	48 x 14	60 x 14	65 x 14	.....
	Floor, actual, in inches	.....	.....	.....	66 x 30
	Floor, motor attached, in inches	.....	.....	.....	72 x 30
	Floor, including working room, in inches	48 x 50	60 x 50	65 x 50	84 x 108
Weight	Hand-power, net pounds	110	135	170	445
	Belt-power, net pounds	120	145	180	450
	Motor attached, net pounds	170	195	230	515
Net Prices f. o. b. Chicago	Hand-power	30.00	40.00	55.00	120.00
	Belt-power	45.00	55.00	70.00	135.00
	Motor attached, alternating-current, 110 V., 60 cycle	86.00	96.00	115.00	195.00
	Motor attached, direct-current, 110 or 220 V.	76.00	86.00	105.00	180.00
	Above prices include Gas or Gravity Gasoline Burners	.....	.....	.....	.....
	Extra for Pressure Gasoline Tank with 20 feet hollow wire	12.50	12.50	12.50	15.00
	Extra for Electric Heating Coil	50.00	60.00	75.00	100.00

CO-OPERATIVE
SERVICE AND
ESTIMATES.

We cheerfully furnish suggestions and plans for installing our Machines and the power connections required, and also submit layouts and estimates for Complete Laundry Equipments.

GUARANTEE.

We install our ironers under our guarantee to give satisfaction and to produce a better finish on fine linen than any other machine or method and to operate at greater economy. We further guarantee them to be free from defect in material and workmanship, and hold ourselves responsible for a period of one year from date of installation.

REFERENCES.

We have on our files numerous unqualified indorsements from satisfied users of our machines in all parts of the country, and shall be glad to send list on application.

THE AMERICAN LAUNDRY MACHINERY MFG. CO.

WESTERN DIVISION

78-80 Franklin Street
CHICAGO, ILL.

SOUTHERN DIVISION

Station "H"
CINCINNATI, OHIO

EASTERN DIVISION

132-138 West 27th Street
NEW YORK, N. Y.

PRODUCTS.

LAUNDRY MACHINERY and APPLIANCES, consisting of FLAT-WORK IRONERS, WASHING MACHINES, EXTRACTORS, STARCHING MACHINES, LAUNDRY DRIERS, IRONING MACHINES, etc., for Custom Laundries, Hotels, Hospitals, Institutions, Schools, Flat Buildings, Residences, etc.

FACILITIES.

We have three large factories and are the largest concern in the country manufacturing Laundry Machinery exclusively. All machines made by us have been thoroughly tried and no experiments are offered.

PLANS AND ESTIMATES.

We have a staff of competent engineers, and upon request shall be pleased to furnish drawings for any sized plant. We have representatives in nearly all parts of the United States, and at any time can arrange to have them inspect plans and make recommendations as to the size of floor space required and machinery best suited to the requirements.



TRADE-MARK

On the next page we submit three plans:

Plan No. 1 shows the laundry equipment of the La Salle Hotel, Chicago, Ill., recently installed by us. This plant is up-to-date in every respect, and a complete equipment of machines for laundering the work of the guests, as well as the hotel linen, has been provided.

Plan No. 2 shows what is required for a hospital of eight hundred beds. This plan is complete in every particular. It includes a clothes sterilizer, so that the clothes can be sterilized before washing, and all machinery necessary to handle the laundry work of the patients as well as that of the hospital. This plan would also be well suited to a six-hundred room hotel and would handle the laundry work of the guests as well as that of the hotel. The clothes sterilizer apparatus however would not be necessary for the hotel.

Plan No. 3 shows a suitable equipment for modern residences. An electric motor drive is used, and this equipment will handle the laundry work for about fifteen people.

These plans are shown merely as a suggestion.

SPECIFICATIONS AND PRICES.

Our line is so extensive that it would be impossible to give specifications and prices here, but upon request we will gladly give this information. It has always been the policy of this Company to assist the architect in any way possible.

CATALOGUE.

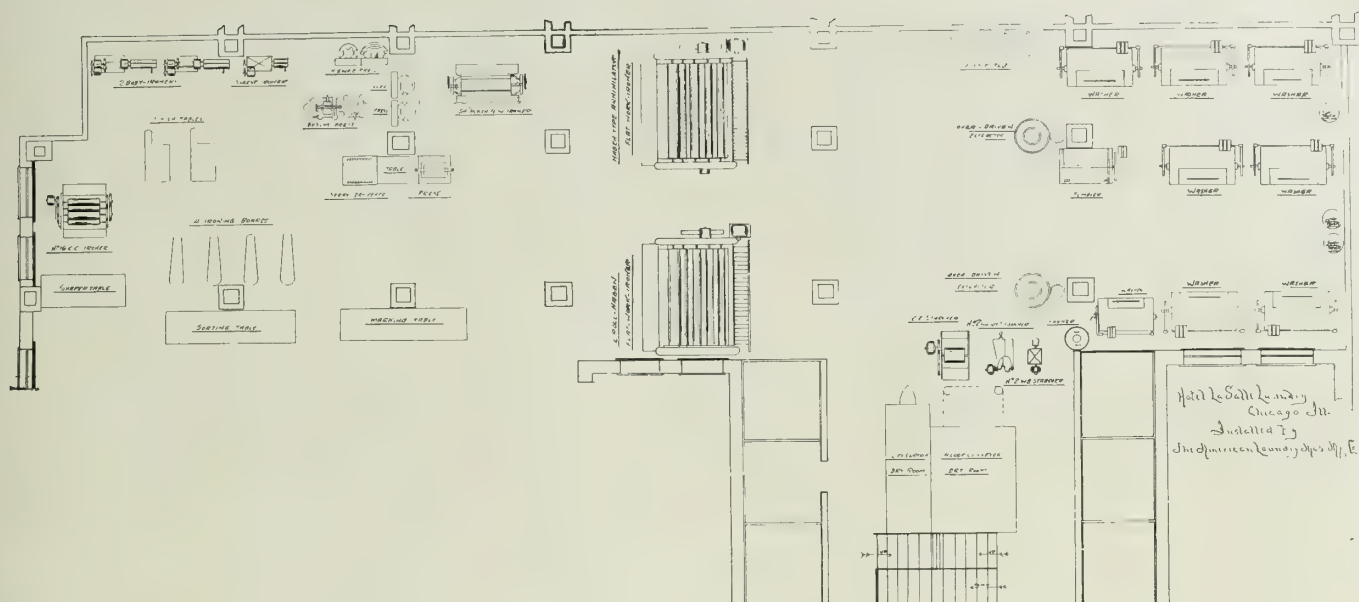
Our latest catalogue contains photographic reproductions and descriptions of the various machines made by us and will be sent upon request.

INSTALLATION.

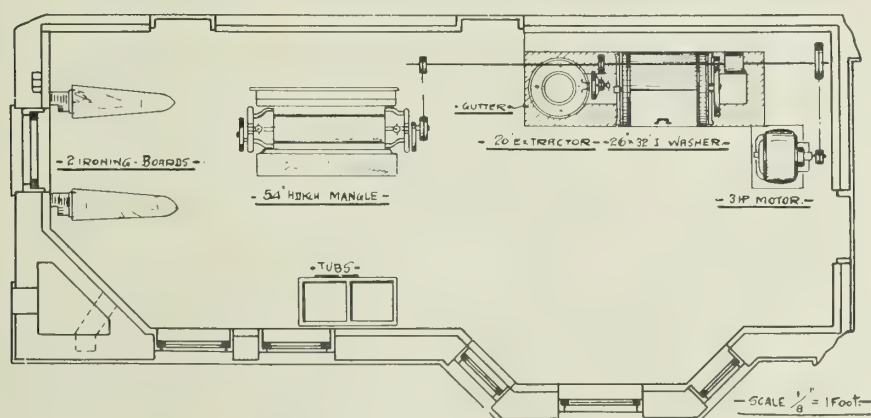
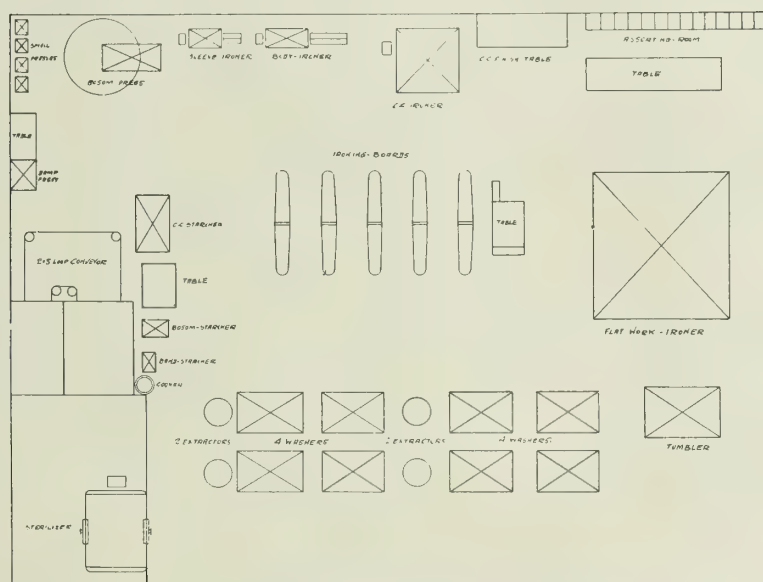
We are prepared to install any and every sized plant or the machinery can be installed by any competent engineer.

REFERENCES.

We have a book of references giving a list of hotels, asylums and institutions using American Laundry Machinery, which we shall be pleased to mail to any address.



PLAN NO. 1. LAUNDRY EQUIPMENT OF THE LA SALLE HOTEL, CHICAGO, ILL.



PLAN NO. 3. PLANT, FOR FAMILY OF FIFTEEN PEOPLE

CHICAGO DRYER COMPANY

SUCCESSORS TO CHICAGO CLOTHES DRYER WORKS

MANUFACTURERS OF

"Chicago" Clothes Dryers

381-385 Wabash Avenue

CHICAGO, ILL.

PRODUCTS.

CLOTHES DRYING MACHINES of all kinds, suitable for Residences, Apartment Buildings, Hotels, Hospitals, Fire-Engine Houses, Public Laundries and Institutions; also, LAUNDRY ROOM EQUIPMENT, suitable for Residences and moderate-sized Institutions.

Our DRYERS are sold under the following trade-marks: "CHICAGO" DRYERS; "CHICAGO-FRANCIS" DRYERS; "CHICAGO-RAPIDO" DRYERS; and "CHICAGO-SUN" CLOTHES DRYERS.

We also manufacture FRUIT DRYERS; STARCH DRYERS; SOAP DRYERS; HAIR DRYERS, etc., as used by manufacturers of these and similar products.

TRADE-MARK
CHICAGO
REGISTERED

FACILITIES.

Our plant for the manufacture of Dryers is the most complete of its kind in the United States, enabling us to fill all orders promptly. The constituents of our Company have devoted more than a score of years exclusively towards the manufacture of drying machines.

EXPERIENCE.

During this time, and especially during the last few years, we have perfected and invented various improvements, pertaining to Dryers, which enable us to produce Drying Machines that are vastly superior in construction and efficiency to all other makes of Dryers on the market.

CONSTRUCTION.

Our Dryers are of metallic construction. The frame-work consists of heavy angle, channel and bar-iron of suitable size, firmly and substantially bolted together. The casing is of galvanized sheet-iron. Casing is either made single or double and interlined with asbestos as may be specified. The interior fittings, such as flanges, used in connection with the bars upon which the clothes hang, etc., are heavily galvanized. The overhead track upon which the racks slide is of galvanized pipe. This insures the machine being absolutely rust-proof. The finest laces or fabrics can come in contact with any part of the interior of the cabinet without any possibility of injury.

HANGING RACKS.

The front and rear panels of the racks are of heavy galvanized sheet-iron. The front panels are made double and heavily insulated. The rear panels are provided with extension plates so that when the racks are pulled out full length the heat will not escape from the interior of the machine. The front and rear panels are joined together by means of specially galvanized tubular pipes or bars upon which the clothes hang. The ends of these bars are threaded and provided with a double flange arrangement. The racks when put together are very rigid and can not get out of order. The bars upon which the clothes hang are ventilated, with the result that they can not become overheated or injure the most delicate fabric.

ROLLER SYSTEM.

The brackets used in connection with the rack panels are provided with rollers with steel or ball bearings, with the result that they are noiseless in operation.

HEATING AND VENTILATING SYSTEM.

The successful drying of clothes in an artificial manner depends upon the quickness with which the moisture emanating from the clothes can be removed. This, in conjunction with the amount of heat secured in the drying cabinet, determines the rapidity with which the clothes can be dried. The principal feature is to be able to remove quickly all moisture and odors without the loss of heat in the drying cabinet.

We have recently perfected and are equipping all Dryers made by us, when so specified, with what is known as the "Chicago-Francis" Patented Heating and Ventilating Sys-



PLATE NO. 1

This plate shows No. 5 Rack, Type "B," "Chicago" Combined Dryer and Laundry Stove. (Coal, wood or natural gas for fuel as may be specified.)

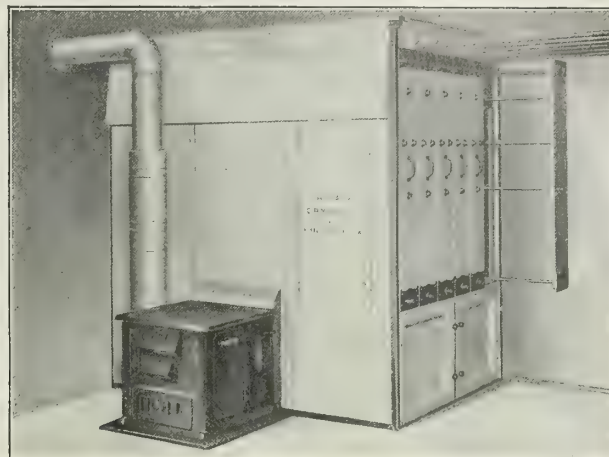


PLATE NO. S 6996

This plate shows No. 6 Rack, Type "B. S.," "Chicago-Francis" Insulated Combined Dryer and Laundry Stove. (Coal, wood or natural gas for fuel as may be specified.)

tem. With this system of ventilation fresh air is taken in evenly and preferably near the top of the drying cabinet. (This is accomplished by various systems manufactured by us.)

The moisture emanating from the wet clothes is quickly and evenly drawn out through vent systems properly placed at or near bottom of drying cabinet, or along casing near bottom of drying cabinet, according to heating system used. Said vent systems are connected to vent-pipes in drying cabinet. These vent-pipes are connected to main vent-pipe which connects with flue as provided.

With this system of ventilation a constant and natural circulation of air is maintained in the drying cabinet at all times. With this system of air circulation a high degree of heat is maintained and evenly distributed. The heat forces a swift and strong circulation of hot air through the clothes. The moisture from the wet clothes is carried away through vent systems at bottom of drying cabinet as above described.

With the "Chicago-Francis" Patented Heating and Ventilating System the clothes dry very rapidly, and are as pure, fresh, sweet, and sanitarily clean as if dried in the open air on a bright summer day.

This system of ventilation can be used on drying cabinets heated by stove suitable for burning coal, wood or gas, or on cabinets heated by gas direct, by steam or by electricity. The "Chicago-Francis" Patented Heating and Ventilating System is used exclusively by us, and can not be used on drying cabinets by other manufacturers, except through our permission.

SPECIFICATION.

To insure our Dryers being equipped with ventilating system as above described, specifications should read: "Dryer to be provided with the 'Chicago-Francis' Patented Heating and Ventilating System."

EFFICIENCY.

Dryers made by us and equipped with the "Chicago-Francis" Patented Heating and Ventilating System will accomplish more work with one half the amount of fuel and cost of operating than any other Dryer made. To substantiate this statement we will ship machines to responsible parties subject to approval.

"CHICAGO-FRANCIS" DRYER.

The Dryer and Stove as shown in Plate No. 3906 is specially adapted for use in residences, apartment buildings, and institutions. This Dryer will dry a batch of clothes in from fifteen to thirty minutes. The Gas Laundry Stoves can be operated with artificial, or gasoline gas, or clean, natural gas. Figuring cost of gas at \$1.00 per 1,000 cubic feet, the cost of operating this Laundry Stove is from two to three cents per hour. Stove will accommodate eight flat-irons at a time, which can be heated by using one burner in stove at an expenditure of one cent per hour.

While the stove is used for boiling clothes or heating flat-irons, the waste heat emanating from the stove is carried into the drying cabinet and dries the clothes. This is the most powerful, efficient and successful apparatus of its kind that has ever been developed. Can furnish Dryer, as shown in Plate No. 3906, containing three, four, five or six racks or draws,

Type "B", as may be specified. When used in apartment buildings, it is customary to allot one No. 3 rack, Type "B" Dryer and Stove, same as shown in Plate No. 3906, with each set of tubs.

GUARANTEE.

We guarantee that the finest fabrics can be dried in these Dryers, and that they will be as sweet, clean and sanitary as if dried in the open air or sunshine. No heating system or heating drums of any kind are placed inside of drying cabinet, thus insuring machines being absolutely fireproof.

Plate No. 6607 shows Dryer with double Stove. Stove has division in center and each half of Stove has its independent burners and header. When used in apartment buildings this Dryer is so arranged that it will give service to two families at a time. Stove will accommodate two wash-boilers at a time, and each tenant is allowed the use of three racks for drying clothes. The Stove is so arranged that the expense of operation is properly subdivided, providing building is so piped that each tenant pays for his own gas used in laundry.

Plate No. 5609 shows "Chicago-Francis" Gas-Heated Dryer, with gas-burner placed in Heat Radiation Drums. Combustion from gas-burner in radiation Drums A passes through pipe-heating system B, C C C C and through pipe D and E to vent-flue.

Fresh air is taken in equally near top of dryer. The moisture is removed through heating system as shown by arrows at bottom of Dryer. This is the best, most powerful and economical direct Gas-Heated Dryer on the market.

Either natural, artificial, or gasoline gas can be used for fuel. We can furnish this Dryer with any number of racks or draws desired, ranging from three racks and up; and can furnish with racks 6 inches, 7½ inches, 9 inches, or 12 inches wide as may be specified.

"CHICAGO-FRANCIS"
(DRUMLESS)
DRYERS.

With the "Chicago-Francis" (Drumless) Combined Dryer and Laundry Stove we eliminate the heating drums in the Dryer. No heating system or heating drums of any kind are placed inside of the drying cabinet, thus producing an absolutely fireproof apparatus. The products of combustion circulate through a system of radiation pipes, which are attached to, and form a part of, the stove proper. The heat emanating from these radiation



PLATE NO. 3906

This shows No. 3 Rack, Type "B," "Chicago-Francis" Combined Dryer and Gas-Heated Laundry Stove

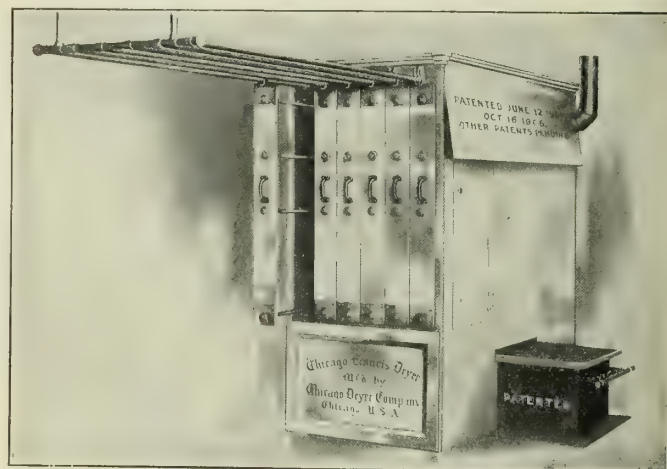


PLATE NO. 6607

This shows No. 6 Rack, Type "W," "Chicago-Francis" Combined Dryer and (double) Gas-Heated Laundry Stove

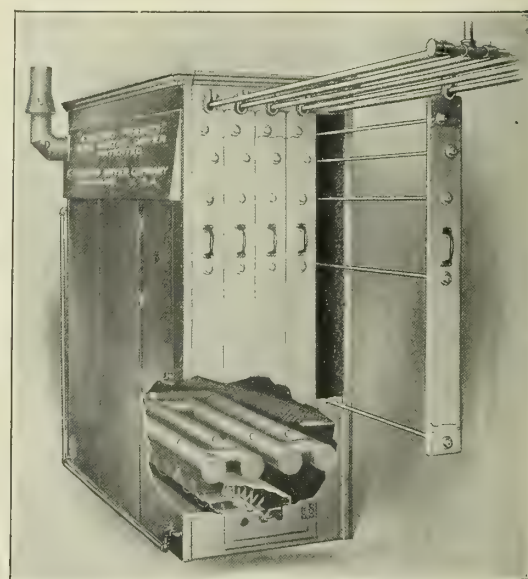


PLATE NO. 5609

This shows No. 5 Rack, Type "W," "Chicago-Francis" Gas-Heated Dryer



PLATE NO. 6608

This shows No. 6 Rack, Type "W," "Chicago-Francis" (drumless) Combined Dryer and Laundry Stove. (Coal or wood for fuel)

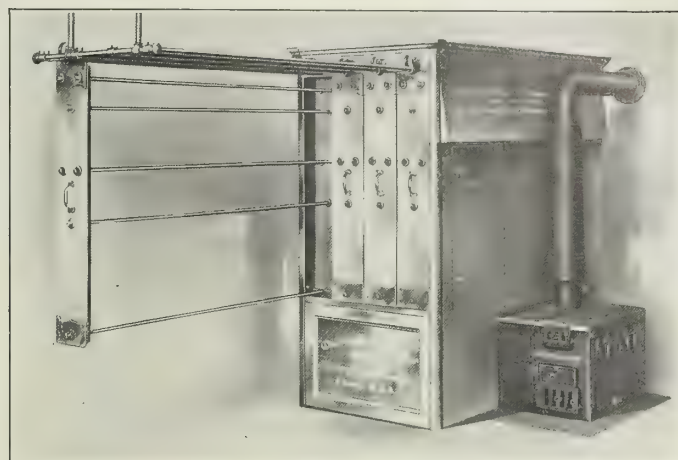


PLATE NO. S 4908

This shows No. 4 Rack, Type "B. S.," "Chicago-Francis" Insulated (drumless) Combined Dryer and Laundry Stove. (Coal or wood for fuel)

pipes and side of stove is carried into the drying cabinet and dries the clothes. The stove is so arranged that clothes can be boiled on top, flat-irons heated on the side and the dryer heated all at one and the same time. These Dryers are adapted for use in residences, apartment buildings and moderate sized institutions, where purchasers desire to use coal or wood for fuel in stove.

This is the only Dryer of its kind on the market. Its efficiency is guaranteed to be far superior to Dryers of same size and capacity made by other manufacturers. This stove and heating system can be adopted on Dryers measuring 4 feet 6 inches in width, or less.

CATALOGUE.

Our No. S 12 Catalogue containing forty eight pages, devoted exclusively to drying machines and laundry room equipment, will be mailed free upon request. Specification forms will be found with each illustration in catalogue, thus greatly facilitating the work of architect when desiring to specify machines in our line.

TYPES.

In order to fulfill various requirements, we build Dryers with racks or draws of various widths as follows: 6 inches, $7\frac{1}{2}$ inches, 9 inches, 12 inches, 16 inches, $16\frac{1}{4}$ inches and 18 inches.

Dryers equipped with racks or draws, 6 inches wide each, are designated as Type "W"; $7\frac{1}{2}$ inches, Type "A"; 9 inches, Type "B"; 12 inches, Type "C"; 16 inches, Type "D"; $16\frac{1}{4}$ inches, Type "F"; and 18 inches, Type "E."

The letter "J" affixed designates that the Dryer racks are made to roll on the floor, i. e., equipped with floor carriage system. The letter "L" designates that the Dryer Racks are arranged in locking compartments. The letter "S" designates that the casing of the drying cabinet is made of double thickness of galvanized sheet-iron, and that insulating material, consisting of asbestos, is provided between the two thicknesses.

MEASUREMENTS.

Ordinarily Dryers are built 7 feet to 8 feet high, if the space will permit, and 7 feet to 8 feet long (exclusive of the space where the racks pull out), if space will permit. Each Dryer is built to order, and we can therefore conform with the height and length to meet the conditions of the room in which the Dryer is to be placed.

The following table gives width of Dryers, Types "W," "A," "B," and "C," containing from three to nine racks inclusive. Measurements of larger sizes will be furnished upon request.

No. of Racks or Draws	Type "W" Racks. 6 inches wide each	Type "A" Racks. $7\frac{1}{2}$ inches wide each	Type "B" Racks. 9 inches wide each	Type "C" Racks 12 inches wide each
3	24 inches	$28\frac{1}{2}$ inches	33 inches	42 inches
4	30 inches	36 inches	42 inches	54 inches
5	36 inches	$43\frac{1}{2}$ inches	51 inches	66 inches
6	42 inches	51 inches	60 inches	78 inches
7	48 inches	$58\frac{1}{2}$ inches	69 inches	90 inches
8	54 inches	66 inches	78 inches	$103\frac{1}{2}$ inches
9	60 inches	$73\frac{1}{2}$ inches	87 inches	117 inches

Above widths are exclusive of laundry stove. Laundry stove as shown in Plates Nos. 1 and S 6996 occupies an additional space of 27 inches square. Stove shown in Plate 3906 measures 22 inches x 22 inches. Stove as shown in Plate 6607 measures 22 inches x 28 inches. Stove used in connection with Drumless Dryer as shown in Plate 6608 measures 24 inches x 32 inches.

DRYER MFG. CO.

SUCCESSORS TO CHICAGO CLOTHES DRYER WORKS

204 East Twenty-Sixth Street
NEW YORK, N. Y.

PRODUCTS.

DOMESTIC LAUNDRY EQUIPMENTS; "CHICAGO" DRYERS; "CHICAGO-FRANCIS" DRYERS; "CHICAGO" ELECTRIC WASHERS; "CHICAGO" SIMPLEX IRONERS, operated by gas, coal, steam or electricity; IRONING BOARDS, TABLES, etc. All devices specially adapted and simplified for use in residences, apartments, institutions, etc.

FACILITIES.

Twenty years' experience in manufacturing and installing Laundry-Drying Machinery places us in a position where we can be of service when the question of equipping the laundry with modern domestic devices is to be considered. All machines being built to order, to fit given spaces and to suit best the various conditions and requirements, the assistance of our representatives to make suggestions in planning, examine premises, or figure cost of installing machines of this character, can be obtained by letter or telephone



DRYER CON- STRUCTION.

In design and workmanship our product is of the very highest character. Frame-work formed of a combination of heavy angle, channel, and tee-iron, enclosed with a double-insulated casing of heavy galvanized sheet steel, producing a fireproof cabinet.

HANGING- RACK SYSTEM.

Formed of extra heavy galvanized-iron front and back paneled faces. Front faces of varying widths (see table) are double cased and filled with insulating material, making the same rigid. Front and back faces joined with specially galvanized tubular guiding and patent ventilated hanging-bars, fastened with inner and outer flanges. Rack system operates on overhead tubular tracks properly suspended from ceiling (as in Figs. 6, 8, 9, 10, 11, 12 and 13, or in other cases, if desired, rolling on the floor and eliminating the overhead tracks (see Fig. 7).

NOTE.

If desired, steam-heating can be installed in combination with gas or hot air.

FINISH.

The casing of Dryers can be finished in aluminum, silver, bronze, or white enamel paints, or to correspond with room as desired. Castings such as sheave-holders, flanges, handles, etc., which are usually made of iron and finished same as casing, can be made of polished brass, plain or nicked, electroplated, or dead black.

SPECIAL— "PERFECTION" HANGING- RACK.

We have just devised and patented the one essential improvement which perfects the Hanging-Rack System for all high-class clothes dryers, viz., the elimination of all overhead track and roller systems and the complete closing of aperture created when rack is extended, thus preventing the waste of heat by escape into the laundry. (See Figs. 1 and 2.)

ROLLER SYSTEM.

All rollers used are improved antifriction ball-bearing rollers, insuring easy and practically noiseless operation of the rack system.

VENTILATING SYSTEM.

Great care is given to the ventilation of our Dryers, as quick drying and thorough ventilation only produce results equal to outdoor conditions, viz.: white, pure, and fresh garments.



FIG. 1. "CHICAGO" LOCKING COMPARTMENT DRYER
Type "Perfection A" Rack

One of six dryers installed in the Belnord Apartments, New York, N. Y. (the largest in the world). Chosen as the best improved dryer in the market. This "Perfection" type of rack can be applied to all widths of racks or styles of dryers we build

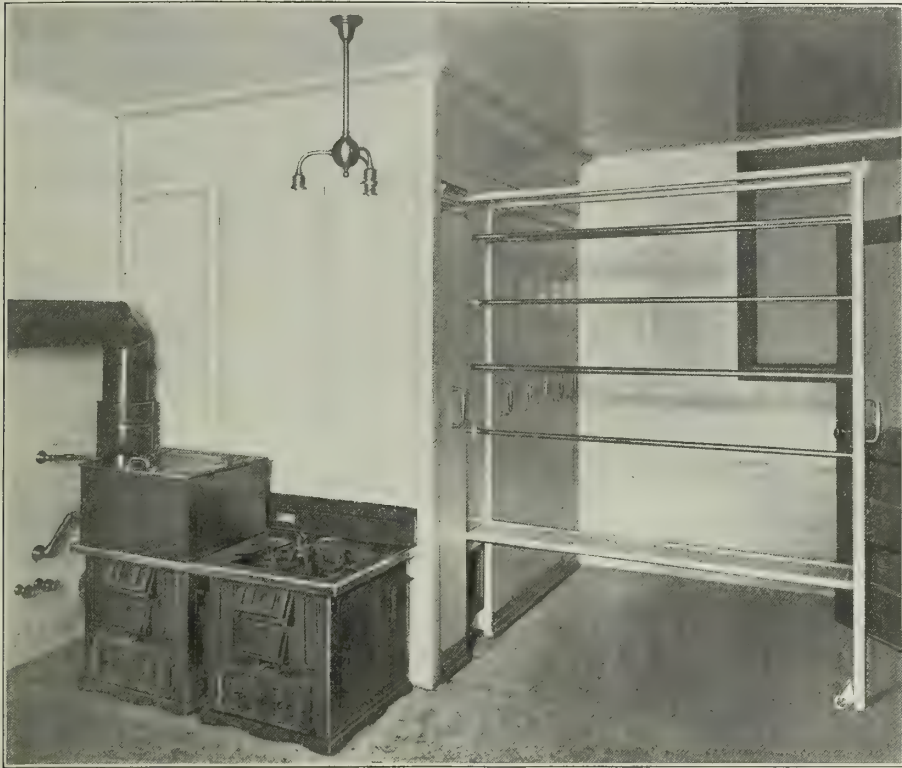


FIG. 2. "CHICAGO" COMBINED DRYER AND DOUBLE LAUNDRY STOVE
One stove equipped with stationary wash boiler. Shows Type "Perfection" C Rack closing Aperture

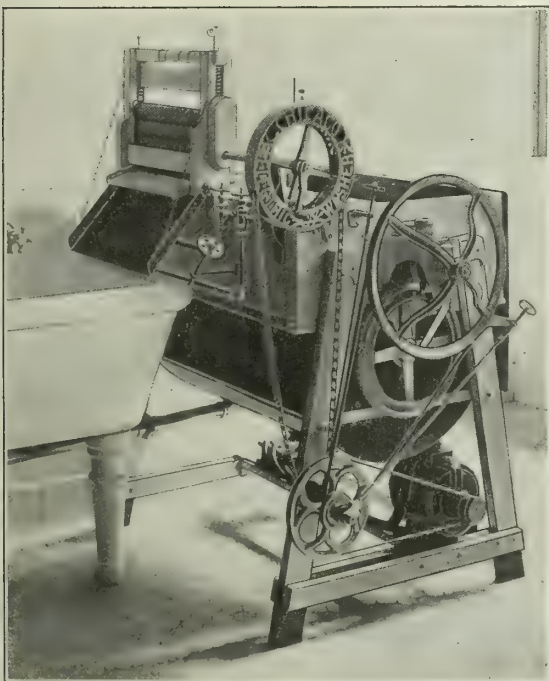


FIG. 4. "CHICAGO" ELECTRIC WASHER AND TRIPLE-ROLL WRINGER

Operated by electric motor or gas engine attached, also by belt or hand power. Tub of washer made of best tin-lined planished copper, and equipped with patent one-piece supply, drain and overflow fixture, ready for plumbing connection. Cylinder, equipped with automatic reverse action, is made of best cyprus, bound with brass hoops and catches

Size No. 1. Occupies floor space 32" x 34"

Size No. 2. Occupies floor space 35" x 41"

Other special sizes.

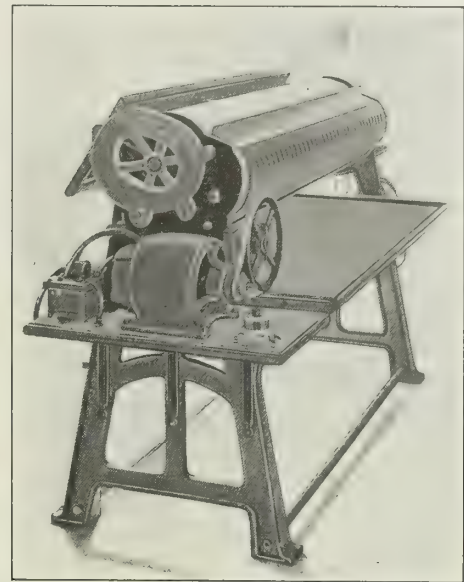


FIG. 3. CHICAGO SIMPLEX IRONER

Operated by electric motor attached or by belt, also made to operate by hand. Ironing surface heated by gas, gasoline gas or electricity. Sizes of ironing surface 48", 42", 37", 26" and 24"

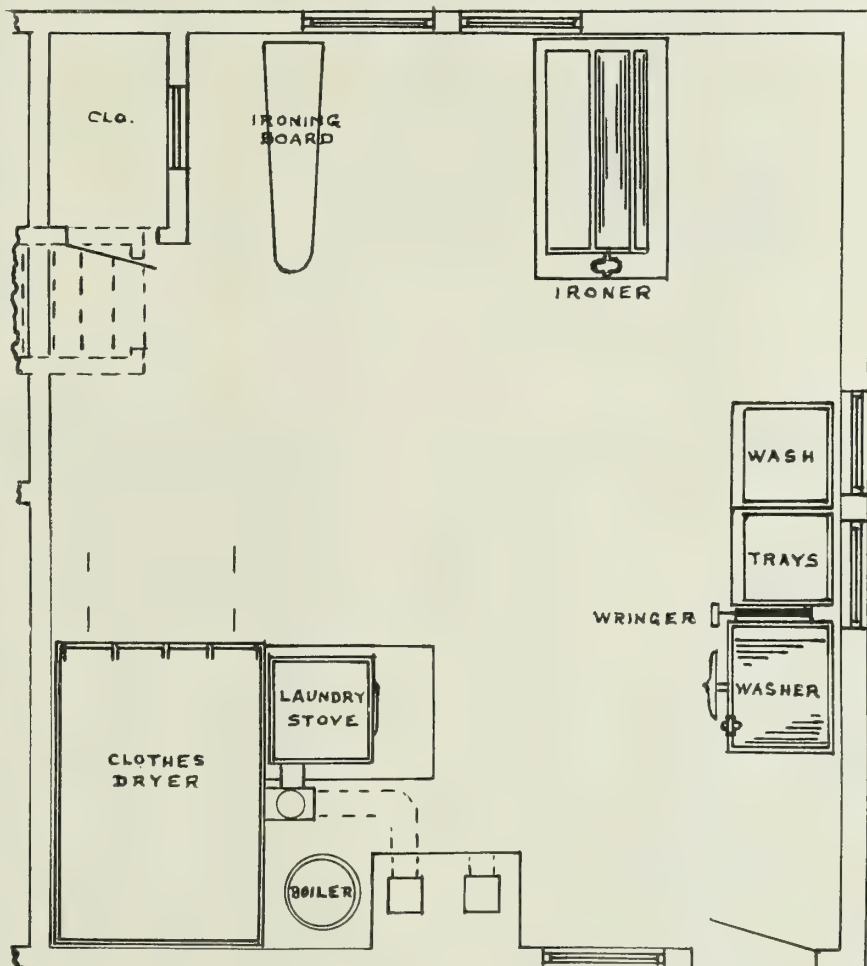


FIG. 5. MODEL FLOOR PLAN FOR RESIDENCE LAUNDRY

Scale $\frac{1}{2}$ in. = 1 ft.

Arrangement can be varied to suit any given room

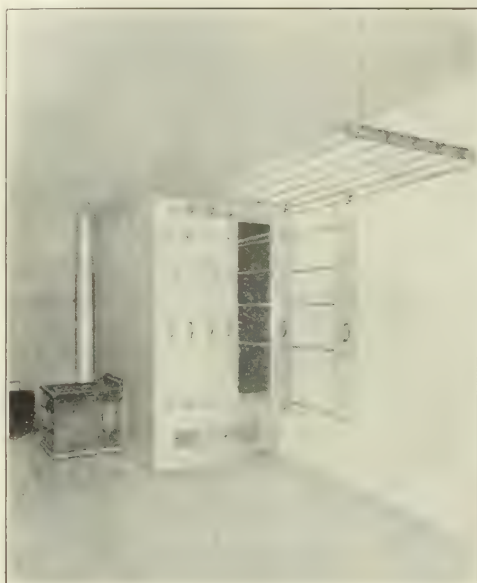


FIG. 6. "CHICAGO" COMBINED DRYER AND LAUNDRY COAL STOVE
Standard Construction Type "A"



FIG. 7. "CHICAGO" COMBINED DRYER AND STOVE, FLOOR CARRIAGE RACK SYSTEM. Type "C J"

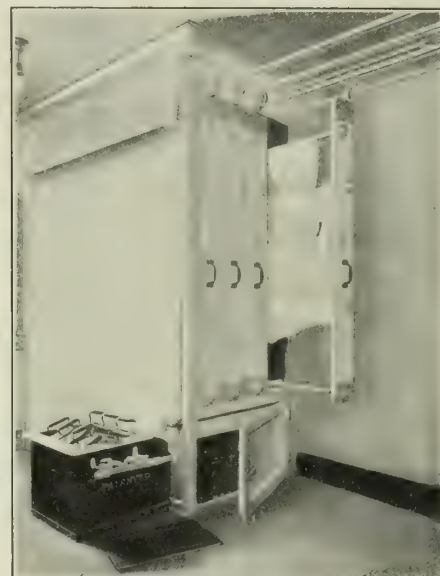


FIG. 8. "CHICAGO-FRANCIS" COMBINED DRYER AND GAS STOVE
Standard Construction Type "A"

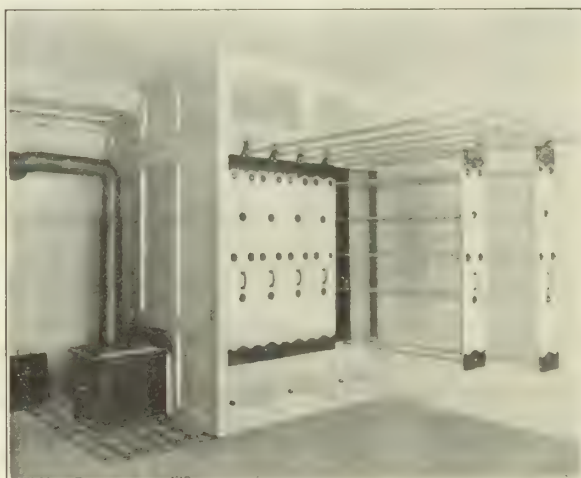


FIG. 9. "CHICAGO" COMBINED DRYER AND LAUNDRY STOVE, PANELED AND MOULDED TO CEILING. Cabinet Finish Type "C"



FIG. 10. "CHICAGO" LOCKING COMPARTMENT DRYER. Type "C L"

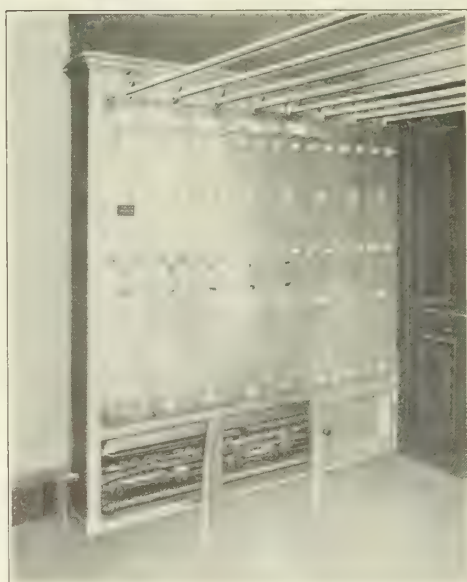


FIG. 11. "CHICAGO" STEAM-HEATED DRYER. Type "B"

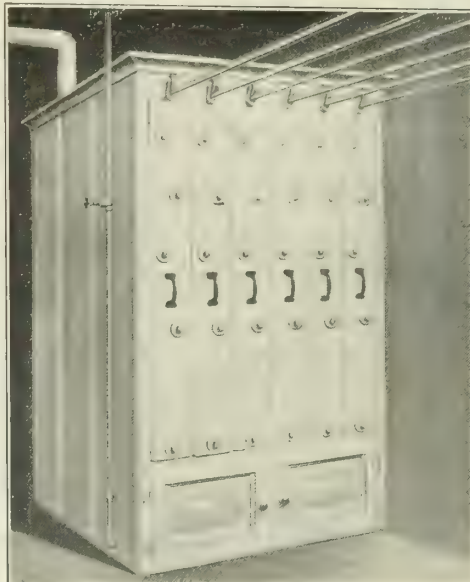


FIG. 12. "CHICAGO" RAPIDO DRYER GAS HEATED
Standard Construction Type "A"

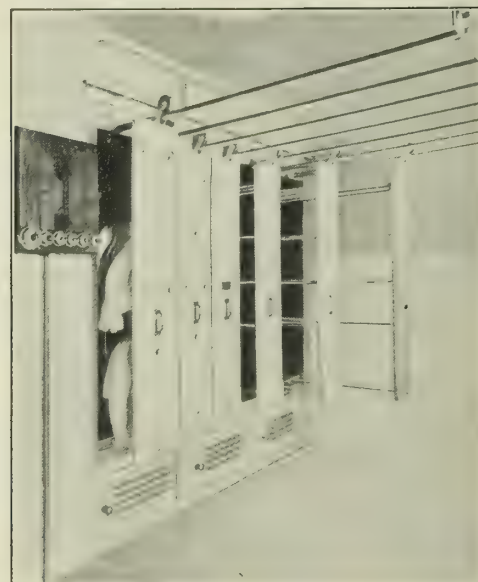


FIG. 13. "CHICAGO" ELECTRIC HEATED DRYER. Type "C"

Dryers can be made in almost unlimited size as to number or type (meaning width) of hanging racks.

Chicago Combined Dryer and Laundry Stove (Coal)																																	
Type 'A' (Meaning Racks 7½" wide each)										Type 'B' (Meaning Racks 9" wide each)										Type 'C' (Meaning Racks 12" wide each).													
Number of Racks		4	5	6	7	8	9	10	11 to 20	3		4	5	6	7	8	9	10 to 20	3		4	5	6	7	8	9	10 to 12						
Width of Dryer		2'-10"	3'-5"	4'-1"	4'-8"	5'-4"	6'-0"	6'-10"	Add 7½" each rack	2'-7"		3'-4"	4'-1"	4'-10"	5'-8"	6'-4"	7'-1"	Add 9" each rack	3'-5"		4'-5"	5'-5"	6'-5"	7'-5"	8'-7"	9'-7"	Add 12" each rack						
Length of Dryer		The length of Dryers is usually figured 7 feet. Can be made longer or shorter when required. (Allow same amount of space in front of Dryer where racks pull into room.)																															
Height of Dryer		The height of Dryers is usually figured 7'-6" but are made to suit the height of room or the possible interference of overhead pipes or other obstructions.																															
Cap. of Dryer		104'	130'	156'	182'	208'	234'	260'	Add 26' per rack	117'		156'	195'	234'	273'	312'	351'	Add 39' per rack	156'		208'	260'	312'	364'	416'	468'	Add 52' per rack						
Size of Stove		2'-3" X 2'-3"								Double Stove 2'-3" X 4'-8"								2'-3" X 2'-3"								Double Stove 2'-3" X 4'-8"							
Provide Flue Size.		8" X 8"								12" X 12"								8" X 8"								12" X 12"							
Capacity Water Back		60 to 80 Gallons.								80 to 100 Gal.								60 to 80 Gallons.								80 to 100 Gallons.							
Style-Extra Heavy Construction.										Style-Chicago Horse Blanket Dryer.										Style-Chicago Garment Blanket & Rubber Boot Dryer.													
Type 'D' (Meaning Racks 16" wide each)										Type 'E' (Meaning Racks 18" wide each)										Type 'F' (Meaning Racks 16½" wide each)													
Number of Racks		2	3	4	5	6	7	8	9 to 12	4		5	6	7	8	9 to 12	2		3	4	5	6	7	8									
Width of Dryer		3'-2"	4'-6"	5'-10"	7'-2"	8'-6"	9'-10"	11'-5"	Add 16" each rack	6'-6"		8'-0"	9'-6"	11'-3"	12'-9"	Add 18" each rack	3'-3"		4'-9"	6'-2"	7'-6"	8'-10"	10'-3"	11'-7"									
Length of Dryer		Same as in types A,B.&C.										Usual length 8 feet.										Usual length 7'-6"											
Height of Dryer		Same as in types A,B.&C.										Usual height 8 feet.										Usual height 8'-0"											
Cap. of Dryer		130'	195'	260'	325'	390'	455'	520'	Add 65' per rack	Figure 4 Blankets to each Rack for best results in drying.										Especially made for Fire and Police Department Houses arranged for hanging garments, blankets and rubber boots													
Size of Stove		2'-3" X 2'-3"				Double Stove 2'-3" X 4'-8"				2'-3" X 2'-3"				Double Stove 2'-3" X 4'-8"				Special.				2'-3" X 2'-3"				Double Stove 2'-3" X 4'-8"							
Provide Flue Size.		8" X 8"				8" X 12"				12" X 12"				8" X 8"				12" X 12"				Special.				8" X 8"				12" X 12"			
Capacity Water Back		60 to 80 Gallons				80 to 100 Gallons				60 to 80 Gallons				80 to 100 Gallons.				60 to 80 Gallons				80 to 100 Gallons.											
Chicago "Francis" Combined Dryer and Gas Laundry Stove																																	
Use table above for No or type of racks, also width, length, height or capacities of Dryers. No water back.																																	
Size of Stove		22" square		No 2-F. 27" square		Double No 2-A 2'-3" X 4'-8"		22" sq.		No 2-F. 27" sq.		Double No 2-F. 2'-3" X 4'-8"		22" sq.		No 2-F. 27" sq.		Double No 2-F. 2'-3" X 4'-8"															
Provide Vent Size		4" X 6"		4" X 8"		4" X 12"		4" X 6"		4" X 8"		4" X 12"		4" X 6"		4" X 8"		4" X 12"															
Chicago Rapido Dryer (Heated by Gas) independent of any stove arrangement.																																	
Use table above for number or type of Racks, also width, length, height or capacities of Dryers. Provide vent sizes same as table for Chicago Francis Dryers. Our Combination Gas Laundry Stove (for boiling clothes and heating flatirons) is a valuable adjunct with this style dryer.																																	
Chicago Steam Dryer (Heated from Steam Coils) independent of any stove arrangement.																																	
Use above table for number or type of Racks, also width, length, height or capacities of Dryers. Provide vent sizes same as table for Chicago Francis Dryers.																																	
Square Feet Radiation		70'	85'	100'	115'	130'	145'	160'	add 15'	60'	80'	100'	120'	140'	160'	180'	add 20'	75'	100'	125'	150'	175'	200'	225'	add 25'								
Chicago Electric Dryer (Heated from Electric Plates) independent of any stove arrangement.																																	
Use above table for number or type of Racks, also width, length, height or capacities of Dryers. Provide vent sizes same as table for Chicago Francis Dryers.																																	
KW Consumption		4'	4½'	5½'	6'	7'	7½'	8½'	Special.	3½'	4½'	5'	6'	7'	8'	9'	Special.	4½'	5½'	7'	8'	9½'	11'	12½'	Special.								
Chicago Locking Compartment Dryers for Apartment Buildings																																	
Type AL (Meaning Racks 7½" wide, each arranged in locking compartments of 2, 3, or 4 Racks to each compartment.																																	
" BL " " 9" " " " " " " " " " 2, 3 " 4 " " " " "																																	
" CL " " " 12" " " " " " " " " " 1 2 " 3 " " " " "																																	
" DL " " " 16" " " " " " " " " " 1 2 " 3 " " " " "																																	
Length, Height and Capacity for above style of Dryers figured the same as in tables of types A, B, C & D. Width of Compartments computed by figuring type of rack desired and adding 2" for each upright division.																																	
Special Notice, Types D, E, F and locking compartment Dryers are usually heated by steam or gas but can be heated from Laundry Stoves.																																	
Chicago Cabinet Whirlwind Dryer.																																	
Type "G" (Meaning Portable Truck Racks)																																	
½ Compartment or 1 door with 2 trucks. 4' wide, 8' high, 8' long, 2 stands, 25 pipes each, 1" coil.																																	
1 " " " 2 " " 3 " " 7 " " 8 " " 8 " " 3 " " 25 " " 1" "																																	
1½ " " " 3 " " 4 " " 10 " " 8 " " 8 " " 5 " " 25 " " 1" "																																	
2 " " " 4 " " 6 " " 13.2 " " 8 " " 8 " " 6 " " 25 " " 1" "																																	
2½ " " " 5 " " 7 " " 16.3 " " 8 " " 8 " " 8 " " 25 " " 1" "																																	
3 " " " 6 " " 9 " " 19.4 " " 8 " " 8 " " 9 " " 25 " " 1" "																																	
The letter "U" affixed to letters A, B, C, etc. denote that racks are to operate on floor carriage system in place of the usual overhead Track System.																																	
The word "PERFECTION" used in connection with letters A, B, C, D, E & F denotes type of rack eliminating all overhead rollers and closing aperture when rack is extended.																																	

CONKLING COMPANY

Water Softening Systems and Washing Machinery

96th Street and Erie Avenue

CABLE ADDRESS, "CONKLING"

CHICAGO, ILL.

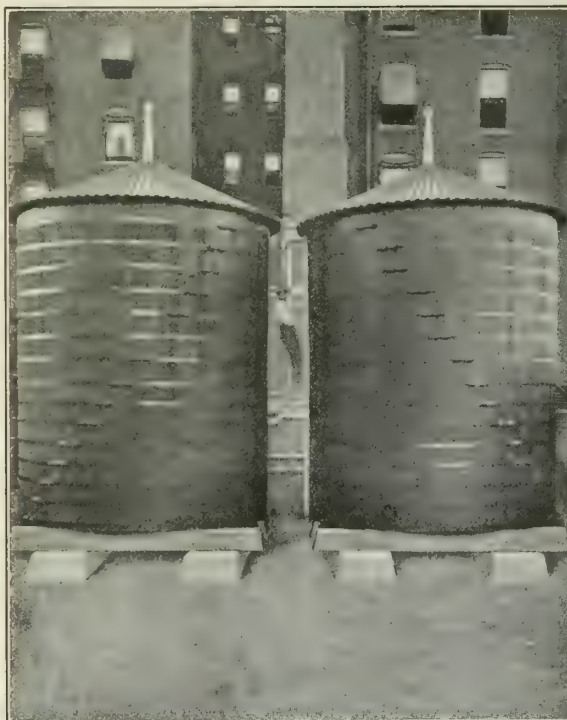
PRODUCTS.

The products of this Company include WATER SOFTENING SYSTEMS; DIRECT-CONNECTED MOTOR-DRIVEN WASHING-MACHINES; SINGLE-BELT EQUAL-REVERSE WASHING-MACHINES; RACKS for drying Blankets and Lace Curtains, and such supplies as PURE NEUTRAL SOAPS, CARBONATED WASHING-POWDER and BLUING for the Laundry.

SERVICES.

ENGINEERING—We specialize on the planning and arranging of Water Softening Systems and Electric or Belt Driven Washing Machinery for hotels and public institutions, laundries and textile mills.

SCIENTIFIC—Laboratory Reports covering the condition of water, its adaptability for laundering purposes, the cost of removing the mineral matter from hard water and the saving accomplished thereby, furnished without charge. Our service further includes the outlining of special methods of washing based on local conditions, and much other information incidental to this subject.



TWO-RESERVOIR WATER SOFTENING SYSTEM

WATER SOFTENING AND PURIFYING SYSTEMS.

DESCRIPTION.

These are built on order only, and their size is in accordance with the amount of soft water required per day. The system may consist of but one settling reservoir where a small quantity of water is needed, or two or three where 50,000 or 100,000 gallons are required per day.

The reservoirs in which the water is softened are made from carefully selected lumber, free from defects, and capable of resisting the action of the chemicals used for the removal of the minerals. The staves are tongued and grooved and fit perfectly. Heavy steel bands, fastened with adjustable draw lugs, are used for hoops.

The method used in softening the water is what is known as our "positive settling system" which produces a uniform soft water. We guarantee satisfactory results.

CONKLING COMPANY

Washing Machinery and Water Softening Systems

96th Street and Erie Avenue

CHICAGO, ILL.

CABLE ADDRESS, "CONKLING"

PRODUCTS.

The products of this Company include DIRECT-CONNECTED MOTOR-DRIVEN WASHING-MACHINES; SINGLE-BELT EQUAL REVERSE WASHING-MACHINES; WATER SOFTENING SYSTEMS; RACKS for drying Blankets and Lace Curtains, and such supplies as PURE NEUTRAL SOAPS, CARBONATED WASHING-POWDER and BLUING for the Laundry.

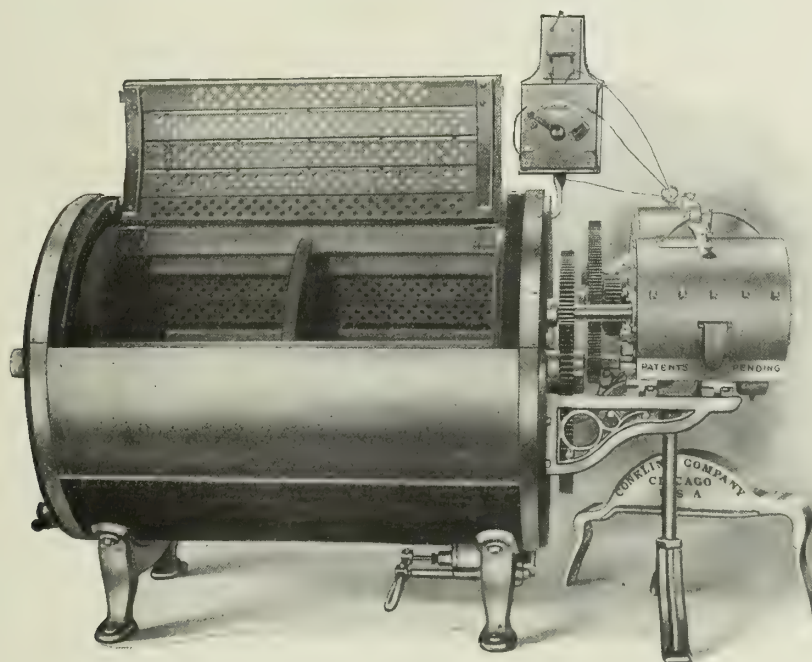
HYDRAULIC WASHING- MACHINES, MOTOR- DRIVEN.

A washing-machine driven by a motor has many advantages over those driven and reversed by two belts, one open and the other crossed. The belts not only accumulate dust and dirt, which settles on the wet clothes more or less, but the slipping of the belts causes the cylinder of the washer to make unequal revolutions which causes the goods to roll in a bunch, consequently the water and soap can not circulate properly through the goods. Our reversing mechanism reverses the cylinder each way equally and positively without any shock either on the motor or the washer and will cut the cost of washing fifty per cent, producing a much better grade of work with very much less wear on the goods.

GUARANTEE.

We sell our washing-machine under a guarantee that we will make our statements good, and we know from careful tests made that our machines are superior in capacity, construction and economical operation to those operated by two belts.

We also guarantee our motor-driven reversing mechanism for one year and will insure it for one or more years thereafter for the small annual premium of nine dollars. Patented in the United States and foreign countries.



DIRECT-CONNECTED MOTOR-DRIVEN WASHING-MACHINE

Size of inside cylinder, 36" x 48"; capacity, 200 shirts or 200 pounds of dry weight of goods to a load; less than two horse-power required to operate it with this load; floor space over all, 45" x 96"

THE MANNEN & ESTERLY CO.

MANUFACTURERS OF

The "Manest" Clothes Dryer

2241-2255 St. Clair Avenue, N. E.

CLEVELAND, OHIO

PRODUCTS.

"MANEST" CLOTHES DRYERS of various descriptions for Residences, Apartment Buildings, Institutions, Hotels and Special Purposes.



FIG. 1. FIVE-RACK "MANEST" DRYER WITH COAL STOVE

OPERATION.

Fig. 1 shows the Combined Stove and Radiator which boils the clothes, heats the irons and furnishes heat for the drying cabinet.

The clothes are dried by the currents of hot air arising from the radiator and passing up between the clothes, carrying with it the moisture and impurities from the clothes. This steam is instantly withdrawn from the cabinet by means of a vent pipe of suitable size connected to a double pipe at the chimney.

LOCATION OF DRYER.

The stove is attached to the drying cabinet at any point except in front, this being an advantage in locating the dryer in the laundry room.

GAS DRYER.

Fig. 2 shows the Combined Gas Stove and Radiator which operates the same as with coal stove, the radiator being gas-tight and admitting no fumes or odor to the clothes. Either natural or artificial gas can be used.

STEAM DRYER. CABINET.

Fig. 3 shows Drying Cabinet with steam coils which can be furnished in any size desired.

The Cabinet is made of heavy finely crimped galvanized sheets. The hanging bars, doors, etc., are also galvanized and a galvanized screen is placed below the clothes racks. The racks operate on large wood rollers which are superior to and make less noise than ball-bearing rollers.

DIMENSIONS OF DRYING CABINET

No.	Racks	Height, feet	Width, inches	Length closed, feet	Length with Rack extended, feet
3	3	7	24	7	14
4	4	7	31	7	14
5	5	7	39	7	14
6	6	7	46	7	14
7	7	7	54	7	14
8	8	7	61	7	14

DIMENSIONS OF STOVES

Coal Stove, 27 x 31 inches with 2 9-in. covers
Two-Burner Gas Stove, 27 x 31 in. with 2 9-in. covers
One-Burner Gas Stove, 20 x 22 in. with 1 9-in. cover

RADIATOR.

The Radiator through which the products of combustion from the stove pass, thereby heating the Drying Cabinet, is made of extra heavy galvanized iron, which is more serviceable and durable for the purpose than cast-iron radiators, causing a saving of fuel and facilitating the drying operation. The size varies with the size of cabinet and there are no dampers in connection, the same being one continuous air-tight duct connecting with inlet and outlet of stove.



FIG. 2. FIVE-RACK "MANEST" DRYER WITH GAS STOVE
 Sizes under Five-Rack require only one burner stove

CHIMNEY.

A Chimney Flue equal in capacity to 9 inches in diameter is necessary for the gas-stove dryer as well as with coal stove.

STOVE.

The Coal Stove, as shown in Fig. 1, can be fitted with soft or hard coal or wood grate. Gas burners can also be used in the coal stove.

SPECIFICATIONS.

Install Rack "Manest" Clothes Dryer with stove, ready for main gas-pipe connections (if gas is to be used), galvanized iron smoke pipe and vent-pipe connected to chimney.

ESTIMATES.

We will furnish estimates on Dryers f. o. b. cars Cleveland or installed complete as desired.

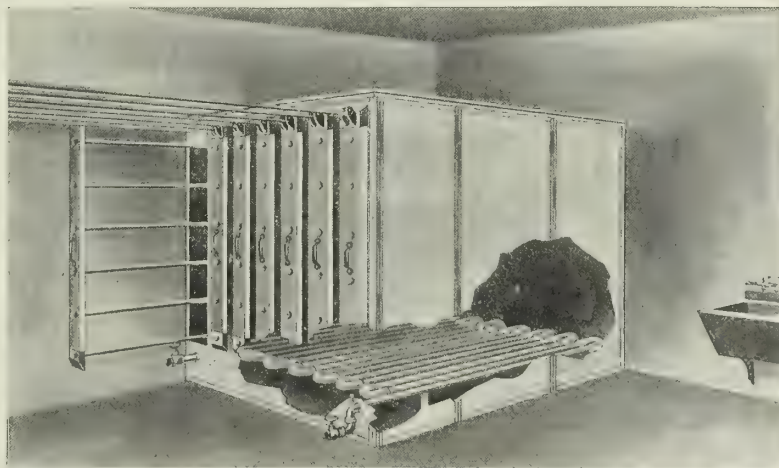


FIG. 3. SEVEN-RACK "MANEST" DRYER WITH STEAM COILS

TROY LAUNDRY MACHINERY CO., LTD.

“Honest Construction” Laundry Machinery

CHICAGO
TROY
NEW YORK

SAN FRANCISCO
SEATTLE
LONDON

PARIS
AMSTERDAM
BERLIN

VIENNA
AUGSBURG
MILAN

PRODUCTS.

We manufacture a full line of high-grade LAUNDRY MACHINERY, ranging from the smallest device, sufficient for modest needs, to the machine whose capacity can more than meet the most unusual demands; WASHERS of wood and metal; STERILIZING and DISINFECTING MACHINES; EXTRACTORS, WRINGERS, TUMBLERS (of wood, brass and woven wire); STARCHERS; DRY ROOMS and their APPLIANCES; DAMPENERS, MANGLES and IRONERS of all kinds.

ADVANTAGES.

Our machines combine the best material obtainable with the highest mechanical skill and the improvements suggested by our long experience. They are so built as to give years of perfect service and do a large amount of work of the highest quality. They are consequently ideal for laundries of any size, hotels and public or private institutions, charitable, educational or otherwise.

FACILITIES.

We have the largest factory in the world devoted exclusively to the manufacture of laundry machinery. We can execute orders promptly anywhere in the United States and Canada, as well as foreign countries, and can furnish a small laundry device or can install a complete plant.

SKETCHES, ESTIMATES AND CO- OPERATION.

Our Drafting Department will be glad to furnish sketches or plans that will best meet special requirements.

We are always glad to quote prices or give estimates on any proposition, when desired, either f. o. b. nearest shipping point, or covering the entire cost of installation by our construction engineers. Our Seventeenth Edition Catalogue, which contains photographic reproductions of our various machines, specifications and full descriptions, will be sent on request and any additional information required will be cheerfully furnished, either by one of our representatives or our nearest office.

SPECIFICA- TIONS.

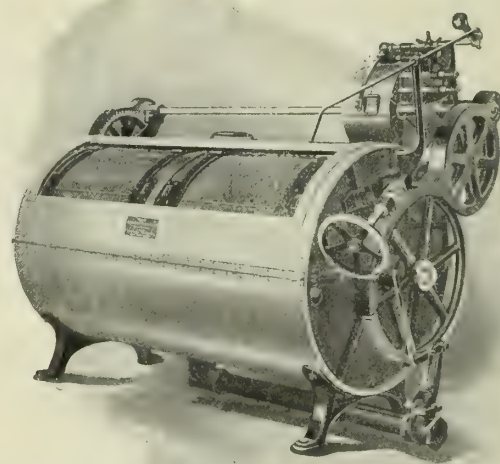
Specify: “‘Honest Construction’ Laundry Equipment, to be furnished by the TROY LAUNDRY MACHINERY CO., LTD., Chicago, Ill., Troy, N. Y., New York, N. Y., San Francisco, Cal., Seattle, Wash.”

REFERENCES.

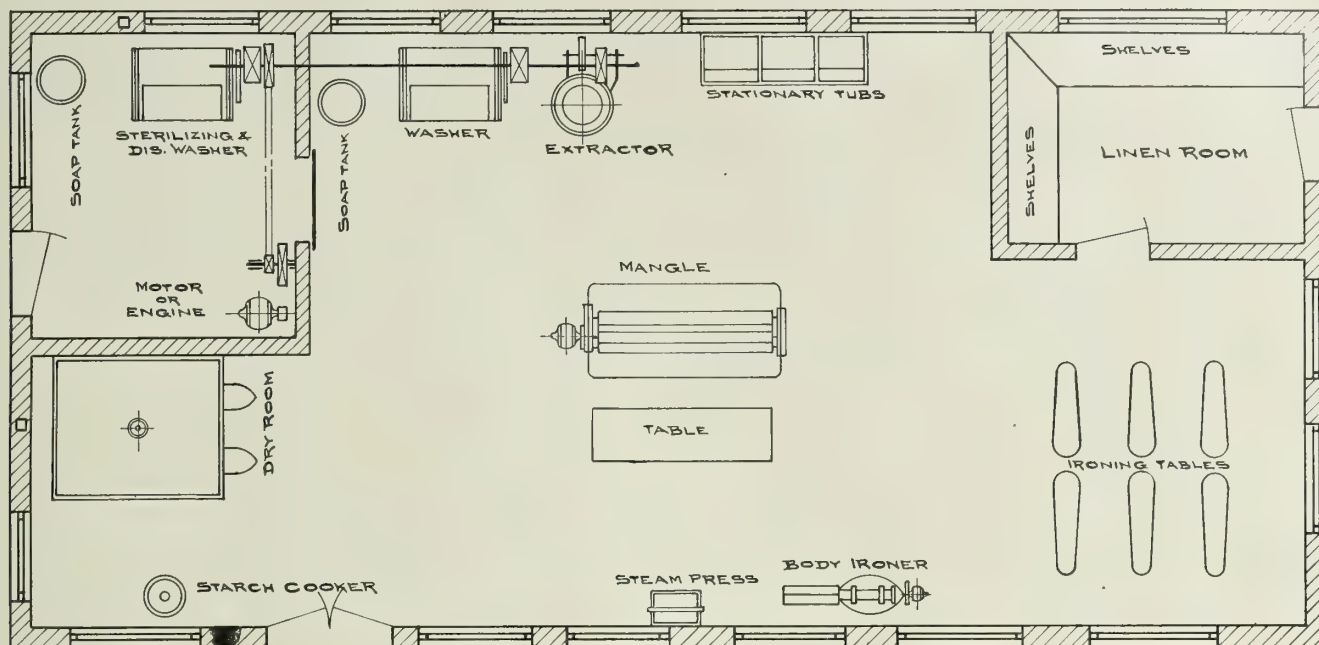
The machines built by the TROY LAUNDRY MACHINERY CO., LTD. are in use in every town or city possessing a modern steam laundry, in prominent hotels and clubs and in numerous asylums, hospitals and other charitable or public institutions. Names of such in his own city will be furnished any architect desiring to inspect a plant or plants.



“TROY” EXTRACTOR, MOTOR-DRIVEN



“TROY” ALL-METAL WASHER

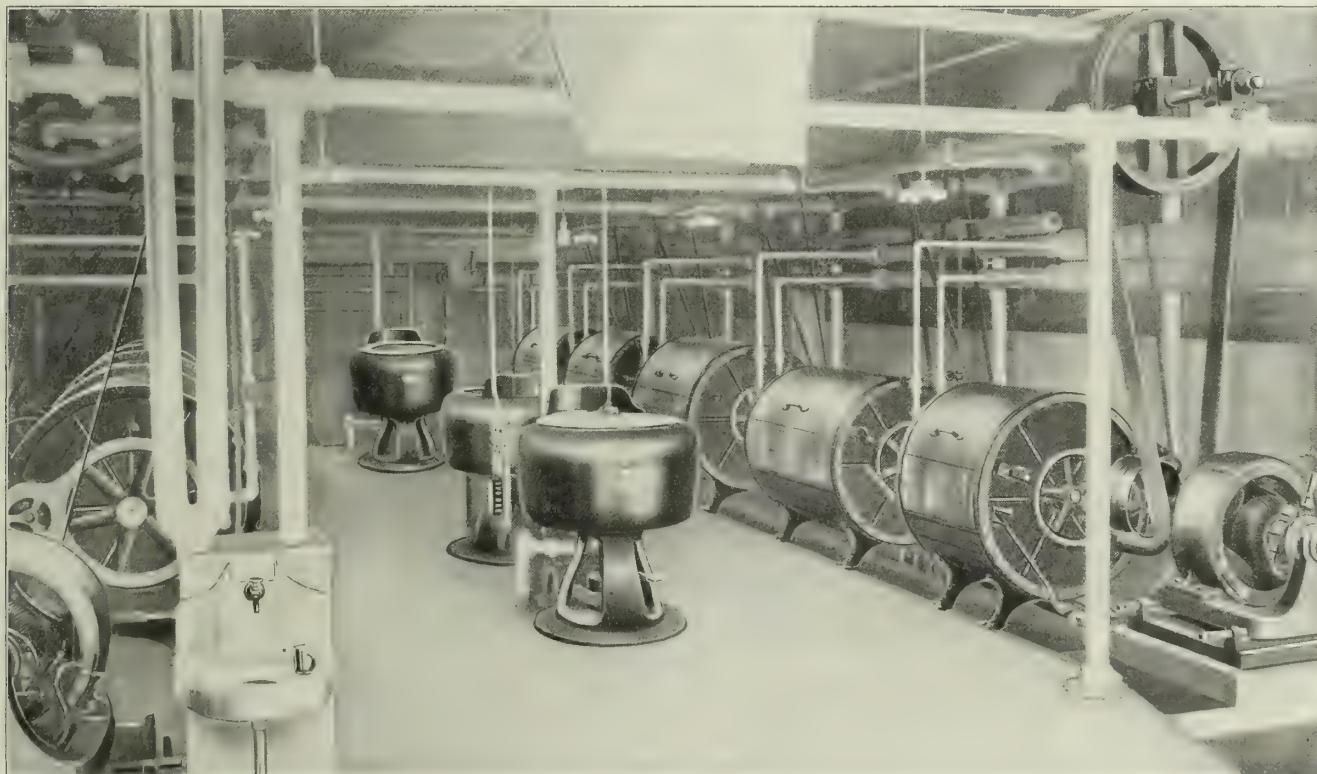


LAUNDRY PLAN

Plant with capacity for Hospital of 150 beds or Hotel of 100 rooms

SAMPLE
LAUNDRY
PLAN.

We show here one plan, with machinery adequate to the work of a hospital of 150 beds, or a hotel of 100 rooms. In the latter case the Sterilizing and Disinfecting Washer may be dispensed with. We have numerous other plans for plants of either description of almost any capacity. Any of these will be sent to architects indicating to us the character of their plans.



AN IDEALLY ARRANGED WASHROOM, "TROY" EQUIPMENT, MOTOR-DRIVEN

ARMSTRONG CORK COMPANY

INSULATION DEPARTMENT

Manufacturers of and Contractors for Cold-Storage Insulation
PITTSBURGH, PA.

BRANCH OFFICES

CHICAGO, ILL., 241 Randolph Street	CLEVELAND, OHIO, 602 American Trust Building
ST. LOUIS, MO., 10-12 North Second Street	SAN FRANCISCO, CAL., 693 Mission Street
CINCINNATI, OHIO, 244 Main Street	ATLANTA, GA., 207 Prudential Building
NEW YORK, N. Y., NONPAREIL CORK WORKS, Fulton Bldg., 50 Church St.	SEATTLE, WASH., D. E. FRYER & COMPANY, Lumber Exchange Bldg.
BOSTON, MASS., NONPAREIL CORK WORKS, 84 North Street	NEW ORLEANS, LA., H. T. STEFFEE, 615 Baronne Street
PHILADELPHIA, PA., JOHN R. LIVEZEY, 1933 Market Street	MONTREAL, QUEBEC, THE KENT Co., LTD., Coristine Build

FACTORIES

BEAVER FALLS, PA. PITTSBURGH, PA. CAMDEN, N. J.

PRODUCTS AND SERVICES.

NONPAREIL CORKBOARD, GENUINE GERMAN IMPREGNATED CORKBOARD, ACME CORKBOARD, GRANULATED CORK, and REGRANULATED CORK, for insulating cold-storage warehouses, abattoirs, breweries, fur vaults, ice plants, candy factories, bakeries, dairies, creameries, refrigerators, freezing and brine tanks, etc., and generally wherever refrigeration is employed. Contractors for COLD-STORAGE INSULATION.

Also Manufacturers of NONPAREIL CORK PIPE COVERING as described elsewhere in this Catalogue, for which see our name in General Index.

NONPAREIL CORKBOARD.

Nonpareil Corkboard ("Nonpareil Cork," Trade-Mark) consists of pure granulated cork compressed in sheets and subjected to a special process of manufacture, which insures permanency of form and enhances the inherent insulating qualities of the raw material. Containing no foreign substance, its heat conductivity is guaranteed to be the lowest of any commercial insulator. It will not disintegrate in the presence of moisture. In fact, the United States Navy Department, which uses Nonpareil Corkboard extensively aboard ship, specifies that the material shall withstand boiling at atmospheric pressure for three hours without disintegration or linear expansion of more than 2 per cent in any direction. This grade of corkboard, erected in two layers in Portland cement, is the only cold-storage insulating material officially tested and approved by the National Board of Fire Underwriters. (See detail No. 1 on second page following.)

GENUINE GERMAN IMPREGNATED CORKBOARD.

Genuine German Impregnated Corkboard is manufactured and distributed in America solely by the ARMSTRONG CORK COMPANY, under patents secured from the original German manufacturers, Grünzweig & Hartmann, Ludwigshafen a. Rhein. Granulated cork, with a fireproofing binder, is moulded into boards, baked and then impregnated with asphalt under high pressure. As might be expected, this material is not as efficient a non-conductor of heat as Nonpareil. Its resistance to moisture, though, and its structural strength are very marked. It is therefore particularly suited for use where excessive dampness renders service conditions unusually severe. It is recognized as the standard form of insulation in Germany.

ACME
CORKBOARD.

Acme Corkboard consists of granulated cork moulded under pressure with an asphaltic binder, into sheets of proper thickness.

GRANULATED
CORK.

Granulated Cork is manufactured in many different grades. The finest will pass through a $\frac{1}{12}$ " mesh screen, weighing $12\frac{1}{2}$ pounds to the cubic foot; the coarsest, termed Unscreened Granulated, through a $\frac{1}{2}$ " screen, its weight being approximately $6\frac{1}{2}$ pounds to the cubic foot.

REGRANU-
LATED
CORK.

Regranulated Cork is a by-product resulting from the manufacture of Nonpareil Corkboard. In insulating efficiency it surpasses all other loose materials. This material weighs $6\frac{1}{2}$ pounds per cubic foot, and is particularly suited for the insulation of freezing and brine tanks.

CORKBOARD
DIMENSIONS
AND
WEIGHTS.

All three grades of corkboard are made in sheets of standard size, 12" x 36", of the following thicknesses:

Nonpareil—1", $1\frac{1}{2}$ ", 2" and 3".

Weight: 1 lb. per ft. B. M.

Impregnated— $1\frac{1}{2}$ ", 2", $2\frac{1}{2}$ ", 3" and 4".

" 2 " " " "

Acme— $1\frac{1}{2}$ ", 2", $2\frac{1}{2}$ ", 3" and 4".

" $1\frac{1}{2}$ " " " "

CARDINAL
QUALITIES.

Corkboard Insulation:

(1) Possesses the lowest heat conductivity, the best grade—Nonpareil—being from 12 per cent to 18 per cent more efficient than its nearest commercial competitor.

(2) Is non-absorbent of moisture and free from capillary attraction on account of the peculiar cellular structure of the cork itself. Hence it keeps dry and free from rot, mould and offensive odors under all conditions.

(3) Is compact, occupying minimum space, thus saving valuable storage room.

(4) Is easily erected (see details of construction).

(5) Possesses ample structural strength, requiring no external support or retaining walls.

(6) Permits the direct application of a cement plaster finish, conducive to sanitation.

(7) Is slow burning, and, without loss of efficiency, permits a solid and compact construction, leaving no concealed air-spaces to act as flues and assist in the spread of fire. As stated above, Nonpareil Corkboard, erected as per detail No. 1, has been officially approved by the National Board of Fire Underwriters.

METHODS OF
CONSTRUC-
TION.

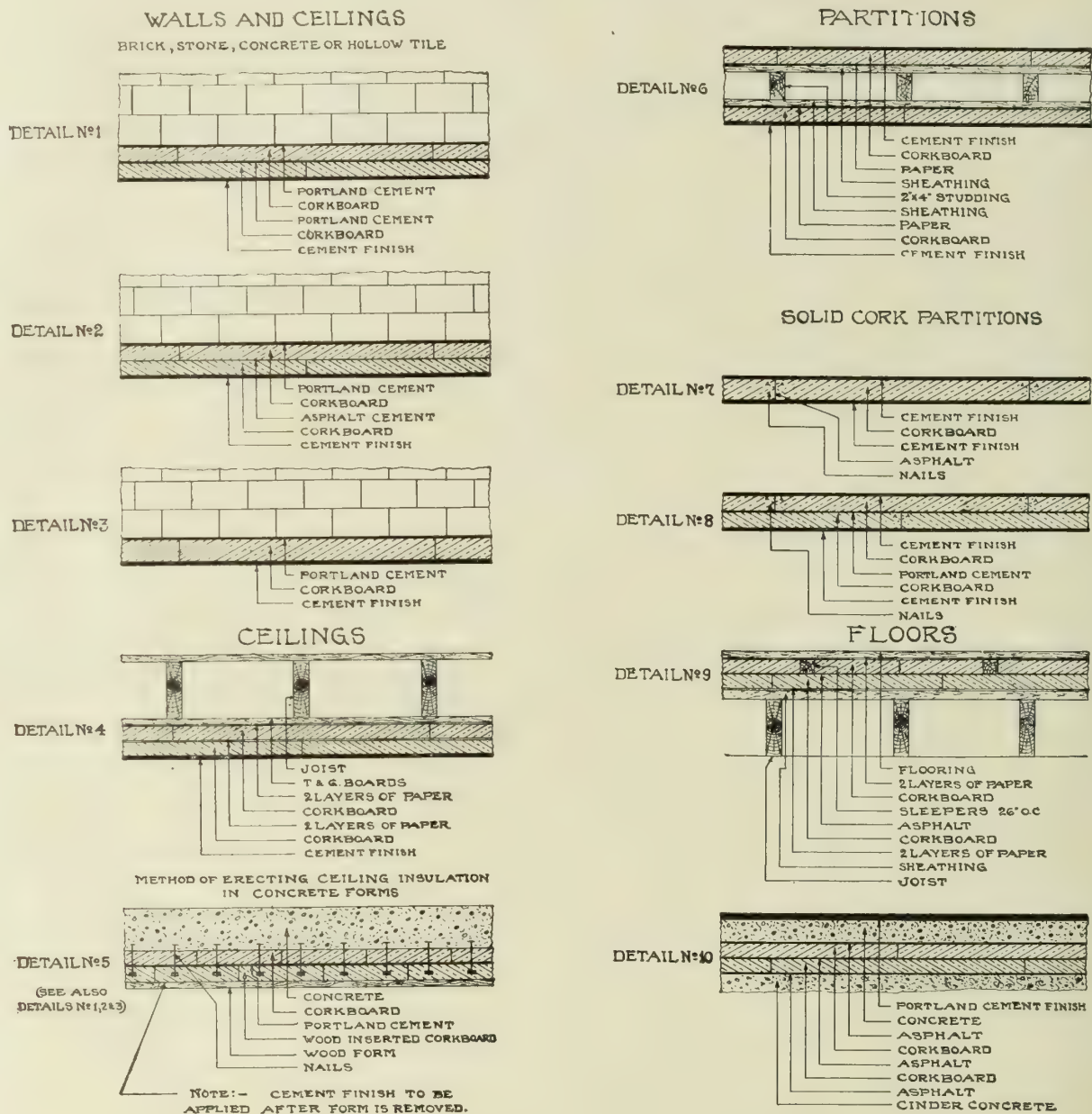
The ease with which Corkboard Insulation may be erected is one of the chief points in its favor. It may be nailed, sawed and used just as ordinary lumber in buildings of frame construction (see details 4 and 6), or put up with Portland cement or asphalt against brick, stone, concrete, or hollow-tile walls and ceilings (see details 1, 2, 3 and 5), no external support being necessary, as the material possesses ample structural strength.

Solid Corkboard Partitions as high as twenty feet are constructed without the use of any studding whatsoever, saving space and the cost of lumber otherwise required. (See details 7 and 8.)

In insulating floors, corkboard is laid in hot asphalt, a concrete or lumber finish being put down directly on top. (See details 9 and 10.)

Wherever the material is installed in two courses, joints are broken both horizontally and vertically between the layers. A cement finish may be readily applied directly to its surface.

The following sketches show those methods of erecting corkboard which practice has shown to be the most satisfactory from all standpoints:



DETAILS OF METHODS OF ERECTING CORKBOARD

FACTORIES.

The largest plants of this character in the world insure the prompt handling of all orders.

CONSTRUCTION
DEPARTMENT.

A fully equipped Construction Department is prepared to design and install insulation in plants of all descriptions.

BRANCH
OFFICES.

Experienced engineers are in charge of all of our branch offices. Information and estimates are cheerfully furnished.

THE BRUNSWICK REFRIGERATING COMPANY

Refrigerating and Ice-Making Machinery

NEW BRUNSWICK, N. J.

PRODUCTS.

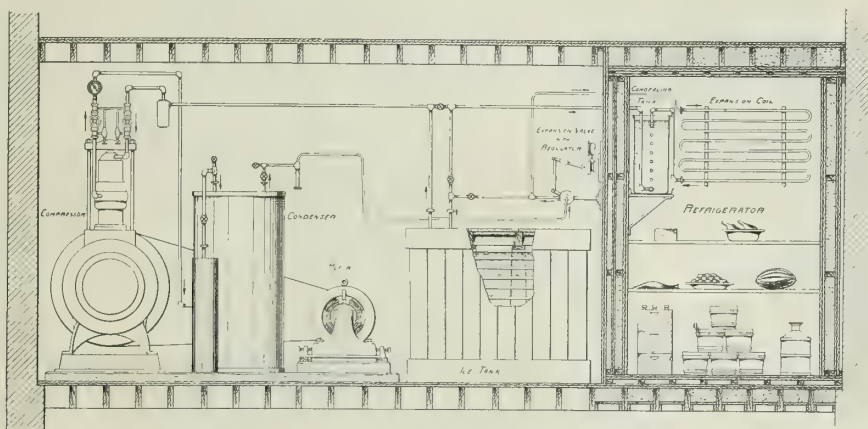
Manufacturers of "BRUNSWICK" ICE-MAKING and REFRIGERATING MACHINERY and APPARATUS for Commercial and Residential purposes.

A FIELD OF IMPORTANCE.

Refrigerating and Ice-Making has become a recognized need in large residences, hotels, hospitals, apartment houses, food and meat markets, confectioneries, dairies, restaurants, cafés, furrieries, yachts and vessels of all description; not only because of its sanitary features, but also because of its economy, which shows a saving in some cases of seventy-five per cent over ice.

THE "BRUNSWICK" APPARATUS.

This advance has been made possible by and opened the way for the "Brunswick"—a strong, simple, efficient apparatus, procurable at a moderate outlay of cost and space.



COMBINED REFRIGERATING AND ICE-MAKING PLANT
Sectional View



"BRUNSWICK" ONE-TON COMPRESSOR

DESCRIPTION.

We furnish installations for refrigeration and ice-making or for both combined. (See illustration.) The apparatus is adapted for any kind of power, can be located in the basement, and the cold conducted to any number of stories for cooling refrigerators, drinking-water, or for general cold storage.

By operating the machine in the day time sufficient cold is stored to continue the refrigeration throughout the night.

CAPACITY, INSTALLATION AND ESTIMATES.

The capacity of the "Brunswick" ranges from $\frac{1}{4}$ ton to 15 tons. We install complete plants or furnish our apparatus with directions for installation. Special estimates and full information furnished upon application.



"BRUNSWICK" PORTABLE AUTOMATIC REFRIGERATING AND ICE-MAKING MACHINE

REFERENCES.

A few of our prominent users:

Walker-Gordon Laboratory, Liberty Avenue and Evaline Street, Pittsburg, Pa.
Dr. A. J. Givens' Sanatorium, Stamford, Conn.
American-Hawaiian Steamship Co., 8-10 Bridge Street, New York, N. Y.
P. A. Rockefeller, Greenwich, Conn.

T. Eaton Co., Toronto, Can.
G. G. Frelinghuysen, Whippany Farm, Morristown, N. J.
The Mohican Co., 175 Fifth Avenue, New York, N. Y.
Princeton University, Princeton, N. J.
Thompson's Spa, Boston, Mass.
Baltimore Country Club, Baltimore, Md.

THE CREAMERY PACKAGE MANUFACTURING CO.

Refrigerating Machinery Department

GENERAL OFFICES

61-67 West Kinzie Street

CHICAGO, ILL.

TELEPHONE, CENTRAL 854

REFRIGERATING MACHINERY WORKS
DEKALB, ILL.

PRODUCTS. Manufacturers of REFRIGERATING and ICE-MAKING MACHINERY, AMMONIA COMPRESSORS: in all sizes from one and one half tons refrigerating capacity upward; AMMONIA CONDENSERS, BRINE COOLERS, STEAM CONDENSERS, AMMONIA FITTINGS.

CONSTRUCTION. Our Compressors are of the horizontal double-acting type. The design of our Compressors and other apparatus is such that the highest economy is secured. All compressor cylinder heads are water-jacketed. Discharge valves are also water-jacketed.

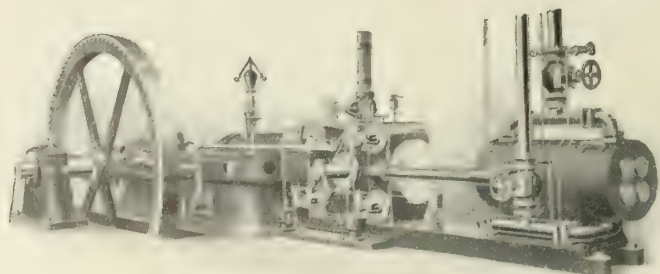
All compressors except Tandem style may be driven by belt or chain.

ESTIMATES. We will, upon request, furnish estimates on the installation of Refrigerating and Ice-Making Machinery in any capacity and for any purpose. We have a corps of special representatives who will gladly assist architects in estimating installations, furnishing foundation plans, and any other needed information.

FACILITIES. Our factory is equipped with modern equipment for turning out the highest grade of work with great rapidity. We are prepared to accept orders and to install our machinery in any part of the United States or in foreign countries.

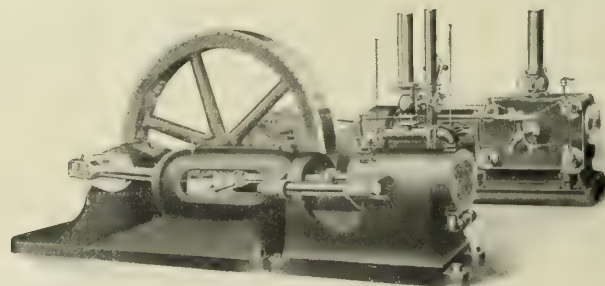
REFERENCES. We have at the present time more than 1,500 machines in successful operation. The list of users includes the United States Government, which has a large number of the smaller sizes in Government hospitals and army posts. A great many State hospitals, as well as private institutions are also users of our machinery. A list of users and catalogues will be sent on request.

ILLUSTRATIONS. The accompanying illustrations show the various styles of compressors we manufacture.



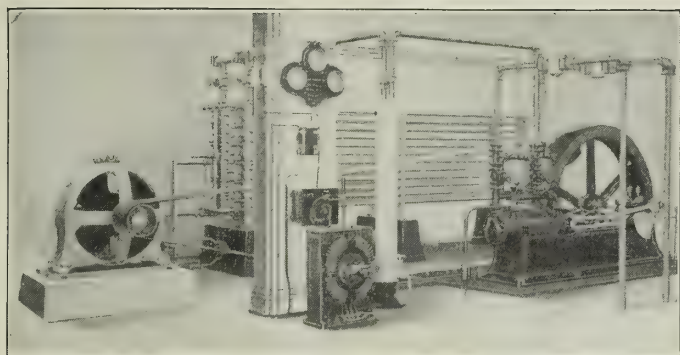
"T" COMPRESSOR CONNECTED TANDEM TO
CORLISS ENGINE

Built in sizes of 30 to 500 tons



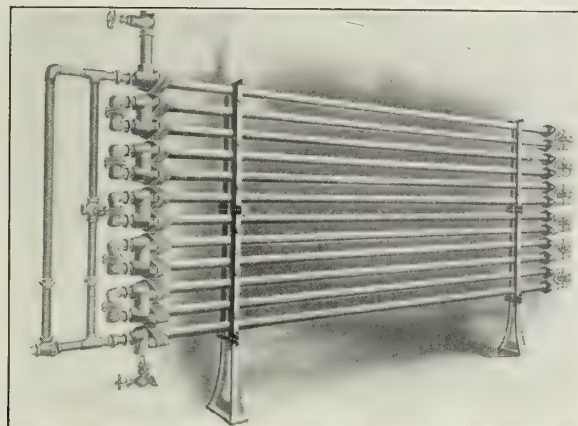
"T" COMPRESSOR DIRECT-CONNECTED TO
CORLISS ENGINE

Built in sizes of 30 to 250 tons

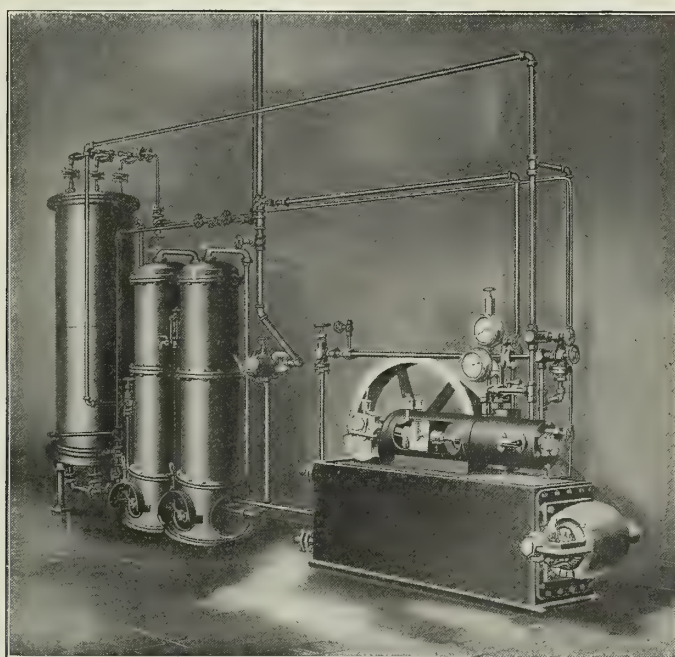


COMPLETE COMPRESSION SIDE, CONSISTING OF "D" STYLE COMPRESSOR, CONDENSER, OIL TRAP, AND LIQUID RECEIVER

This style compressor is built in 20 to 40 ton sizes. Can be belt-driven or direct-connected to Corliss engine

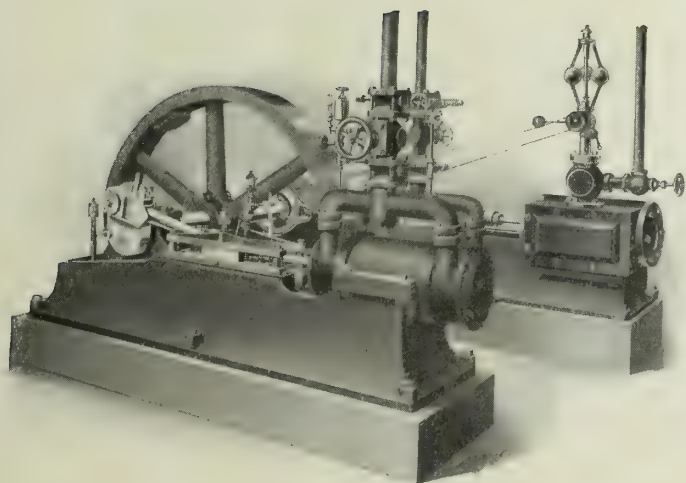


1906 STYLE DOUBLE-PIPE AMMONIA CONDENSER
Built up in sections to any desired capacity

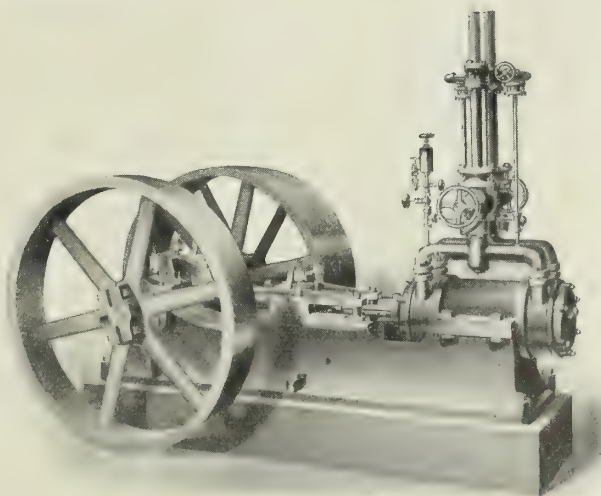


SELF-CONTAINED REFRIGERATING MACHINE WITH ELECTRIC DRIVE

Water-Cooling System in large office building



SIDE CRANK COMPRESSOR WITH SLIDE-VALVE ENGINE
Sizes of 3 to 23 tons



CENTER-CRANK COMPRESSOR FOR BELT DRIVE ONLY
Built in sizes of 3 to 23 tons

FRICK COMPANY

MANUFACTURERS OF

Ice-Making and Refrigerating Machinery

MAIN OFFICE AND WORKS

WAYNESBORO, PA.

BRANCH OFFICES

NEW YORK, N. Y., 39 Cortlandt Street
CINCINNATI, OHIO, 308 Neave Building
PITTSBURG, PA., 922-924 Fulton Building
ST. LOUIS, MO., 511 Granite Building
ATLANTA, GA., 406 Century Building
DALLAS, TEX., 712 Wilson Building

CHICAGO, ILL., THE B. M. OSBUN Co., Commercial National Bank Building
LOS ANGELES, CAL., 424 H. W. Hellman Building
SYDNEY, AUSTRALIA, 441 Kent Street
LONDON, ENGLAND, JOSEPH BAKER & SONS, LTD., Willesden Junction
HAVANA, CUBA, CHAMPION & PASCUAL, Obispo 101

PRODUCTS.

We manufacture "ECLIPSE" ICE-MAKING and REFRIGERATING MACHINERY of the Vertical Single-Acting Type for all purposes. Machines are direct connected with steam-engine of the Slide Valve or Corliss type, or can be arranged for belt drive by motor, gasoline engine, or otherwise. We also manufacture all other accessories needed to equip an up-to-date Ice-Making or Refrigerating Plant of any description.

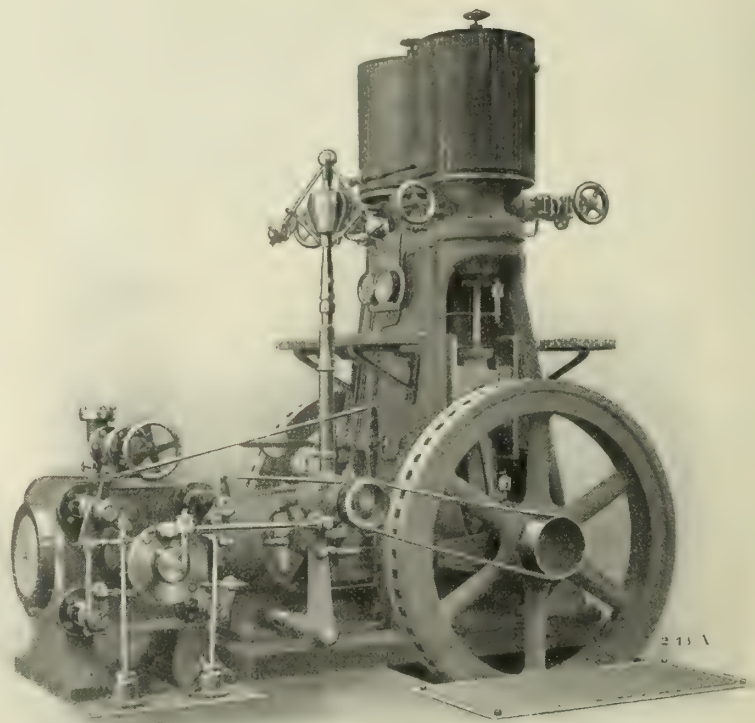


TRADE-MARK

ADVANTAGES.

We build only first-class machinery—first-class in design, material and workmanship; erected and tested and absolutely guaranteed by us. Our works cover over 15 acres, and furnish employment to from 600 to 800 skilled men, who produce all parts of the refrigerating and ice-making machinery and apparatus furnished by us. The various departments of the works include large and complete machine-shops, fitted with up-to-date special and general tools; an extensive foundry, steam forge, general smithy, pattern-shops, wood-working shops, testing shops, pipe shops, boiler, tank, sheet-iron and tin shops.

If given ordinary care our apparatus will easily outlast a generation, as we can cite cases where our machines have been in continuous operation for years, without a dollar's expenditure for repairs. We own all the patents covering our systems and machines, and our customers are guaranteed absolute indemnity from loss by reason of litigation growing out of alleged infringements.



15- TO 25-TON REFRIGERATING MACHINE

COLD-PRODUC-
ING AGENT.

Refined anhydrous liquid ammonia from which every impurity has been eliminated is the cold-producing agent which we use.

REFRIGER-
ATING
MACHINES.

Refrigerating machines are rated for refrigerating capacity equal to the cooling value of one ton of ice melting in a day of 24 hours. Their ice-making capacity is given in tons of ice produced per day of 24 hours. We can furnish single machines up to 500 tons refrigerating capacity.

ICE FACTORY
BUILDINGS.

Ice factory buildings may be made of wood or brick, depending upon the building regulations or fire restrictions of the city or locality, as well as upon the ambition and means of the owner. In most cases a plain and well-built wooden building will answer all requirements, provision being made for the following compartments: boiler room, engine or ice-machine room, tank room, distilling room, ice-storage house (having an anteroom), and a business office.

The condensing and distilling apparatus may be placed upon the roof, or in a special room; in either case it should be protected by a roof with open sides of lattice or screen work through which air may circulate. A convenient platform for loading into wagons and weighing the ice is also required.

Special cold-storage rooms for preserving butter, eggs and perishable products may be added to the premises with profit, if the locality offers any inducement to undertake this kind of business.

ASSISTANCE
TO ARCHITECTS.

We are prepared to furnish, at short notice, preliminary plans for plants of any size or style, and we shall be glad to be of service in the selection of a machine suitable for the work you have in mind.

REQUESTS
FOR INFOR-
MATION.

We would thank the prospective purchaser applying to us for prices, to give full and complete replies to the following questions, or such of them as apply to the requirements of the intended installation, and address same to FRICK COMPANY, at either of our branch houses, or to the home office at Waynesboro, Pa.:

1. Kind of business.
2. Where located.
3. Firm name.
4. Have you ever used refrigerating machinery?
5. Where made and what capacity?
6. Have you an ample supply of water for use in the condenser of machine, counting four gallons per minute for each ton of ice, or two gallons for each ton of refrigerating power?
7. How many gallons per minute?
8. Temperature of the water in midsummer.
9. Source of supply.
10. Can you get additional supply of water, if needed?
11. If for ice-making, how many tons of ice do you wish to make per day of twenty-four hours?
12. Do you wish to make can or plate ice?
13. Kind of fuel you intend to use.
14. Cost of fuel per ton or cord.
15. How large do you wish the cakes of ice?
16. Name the lowest temperature you require in your rooms.

17. Give the size of the rooms (each of them) by giving the exact height, length and width. If arch vaults, give spring of arch.
18. In packing and slaughter houses, give tons of fresh meat daily handled, or kind and number of carcasses.
19. If for a brewery, give barrels of beer brewed per day.
20. Capacity of storage rooms in cubic feet.
21. If you wish to use attempters in fermenting tubs.
22. Barrels per brewing.
23. Brewings per day.
24. Do you think of extending your building and business?
25. If for any other purpose than that to which the questions above apply, you will please state plainly the object, the present treatment, and results desired to be obtained, the quantity of material and its nature, and any information that may be useful.
26. In all cases do not fail to send us a sketch or drawing of your buildings, giving dimensions, and indicating on the sketch where you prefer to locate the machinery.

REFERENCES.

Farmers and Dairymen's Milk Co., Sydney, Australia
 St. Louis Refrigerating & C. S. Co., St. Louis, Mo.
 National Ice Co., San Francisco, Cal.
 Cosgrove Brewing Co., Toronto, Canada
 The Nicaragua Sugar Estate, Corinto, Central America
 Herancourt Brewing Co., Cincinnati, Ohio
 Tropical Brewing Co., Havana, Cuba
 Carr & Co., Ltd., Carlisle, Eng.
 Florida East Coast Ice Co., Miami, Fla.
 Atlanta Brewing & Ice Co., Atlanta, Ga.
 Hilo Electric Power & Refrigerator Co., Hilo, Hawaiian Islands
 Holt Ice & C. S. Co., Indianapolis, Ind.
 T. J. Keenan, Neuva Garona, Isle of Pines, Cuba
 Alex. Lawrie & Co., Calcutta, Ind.
 Kobé Electric Light Co., Kobé, Japan
 American Ice Co., Baltimore, Md.

Sr. Alberto Malo, City of Mexico, Mex.
 Armour Packing Co., Kansas City, Mo.
 Armour Packing Co., Chicago, Ill.
 Armour & Co., Hartford, Conn.
 Armour & Co., South Omaha, Neb.
 Armour & Co., Philadelphia, Pa.
 Yorkville Independent Hygeia Ice Co., New York, N. Y.
 United States War Department, Fort Wm. McKinley, Manila, Philippine Islands
 United States Government, Tutuila, Samoan Islands
 Bangkok Manufacturing Co., Bangkok, Siam
 Johannesburg Ice Co., Johannesburg, South Africa
 Baranquilla Brewing Co., Baranquilla, South America
 Howe Ice Co., Nashville, Tenn.
 Wheeling Ice and Storage Co., Wheeling, W. Va.
 Bridgetown Crystal Ice Co., Bridgetown, Barbados, West Indies

THE JEWETT REFRIGERATOR COMPANY

Builders of Refrigerators

MAIN OFFICE AND FACTORY

BUFFALO, N. Y.

NEW YORK OFFICE
1135 BROADWAY (ST. JAMES BUILDING)
ALLSTON SARGENT, *Manager*
TELEPHONE, 4198 MADISON

EDGAR B. JEWETT, *President*
JOHN E. JEWETT, *Vice-President and Treasurer*
ROBERT F. BUCKLEY, *Secretary*

PRODUCTS.

FACILITIES AND

TERRITORY.

ESTIMATES.

Builders of REFRIGERATORS and REFRIGERATOR WORK to order from special designs. Our long experience (since 1849) and ample facilities enable us successfully to execute contracts in all parts of the country.

We make a specialty of preparing layouts and drawing up general specifications for all classes of Refrigerator Construction, which we are always ready to furnish promptly and without charge, together with detail drawings, specifications and estimates covering refrigerators in any size, arrangement or finish.

We invite your inquiries.

QUALIFI- CATIONS.

Our qualification as builders of Refrigerator Work on the most advanced lines may be exemplified by the following recent contracts in New York and vicinity:

HOTELS AND APARTMENTS

BUILDING
Hotel St. Regis
Hotel Ansonia
Louis Sherry's
Hotel Gotham
Hotel Weston
Hotel Imperial
Hotel Knickerbocker

ARCHITECTS
Trowbridge & Livingston
M. Dubois
McKim, Mead & White
Hiss & Weeks
Herbert Lucas
Warren & Wetmore
Trowbridge & Livingston
and Marvin & Davis

BUILDING
Hotel Ritz-Carlton
Hotel Leonori
Hotel Webster
Hotel Hermitage
The Langham
The Carlton House
The St. Lawrence
The Buckingham

ARCHITECTS
Warren & Wetmore
Buchman & Fox
Tracy & Swartwout
Robert D. Kohn
Clinton & Russell
Warren & Wetmore
Charles W. Romeyn

New Bellevue Hospital
Mt. Sinai Hospital
St. Luke's Hospital
Jewish Protectory Aid Society

McKim, Mead & White
Arnold W. Brunner
Ernest Flagg
Jacobs & Heidelberg

Lawrence Hospital
N. Y. Orthopaedic Hospital
Caroline Rest
Cornell Medical College

Wilder & White
Delano & Aldrich
Jacobs & Heidelberg
McKim, Mead & White

CLUBS AND RESTAURANTS

Lambs' Club
Columbia University
Pasque Island Club
Larchmont Yacht Club
Union League Club
Racquet and Tennis Club
Harvard Club

McKim, Mead & White
H. C. Pelton
Delano & Aldrich

Lackawanna Terminal Restaurant
John Wanamaker Restaurant
Gibson's Restaurant
New York Life Building Restaurant
Lord & Taylor Restaurant
Henry Maillard

Kenneth M. Murchison
D. H. Burnham & Co.
Frank H. Quinby

McKim, Mead & White

Buchman & Fox

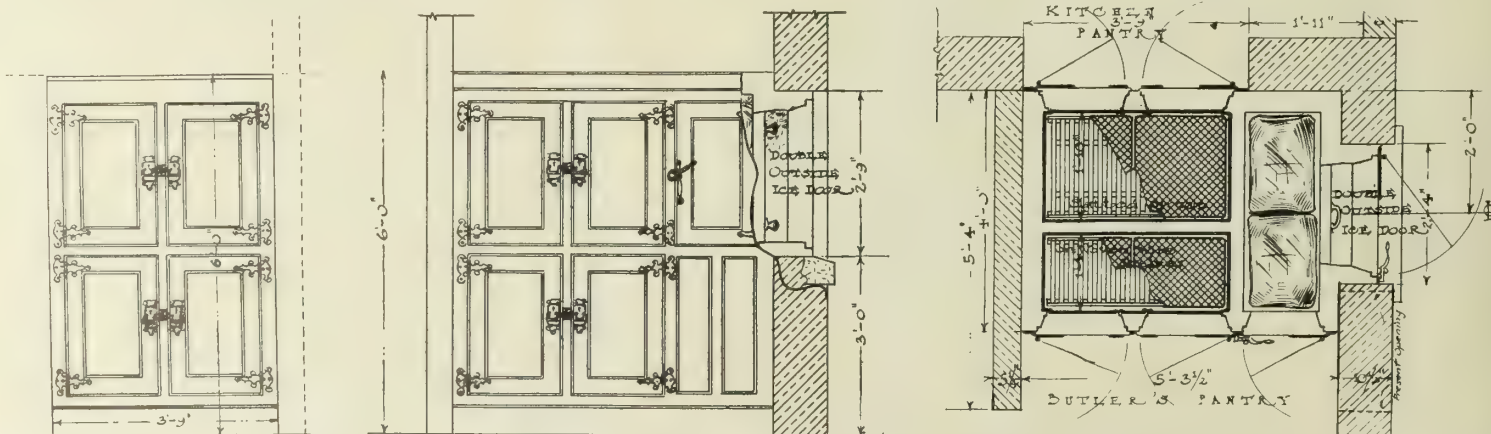
RESIDENCES

Senator Wm. A. Clark
Charles M. Schwab
James A. Burden, Jr.
Cornelius Vanderbilt
Henry Phipps
John D. Rockefeller, Jr.
Murray Guggenheim
Louis C. Tiffany
G. G. Haven, Jr.
Walter Jennings

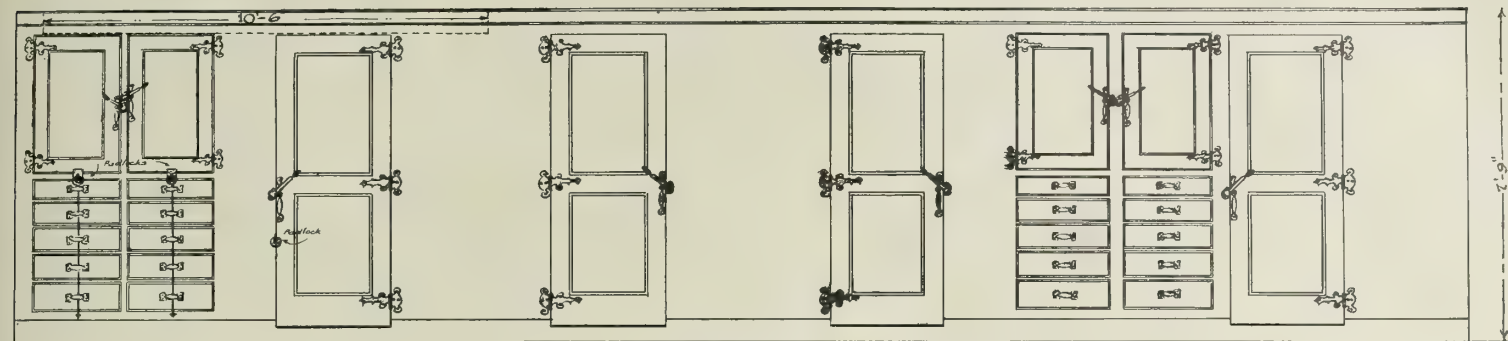
Lord, Hewlett & Hull
Maurice Hébert
Warren & Wetmore
Delano & Aldrich
Trowbridge & Livingston
Delano & Aldrich
Carrère & Hastings
Louis C. Tiffany
William Emerson
Carrère & Hastings

Woodbury Langdon
George Crocker
Franklin Murphy
C. S. McKune
Webb Horton
Payne Whitney
John D. Rockefeller
Ralph Pulitzer
William Sloane
Robert Bacon

McKim, Mead & White
James Brite
Charles Alling Gifford
Babb, Cook & Willard
F. J. Lindsey & Son
Guy Lowell
Delano & Aldrich
Walker & Gillette
Delano & Aldrich
John Russell Pope

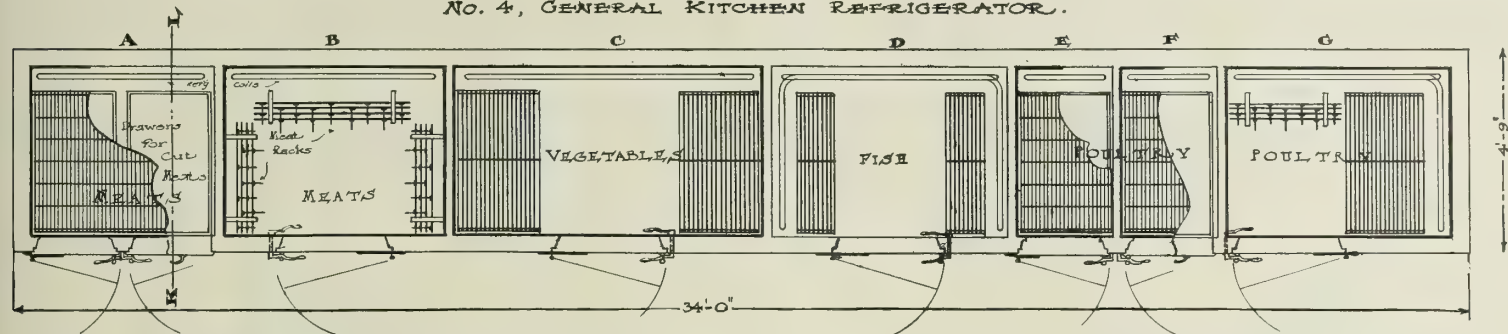


COMBINATION KITCHEN AND BUTLER'S PANTRY REFRIGERATOR, RESIDENCE OF
JAMES L. CRANE, BUFFALO, N. Y.



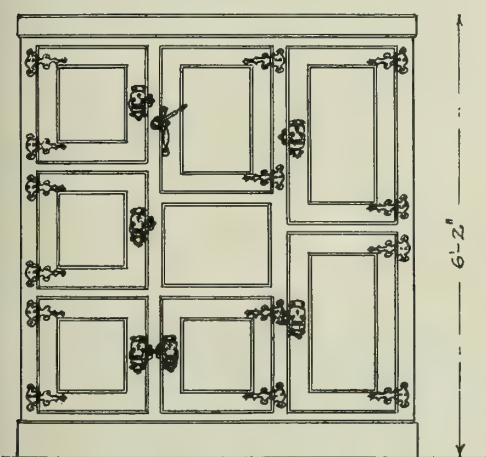
Elevation.

NO. 4, GENERAL KITCHEN REFRIGERATOR.

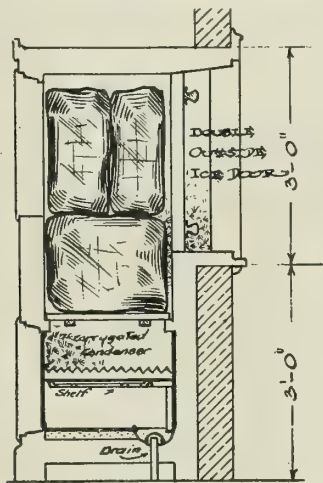


PLAN AND ELEVATION OF GENERAL KITCHEN REFRIGERATOR, WINDSOR HOTEL, MONTREAL, CAN.

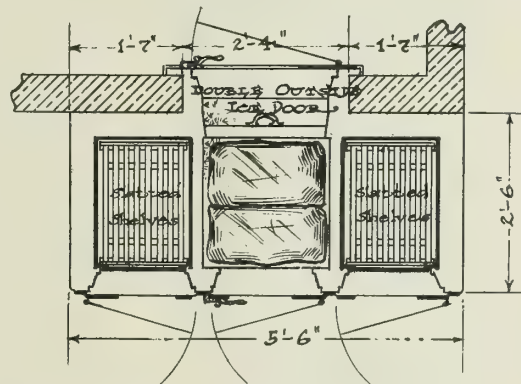
H. J. HARDENBERGH, Architect



Elevation

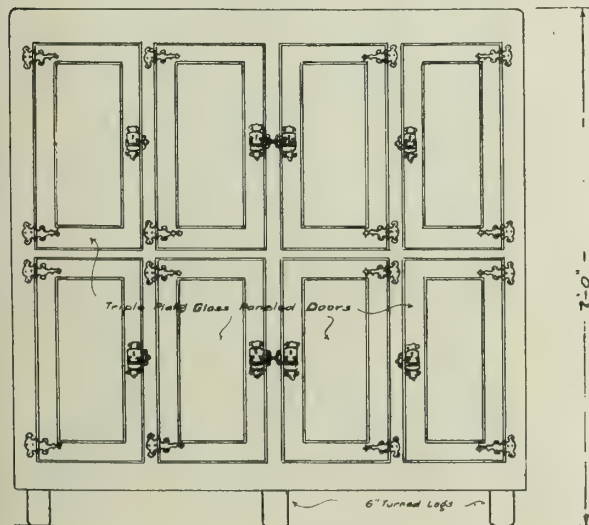


Section

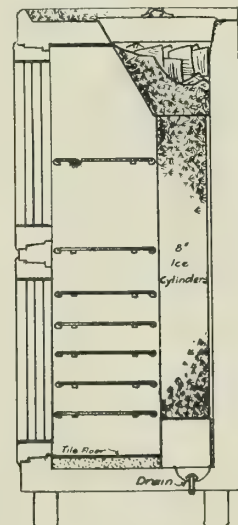


Plan

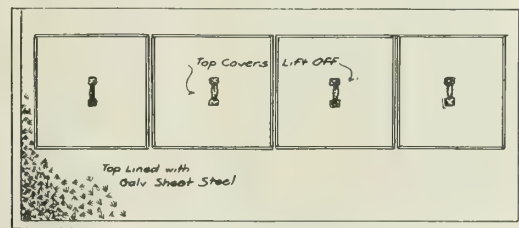
REFRIGERATOR FOR PRESIDENT'S HOUSE, WILLIAMS COLLEGE, WILLIAMSTOWN, MASS.



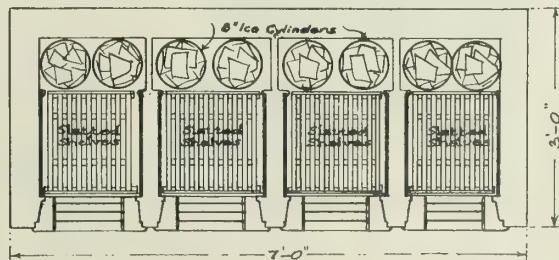
Elevation



Section



Plan of Top



Plan

BAR REFRIGERATOR, FORT ORANGE CLUB, ALBANY, N. Y.

JONES COLD STORE DOOR CO.

Corner Church and Foundry Streets
HAGERSTOWN, MD.

PRODUCTS.

We manufacture COLD-STORAGE and FREEZER DOORS, DUCT DOORS, COLD-STORAGE WINDOWS, either fireproof or non-fireproof; also, ICE-RECORDING DOORS and CHUTES.

CONSTRUCTION, TWO SEALS, PATENT GASKET.

All of the above products are built and shipped hung in the frame, with hardware complete, ready to set in the wall, bolt fast and use. Fig. 1 shows the construction of the door and frame with the two seals of contact, L. L. N. N., making double protection against leakage; the confined air space between them providing additional insulation. This makes a superior joint at the sides and top, the weak point of all doors with only one seal. The seals are formed with our pliable waterproof gasket.

At the sill we also have the double-contact joint by means of two rolls of felt which are easily adjusted or replaced when worn. The door is made a little smaller than the opening of the frame, to allow for swelling, and is guaranteed not to bind or stick fast in the frame.

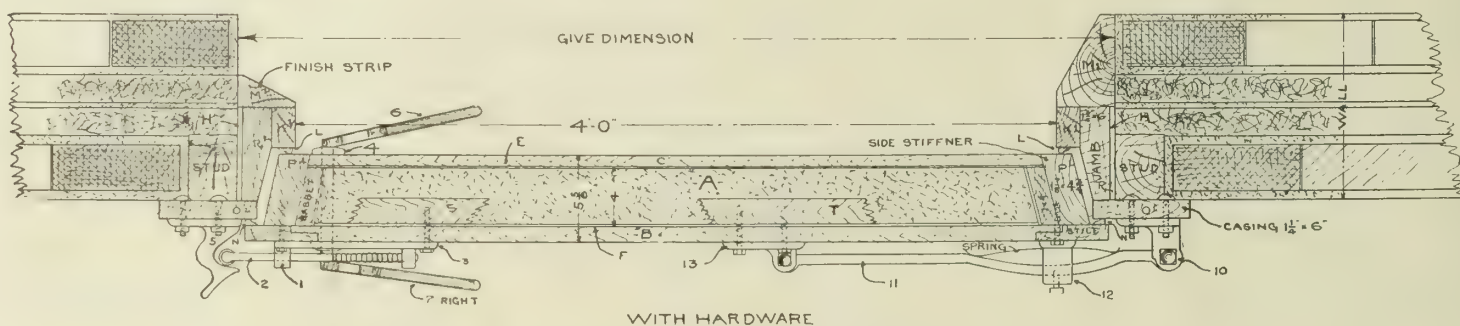


FIG. 1. HORIZONTAL SECTION OF DOOR AND FRAME

SILLS.

Fig. 3 shows frame fitted with Beveled Oak Sill. Fig. 4, Angle Irons cross-connecting the frame, which should be set in the concrete. Fig. 5, High Sill, superior in insulating qualities; unserviceable for trucking.

BRACING INSULATION.

The door has inserted a diagonal 2" x 4" Brace and heavy angle irons in the corners to keep the door true and rigid and free from sagging. We will use any kind of standard insulating material specified, and pay special attention to the packing to prevent settling.

HARDWARE.

The pressure of our Adjustable Spring Hinge is regulated by a set screw, by turning which a new seat is given the door from time to time, thus keeping it as tight as when new.

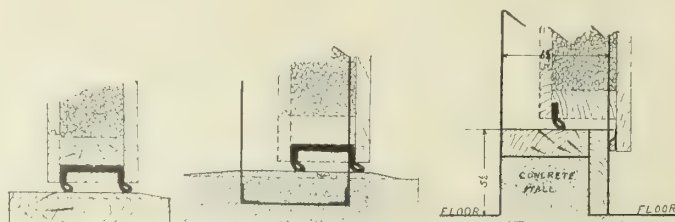


FIG. 3.
BEVELED
OAK SILL

FIG. 4. ANGLE
IRON FOR CON-
CRETE FLOOR

FIG. 5. HIGH SILL

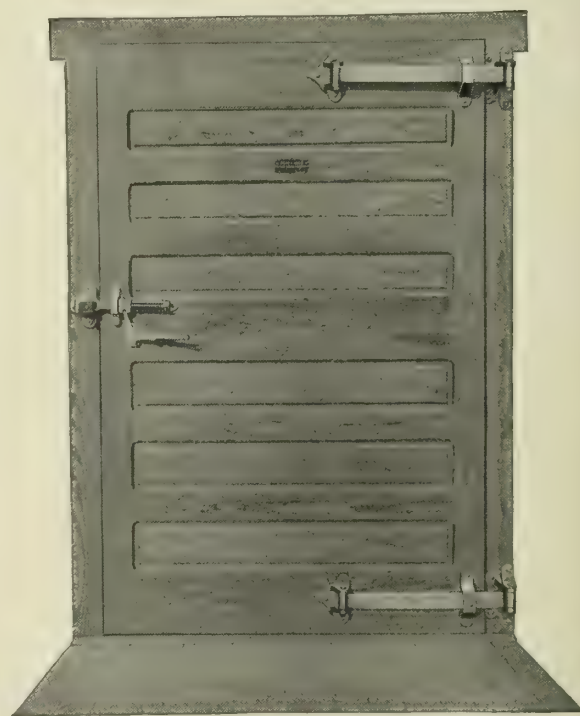


FIG. 2. "OUR STANDARD" DOOR
Right hand, raised panel and beveled sill

Our Automatic Self-Tightening Fastener is a spring-projected slide-bolt worked by a lever; a strong, reliable device that draws the door up tight.

The Automatic Trap-Lift for doors with overhead rail is a simple, reliable mechanism that will not get out of order.

Our hardware is heavy, weighing 65 pounds to the set; well galvanized and will stand the constant hard usage on heavy cold-storage doors.

TABLE OF STANDARD STOCK SIZES

Our Stock Door No.	DIMENSIONS INSIDE OF FRAMES				SIZE OF WALL OPENING			
	Feet	Width Inches	Feet	Height Inches	Feet	Width Inches	Feet	Height Inches
1	2		6		2	7	6	4½
2	2	6	6		3	1	6	4½
3	2	6	6	6	3	1	6	10½
4	3		6		3	7	6	4½
5	3		6	6	3	7	6	10½
6	3	6	6		4	1	6	4½
7	3	6	6	6	4	1	6	10½
8	3		7		3	7	7	4½
9	3	6	7		4	1	7	4½
10	4		6		4	7	6	4½
11	4		6	6	4	7	6	10½
12	4	6	6		5	1	6	4½
13	4	6	6	6	5	1	6	10½
14	4		7		4	7	7	4½
15	4	6	7		5	1	7	4½

In ordering doors use stock numbers in first column of table

STYLES OF DESIGN.

Our doors are built of odorless and tasteless spruce on the inside; the exterior may be of any wood desired, either in plain ceiling boards or paneled; they may be solid doors or arranged for glass panels, the latter formed like the windows, of several thicknesses of glass.

ABATTOIR DOORS.

On high Abattoir Doors we put two fasteners, as shown by Fig. 6, to prevent the door from springing away from the frame at the top.

FREEZER DOORS.

They are of the same construction and thickness as the Standard, but with better insulation; guaranteed to carry the most extreme temperatures.

FIREPROOF DOORS.

They are of our regular wood construction, metal covered; carrying the same temperatures as the Standard door.

COLD-STORAGE WINDOWS.

Are built either fireproof or non-fireproof and of general construction, like the doors. (See Fig. 7.) From four to six thicknesses of glass are nested in one sash, 5½ inches thick with air spaces between them.

ICE-RECORDING DOORS.

These devices for passing and counting blocks of artificial ice are a necessity in modern plants. Made of wood and steel; strong and reliable in action.

PRICES, CO-OPERATIVE SERVICE.

We will quote promptly prices as low as is consistent with our work. We have but one price to all. Special information in our line will be given and illustrated trade pamphlet furnished free upon inquiry.

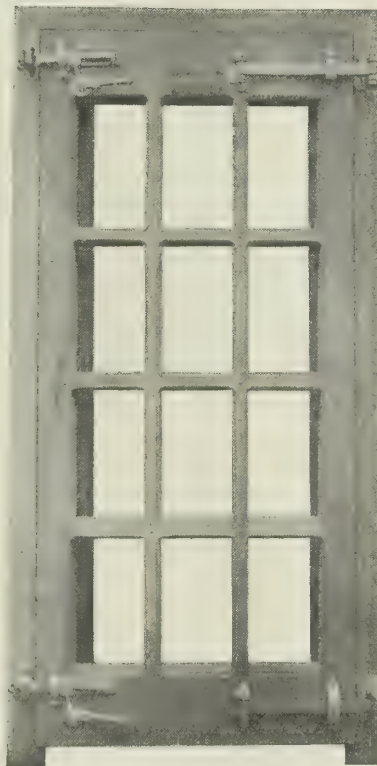


FIG. 7. COLD-STORAGE WINDOW
Closed

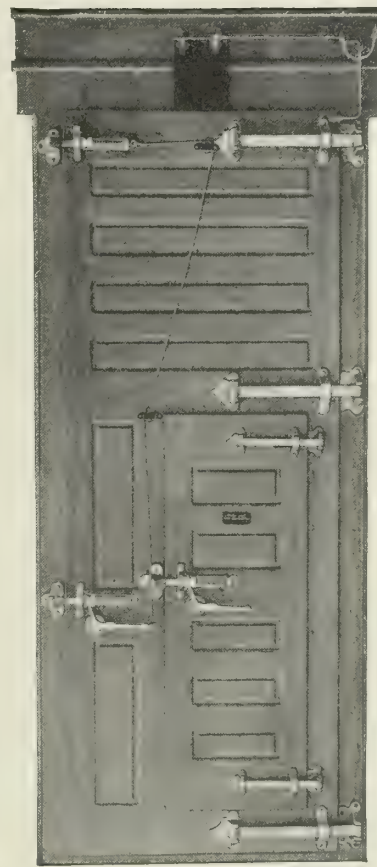


FIG. 6. ABATTOIR DOORS

R. E. JONES

MANUFACTURER OF

Cold-Storage Doors, Ice-Recording Chutes, etc.

HAGERSTOWN, MD.

PRODUCTS.

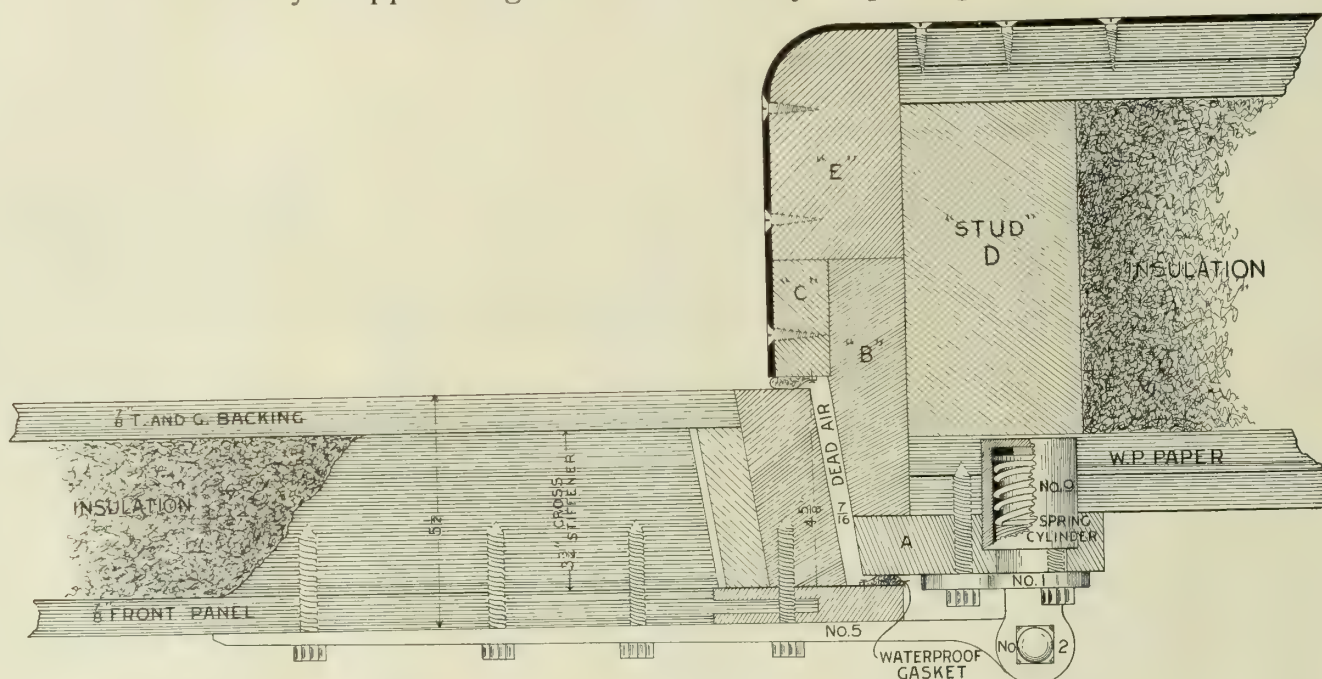
STANDARD and FIREPROOF COLD-STORAGE DOORS; COOLER WINDOWS; ICE-RECORDING CHUTES; SPECIAL HARDWARE for COLD-STORAGE DOORS; ELECTRIC REGISTERS.

COLD-STORAGE DOORS.

These overlapping doors are insulated for very low temperatures, have two points of contact with the frames made perfectly tight by waterproof gaskets, compressed into the joints by the great force which is constantly exerted by self-tightening fasteners and spring hinges.

These doors never stick from swelling or sagging, and are easily operated from either side. No trimming or adjustments are necessary after proper installation. The door swings clear of opening, and is not liable to be injured by passing trucks.

Always shipped hung in frame and ready for placing in wall.



DETAILS OF DOOR, FRAME, AND SELF-ADJUSTING SPRING HINGE
Parts A, B, and C compose the frames which we furnish with the doors

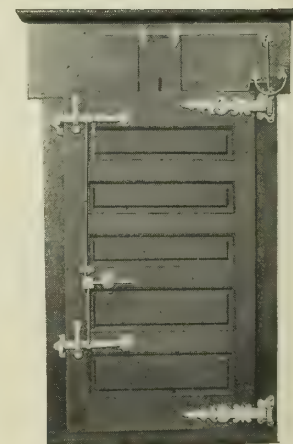
HARDWARE.

Hardware and gaskets sold and shipped promptly with free specification for building your own doors.

SIZES AND PRICES.

Door No.	Dimensions Inside of Frames				Size of Wall Opening				Approximate Shipping Weight	Price
	Feet	Ins.	Feet	Ins.	Feet	Ins.	Feet	Ins.		
1	2		6		2	7	6	6	300 lb.	\$27.00
2	2	6	6		3	1	6	6	368 "	27.00
3	2	6	6	6	3	1	7		390 "	27.00
4	3		6		3	7	6	6	450 "	27.00
5	3		6	6	3	7	7		455 "	27.00
6	3	6	6		4	1	6	6	460 "	28.50
7	3	6	6	6	4	1	7		489 "	29.00
8	3		7		3	7	7	6	467 "	29.00
9	3	6	7		4	1	7	6	500 "	29.50
10	4		6		4	7	6	6	525 "	29.50
11	4		6	6	4	7	7		550 "	30.00
12	4	6	6		5	1	6	6	575 "	30.00
13	4	6	6	6	5	1	7		600 "	31.00
14	4		7		4	7	7	6	561 "	32.50
15	4	6	7		5	1	7	6	616 "	33.00

Track doors, \$5.00 extra. Order by number.



RIGHT-HAND TRACK DOOR

ICE-
RECORDING
CHUTES.

"Victor" Ice-Recording Chutes are for passing ice into storage, and from storage to loading platforms of ice factories.

They are built of heavy iron which insures durability even with very rough use, are insulated with cork board to retain refrigeration, and are equipped with recording devices that cannot be manipulated to the disadvantage of owners.

PRICES.

These chutes are made single, double, and triple to accommodate one, two, or three blocks of ice. Price \$50.

MECHANICAL.

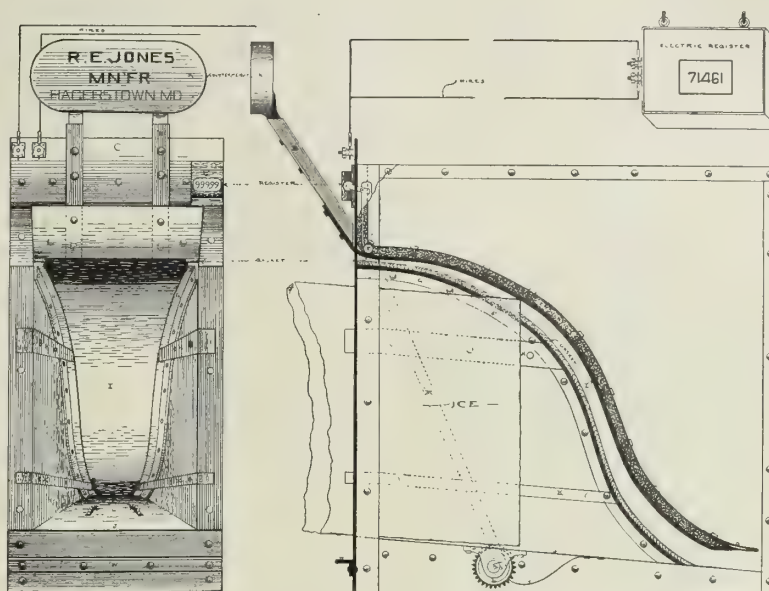
A Mechanical Register is secured to front of chute and connected direct to the measuring sprocket by a driving-rod.

REGISTERS.
ELECTRIC
REGISTER.

An Electric Register is also placed in the Manager's office, and connected to the chute by wires. The current to operate may be taken from any available lines about the plant. We make them to suit any voltage, or batteries if preferred. This register may also be used for counting the product of other plants where it is handled at a distance from the office, such as can manufactories and others.

METHOD OF
INSTALLA-
TION.

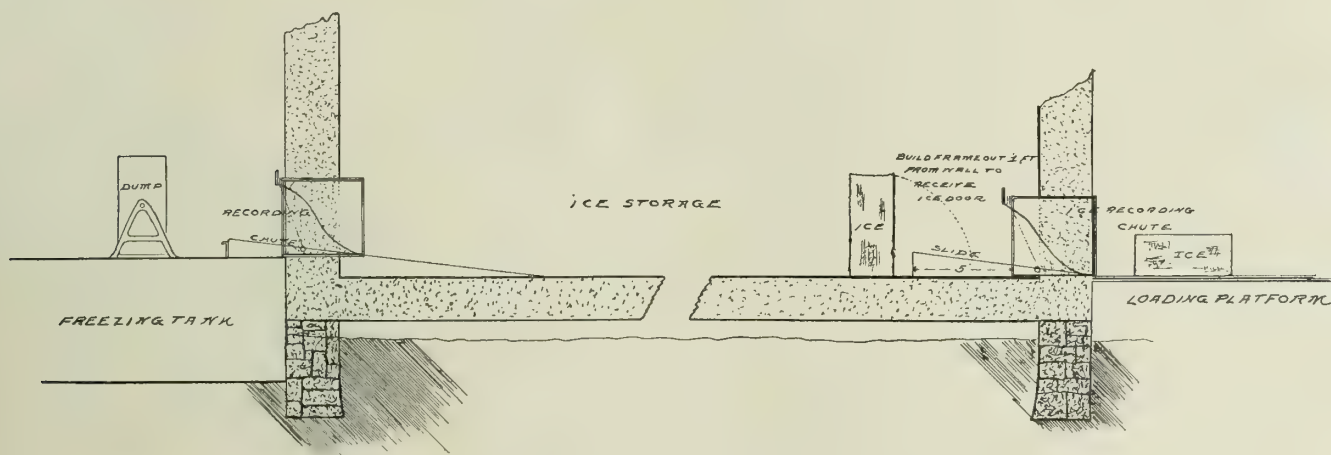
The illustration below shows method for installing "Victor" Ice Chutes where loading platform is level with storage room floor, but it is better practice to place the loading platform at least 6 inches below the storage floor.



Front View

Detail View

"VICTOR" ICE-RECORDING CHUTE



METHOD FOR INSTALLING "VICTOR" ICE CHUTES

SIZES.

	Width	Height		Width	Height
No. 16 for ice 11½" x 22½"	requires wall openings 16"	37"	No. 19 for ice 12" x 18"	requires wall openings 16½"	33½"
No. 17 for ice 15" x 22"	requires wall openings 19½"	37"	No. 20 for ice 10" x 20"	requires wall openings 14½"	34½"
No. 18 for ice 14" x 14"	requires wall openings 18½"	28½"	No. 21 for ice 8" x 16"	requires wall openings 13½"	31"

Order by number, giving the length of your ice blocks in inches.

CATALOGUES
AND SPECI-
FICATION.

Catalogues, order blanks, and any information desired, sent promptly on request. Write us before getting out your plans and specifications. Liberal discounts allowed.

McCRAY REFRIGERATOR CO.

MANUFACTURERS OF

The "McCray" Refrigerators

MAIN OFFICE AND FACTORY

100 Lake Street

KENDALLVILLE, IND.

BRANCH OFFICES

ATLANTA, GA., 33-35 Peachtree Street
BOSTON, MASS., 50-52 Commercial Street
CHICAGO, ILL., 55 Wabash Avenue
CINCINNATI, OHIO, 326 Main Street
CLEVELAND, OHIO, 924 Prospect Avenue
COLUMBIA, S. C., Main Street
DETROIT, MICH., 218 Jefferson Avenue

BRANCH OFFICES

JACKSONVILLE, FLA., 218 East Bay Street
KANSAS CITY, MO., 1216-24 Main Street
MINNEAPOLIS, MINN., 424 South Third Street
NEW YORK, N. Y., 231 West 42d Street
PITTSBURG, PA., 114 Market Street
ST. LOUIS, MO., 404 North Third Street
SAN FRANCISCO, CAL., 1-37 West Eldorado Street
WASHINGTON, D. C., 620 F Street, N. W.

AGENCIES IN ALL PRINCIPAL CITIES

REFER TO TELEPHONE BOOK OR CITY DIRECTORY FOR ADDRESS OF LOCAL AGENCY

PRODUCTS.

We manufacture the "McCray" REFRIGERATORS and COOLING ROOMS for Residences, Hospitals, Hotels, Restaurants, Cafés, Clubs, Florists' Shops, Groceries, Meat Markets, Steamships, Dining-Cars, etc. Also, MORTUARY REFRIGERATORS for Morgues and Hospitals, and COLD-STORAGE ROOMS for cooling with ice or refrigerating machinery.

THE "McCRAY" GUARANTEE.

We guarantee every "McCray" Refrigerator and Cooling Room to be exactly as represented. *If one of our refrigerators or cooling rooms is found to be not as represented we will gladly refund purchase price and stand all freight charges.* This guarantee is binding on us whether refrigerators are bought direct from us or through one of our representatives.

"McCray" SYSTEM OF CIRCULATION.

The "McCray" System of Circulation gives a constant active circulation of pure, dry, cold air to every part of the food chambers. The openings at top and bottom of ice partitions extend the full depth of the refrigerator. (See Fig. 1.) The odors and moisture carried by the warmer air from the food compartments to the ice-chamber are condensed the moment they touch the cold surface of the ice, and are absorbed and carried off by the water through the drain-pipe. The air which constantly circulates throughout "McCray" Refrigerators is perfectly dry and absolutely frigid.

"McCray" INSULATION.

All stock-size and built-to-order tile and glass lined "McCray" Refrigerators have a wall consisting of nine heat- and cold-tight layers as shown in cut (Fig. 2). This wall is four inches thick, and is made up of three courses of lumber, three of insulating sheathing, one of mineral wool, one of insulating felt and the lining proper of tile or opal glass.

All stock-size and built-to-order wood and enamel lined refrigerators for residences have an insulation consisting of two courses of lumber, two thicknesses of insulating sheathing, and a course of mineral wool.

In all large work a $5\frac{1}{2}$ -inch wall is used. This wall consists of three thicknesses of $\frac{7}{8}$ -inch lumber, three of heavy insulating sheathing, two inches of mineral wool, and one 1-inch dead-air space.

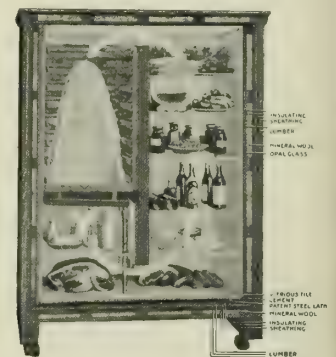


FIG. 1. "McCray" REFRIGERATOR, WITH FRONT REMOVED
Arrow shows course of cold, pure air

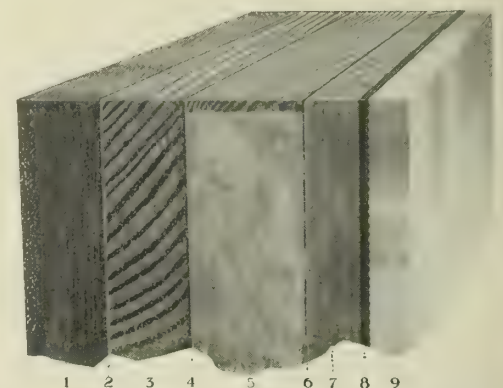


FIG. 2. SECTION OF WALL OF AN OPAL-GLASS LINED "McCray" REFRIGERATOR

Nine heat- and cold-tight layers

- | | |
|-----------------------------|---------------------------|
| 1—Outside Oak Case | 6—Insulating Sheathing |
| 2—Insulating Sheathing | 7— $\frac{3}{4}$ " Lumber |
| 3— $\frac{3}{4}$ " Lumber | 8—Insulating Felt |
| 4—Insulating Sheathing | 9—Glass or Tile Lining |
| 5—1" Course of Mineral Wool | |

"McCray"
BUILT-TO-
ORDER RE-
FRIGERATORS.

A special department is maintained for the planning and manufacturing of built-to-order refrigerators. We have built refrigerators from our own design under architects' directions for a large number of the finest residence, hotels, clubs and institutions. The refrigerator should be planned for the house, as is the plumbing or heating plant. We have a corps of draftsmen who do nothing but plan built-to-order refrigerator work. *Upon receipt of floor plans, we will prepare detailed plans and specifications for the right refrigerator, its proper location and outside icing door, free of charge.* Usually it is a distinct saving to plan the refrigerator before the building is started. In asking estimates on built-to-order work where the space for the refrigerator has already been located, give exact size of space, and state whether opal glass, porcelain tile, white enameled-wood or odorless unfinished wood lining is preferred.

SIZES, PRICES,
AND CAPACI-
TIES OF STOCK
REFRIGERATORS.

The following tables show exact sizes, capacities and list prices of all "McCray" Refrigerators made in stock sizes in all materials and all linings:

All Refrigerators mentioned in this table have Side Ice-Chambers	Quartered-Oak Case, Opal Glass Lined						Quartered-Oak Case, Tile Lined	
Catalogue Number.....	440	445	450	460	475	480	245	255
Width over Cornice (in.)...	37	39	42½	47	57½	65½	39	45
Depth over Cornice (in.)...	24	24	26	28	30¼	27¼	24	27
Height over all (in.).....	51½	53	57	64	74	68½	53	61
Number of Shelves.....	5	5	5	6	6	9	5	6
Shelf Space (square feet)...	9¼	10	13	19¾	27	27	10	17
Ice Capacity (pounds).....	85	100	140	200	300	380	100	150
Shipping Weight.....	600	640	755	950	1250	1250	610	765
List Price.....	\$143	\$166	\$189	\$235	\$377	\$368	\$149	\$190

These prices are subject to liberal discount

All Refrigerators mentioned in this table have Side Ice-Chamber	Oak, Antique Finish, White-Enamel Lined				Oak, Antique Finish, Odorless-Wood Lined					
Catalogue Number....	130	140	145	155	30	40	50	60	65	75
Width over Cornice (in.)...	36	38	40	45	36	38	42½	47	51	57½
Depth over Cornice (in.)...	20	23½	25	27	20	23½	26	28	29	30¼
Height over all (in.)...	46½	52½	54½	60½	46½	52½	56½	63	66	74
Number of Shelves....	5	5	5	6	5	5	5	6	6	7
Shelf Space (sq. ft.)...	9½	12½	14½	22	9½	12½	17	23	28	35½
Ice Capacity (pounds)...	70	110	140	175	70	110	165	240	300	40
Shipping Weight.....	315	400	440	550	285	350	450	555	620	25
List Price.....	\$80	\$92	\$103	\$134	\$53	\$64	\$85	\$104	\$112	43

These prices are subject to liberal discount



FIG. 5. NO. 30

Antique Oak Case; Odorless-Wood Lined; Side Ice-Chamber

	Overhead Ice-Chamber					Center Ice-Chamber		
	Quartered Oak, Opal-Glass Lined	Quartered Oak, Tile Lined	Oak, Antique Finish, White Enamel Lined	Oak, Antique Finish, Odorless-Wood Lined	Oak, Antique Finish, Odorless-Wood Lined	Quartered Oak Case, Golden Oak Fin. Opal Glass Lined	Oak, Antique Finish, Odorless-Wood Lined	
Catalogue No.	438	228	128	28	38	420	120	132
Width.....	33	30½	29	29	33	72½	72½	87½
Depth.....	23½	21¼	20½	20½	23½	28¾	28¾	31¼
Height.....	68½	53	52½	52½	68½	72	72	75
Shelves.....	3	3	3	3	3	11	9	11
Shelf Space....	9¾	7½	9	9	13	37¼	37	58
Ice Capacity...	115	65	70	70	135	300	300	550
Weight.....	630	440	300	255	410	1550	930	1270
List Price.....	\$146	\$97	\$76	\$51	\$70	\$428	\$183	\$246

These prices are subject to liberal discount



FIG. 3. NO. 440

Golden Oak Case; Opal Glass Lined; Side Ice-Chamber



FIG. 4. NO. 155

Antique Oak Case; White-Enameled-Lined; Side Ice-Chamber

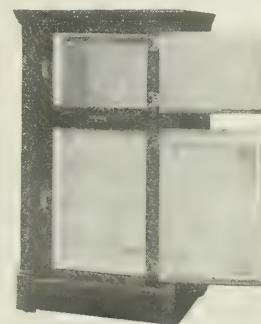


FIG. 6. NO. 228

Quartered Oak Case; Porcelain Tile Lining; Overhead Ice-Chamber

THE
"McCray"
WATER-
COOLER.

We furnish a "McCray" Water-Cooler in numbers 50, 145, 245, and 445, and all larger sizes when specially ordered, at a slight additional cost. The "McCray" Water-Cooler is made by placing a coil of block-tin pipe in the bottom of the ice-chamber. One end is attached to the water supply and the other end terminates in a faucet at the front or end of the refrigerator, as ordered.

OPAL-GLASS
AND PORCE-
LAIN TILE
LININGS.

"McCray" Opal Glass Lined Refrigerators are lined with white opal sanitary plate glass, seven sixteenths of an inch in thickness each surface being made of one sheet of glass. "McCray" Tile-Lined Refrigerators are lined with white porcelain tile of select grade, carefully fitted and firmly supported by heavy nickel-plated screws set in specially made

washers so that the screw head does not protrude. The floors of both the opal-glass lined and the porcelain tile lined refrigerators are of vitrified tile set in cement, which is laid on a steel lath base and presents a smooth, waterproof surface.

"McCray "
WHITE
ENAMEL
LINING.

"McCray" White Enamel Lined Refrigerators are lined with odorless white wood fitted by hand, upon which three separate coats of white enamel have been applied. This produces a surface of great hardness and durability, free from all cracks and joints. Because of their construction they have all the advantages of the low cost of wood lined refrigerators, together with an attractive appearance approaching that of the opal glass and tile lined styles.

"McCray "
ODORLESS
WOOD
LINING.

Many "McCray" Odorless Wood Lined Refrigerators have been in use twenty-five years, and are still giving good service, as the interior of every "McCray" Refrigerator is perfectly dry—due to the circulation of cold, dry air. The interior of the odorless white wood lined refrigerator is always in a dry and sweet condition.

HARDWARE.

All Hardware used on "McCray" Refrigerators is heavy nickel-plated brass. Hinges and locks are carefully fitted by hand, and will keep doors closed absolutely tight.

OUTSIDE
ICING.

The advantages of Outside Icing are apparent, as icing deliveries are made from the porch in summer, and in winter perfect refrigeration may be had by leaving the outside ice door slightly open. In the following tables, measurements for locating opening in the wall for icing stock-size refrigerators from out of doors are given. In using these tables kindly

refer to the accompanying sketches. Where a built-to-order refrigerator is to be used we will submit exact measurements for locating the wall opening for ice door.

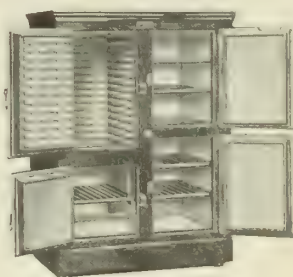


FIG. 7. NO. 60 "McCray" REFRIGERATOR

Side ice-chamber; antique oak case; odorless white wood lining



FIG. 8. NO. 420 "McCray" REFRIGERATOR

Center ice-chamber; quartered oak case; opal glass lining. (See next page for Center Ice-Chamber Table.)

DIMENSIONS TO BE USED IN LOCATING WALL OPENING FOR STOCK-SIZE REFRIGERATORS HAVING SIDE ICE-CHAMBERS, END ICE-DOORS. (See Fig. 9 and 10.)

Side Ice-Chambers, End Ice-Doors

No.	A Inches	B Inches	C Inches
30, 130.....	18	23	22
40, 140.....	22	27	23
440.....	22	27	23
145.....	22	27	25
245, 445.....	22	27	24
50.....	24	29	26
450.....	24	29	26
155.....	25	31	28
255.....	25	31	28
60.....	26	32	29
460.....	26	32	29
65.....	27	34	30
75.....	28	31	39½
475.....	28	37	34½
480.....	25	27	38½

A—Width of opening in wall of building

B—Height of opening in wall of building

C—Distance from the floor to opening in wall of building

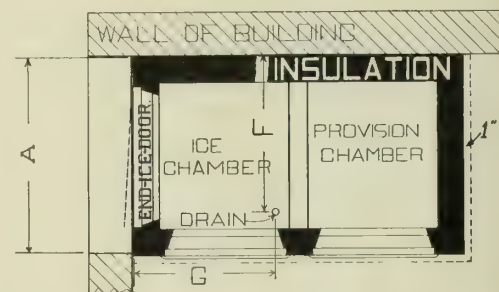


FIG. 9. FLOOR PLAN

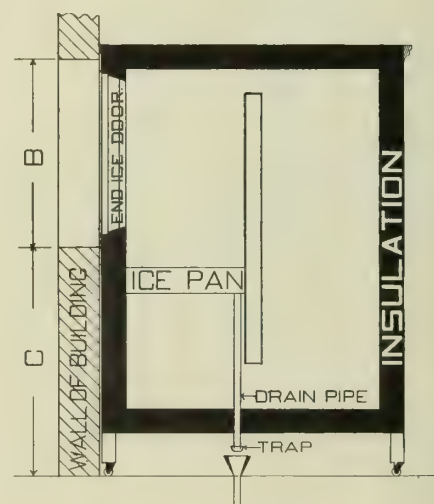


FIG. 10. SECTION

If necessary the ice-chamber may be put in the right side of the refrigerator, at a slight additional expense, thus allowing an ice door in the right end of refrigerator. In this case these dimensions also hold good. The end-icing door plan shows the cornice removed, allowing the refrigerator to fit tight up against the wall of the house. But the cornice will not be removed at the factory unless so ordered. If no casters are wanted deduct 2½ inches from C for numbers 450, 255, 460, and 480; from all the other refrigerators listed with casters deduct 2 inches.

TABLES FOR LOCATING WALL OPENINGS.

Instructions for locating opening in wall of house for Stock-Size Refrigerators having rear door for icing from the outside. (See table below and plans at the right.)

In case it is necessary to have the ice-chamber in the right side of the refrigerator, the dimensions A and E will be reversed.

If the cornice and base are to be removed from the end of refrigerator deduct 1 inch from E for all of the sizes except numbers 75, 475, and 480; these sizes have a cornice projection of $1\frac{1}{2}$ inches. If no casters are wanted deduct $2\frac{1}{2}$ inches from C for numbers 450, 255, 460, and 480; from all the other refrigerators listed with casters deduct 2 inches.

FOR STOCK-SIZE REFRIGERATORS HAVING SIDE ICE-CHAMBERS AND
REAR ICE-DOORS

No.	A Inches	B Inches	C Inches	E Inches
30, 130.....	20	23	22	14
40, 140.....	20	27	23	16
440.....	20	27	23	15
145.....	22	27	25	16
245, 445.....	22	27	24	15
50.....	23	29	26	$17\frac{1}{2}$
450.....	23	29	26	$17\frac{1}{2}$
155.....	24	31	28	19
255.....	24	31	28	19
60.....	25	32	29	20
460.....	25	32	29	20
65.....	27	34	30	22
75.....	29	31	$39\frac{1}{2}$	26
475.....	29	37	$34\frac{1}{2}$	26
480.....	30	27	$38\frac{1}{2}$	$26\frac{1}{2}$

FOR CENTER AND OVERHEAD ICE-CHAMBERS, REAR ICE-DOORS

Figs. 11 and 13

No.	A Inches	B Inches	C Inches	D Inches	E Inches
28, 128.....	26	18	34	$1\frac{1}{2}$	$1\frac{1}{2}$
228.....	26	18	34	$2\frac{1}{2}$	$2\frac{1}{2}$
38.....	28	22	45	$2\frac{1}{2}$	$2\frac{1}{2}$
438.....	28	22	45	$2\frac{1}{2}$	$2\frac{1}{2}$
120.....	26	36	33	$22\frac{1}{2}$	$24\frac{1}{2}$
420.....	26	36	33	$22\frac{1}{2}$	$24\frac{1}{2}$
132.....	32	38	34	$26\frac{3}{4}$	$28\frac{3}{4}$

A—Width of opening in wall of building. B—Height of opening in wall of building. C—Distance from floor to bottom of opening in wall of building. D—Distance from left end facing front of refrigerator to the wall opening. E—Distance from the right end of refrigerator to wall opening.

If the cornice and base are to be removed from the end of refrigerator deduct 1 inch from D or E for numbers 28, 128, 228, 38, and 438, and $1\frac{1}{2}$ inches for numbers 120, 420, and 132. If no casters are wanted deduct 2 inches from C for Nos. 28, 128, 228, 38, and 438.

BOOK OF FLOOR PLANS.

To enable architects and builders to see the best that has been done in making the refrigerator an organic part of the house we have prepared the book "McCray Refrigerators in American Homes," which will be sent with the catalogue of stock-size residence refrigerators, upon request. The "American Homes" book contains floor plans of nineteen residences, illustrated so that the method of placing may readily be seen.

LOCATION OF DRAIN-PIPES.

Owing to recent minor changes in construction which have affected the position of the drain-pipe, measurements for drain-pipe location are not given in the above tables. Upon request we will send blue-prints showing location of drain-pipes in all stock-size refrigerators. The exact location of floor opening for drain-pipe, however, is not important, as a jointed pipe can readily be extended from the end of the drain-pipe under the floor of the refrigerator to the floor opening, if it happens that the floor opening is not directly under the drain-pipe.

A—Width of opening in wall of building

B—Height of opening in wall of building

C—Distance from floor to opening in wall of building

E—Distance from right end of refrigerator to opening in wall of building

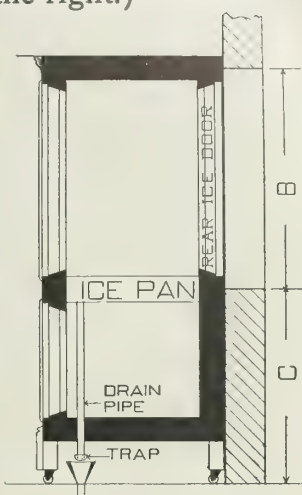


FIG. 11. SECTION

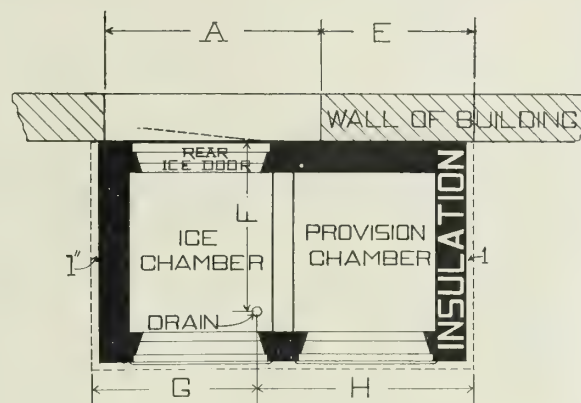


FIG. 12. FLOOR PLAN

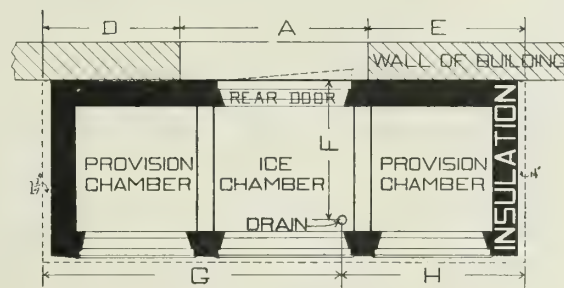


FIG. 13. FLOOR PLAN

MONROE REFRIGERATOR COMPANY

MAIN OFFICE AND FACTORY

LOCKLAND, CINCINNATI, OHIO

PRODUCTS. Manufacturers of "MONROE" PORCELAIN-LINED REFRIGERATORS exclusively.

ADAPTATION. The "Monroe" Solid Porcelain-Lined Refrigerators are built for fine residences, apartment houses, clubs, hospitals, hotels, and all classes of buildings requiring sanitary furnishings.

SPECIAL WORK. We are prepared to construct special work from architects' drawings, or we will submit our own designs for inspection and approval.

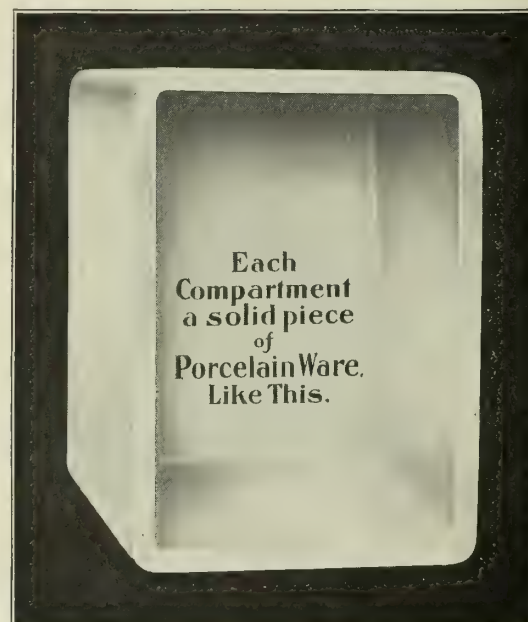
REGULAR SIZES. Twenty sizes are carried in stock for immediate shipment. These are as carefully made as our "made-to-order" work, and will be found to meet all ordinary requirements.

SELLING PLAN. We sell direct from factory to user on approval, freight prepaid. We guarantee satisfaction and safe arrival or refund the purchase price.

THE "MONROE" CONSTRUCTION. Our plan of construction is a radical departure from ordinary refrigerator construction. Features that are peculiar to the "Monroe" make it superior to the best modern refrigerator of other makes. Unchallenged sanitary features, substantial construction, and a positive circulation combine to make the "Monroe" the ideal refrigerator.

FOOD COMPARTMENTS. A distinctive feature of the "Monroe" is the food compartments. These are made of snow-white porcelain ware, moulded in one piece, absolutely without joint or crevice, and are, therefore, strictly sanitary. All corners are rounded, and compartments are easily kept clean and sweet. No other refrigerator can be made with porcelain food compartments, as this and other features are covered by our letters-patent.

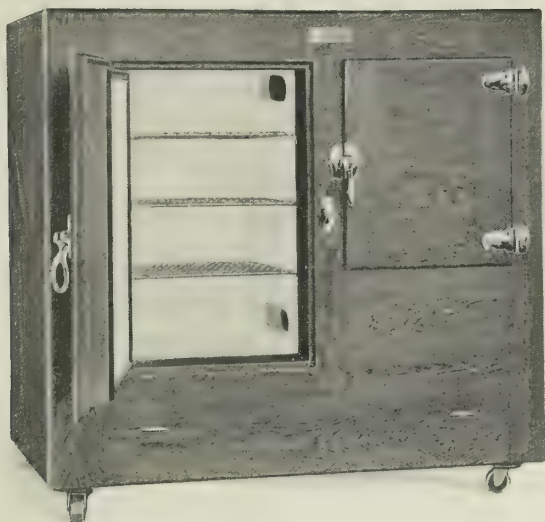
WOODWORK. The outer case of a "Monroe" is made of kiln-dried white oak, free from useless projections and attached ornaments. All our goods are durably finished in golden oak and trimmed with heavy nickel-plated hardware of modern design.



FOOD COMPARTMENT IN A "MONROE" REFRIGERATOR

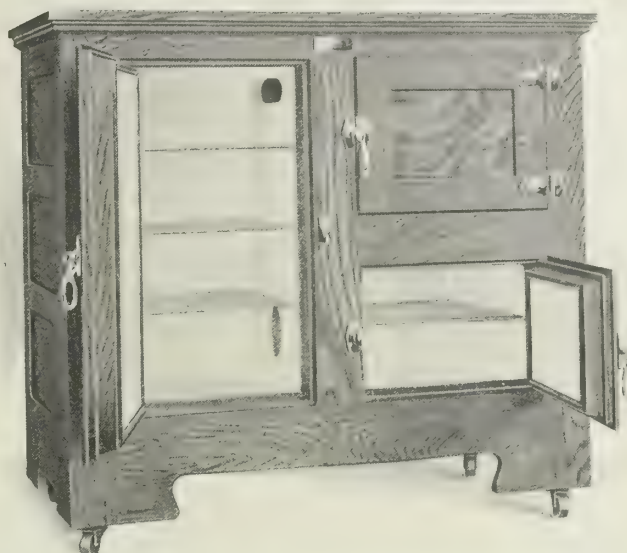
ILLUSTRATIONS.

The accompanying illustrations show the wide range of styles of the "Monroe":



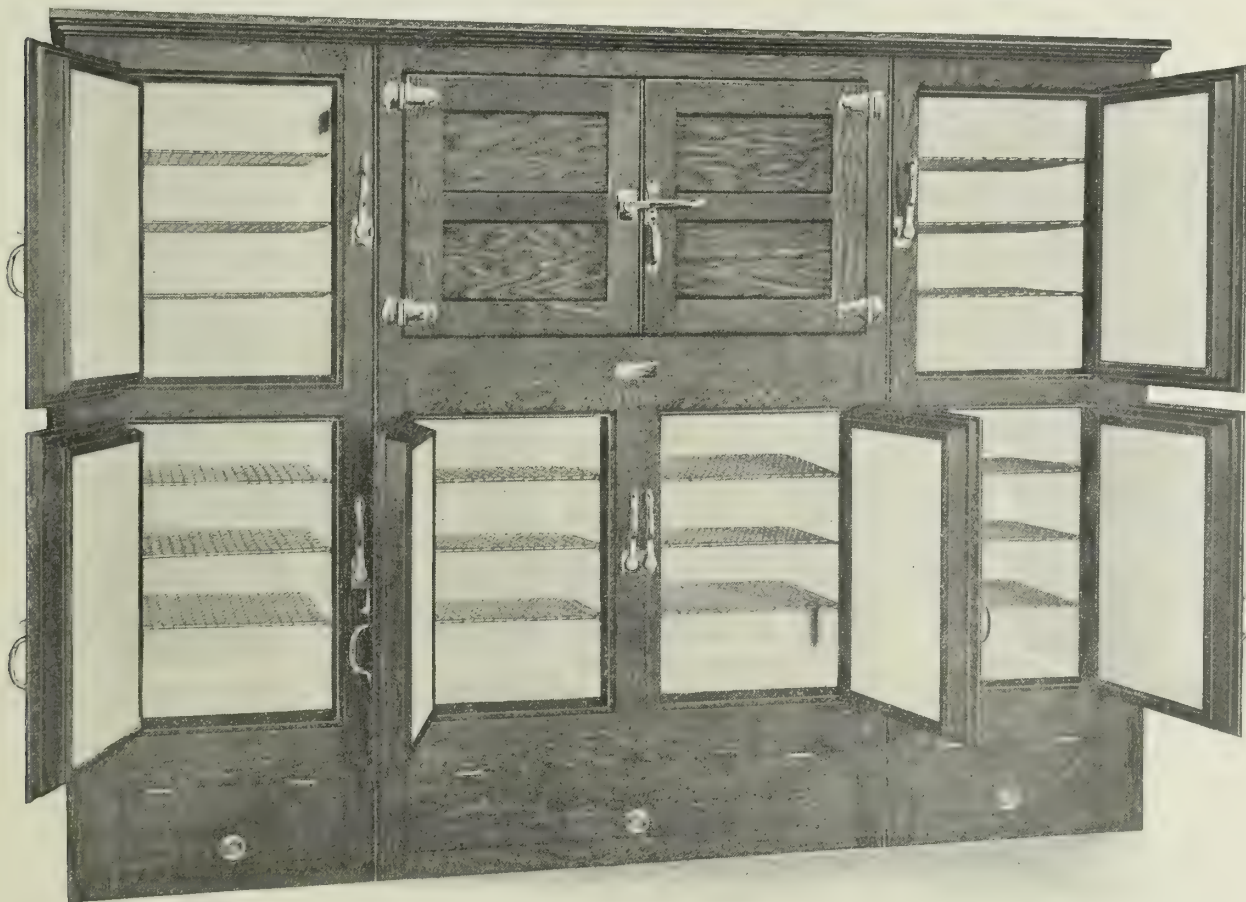
REFRIGERATOR, STYLE NO. 11 1/2

Outside dimensions, 39 1/2 in. wide, 38 1/2 in. high, 23 1/2 in. deep.
Ice capacity 75 pounds



REFRIGERATOR, STYLE NO. 21

Outside dimensions, 47 1/2 in. wide, 43 1/2 in. high, 24 1/2 in. deep.
Ice capacity 80 pounds



REFRIGERATOR, STYLE NO. 251

Special Design built to order only. Built in three sections to facilitate installation. Either end section may be omitted to reduce size. Outside dimensions 90 in. wide, 66 in. high, 24 1/2 in. deep

PRICES.

Prices, catalogue and full information furnished upon request.

BUILDINGS
EQUIPPED.

The following list shows the character of institutions and buildings equipped with the "Monroe":

John Hopkins Hospital, Baltimore, Md.; St. Luke's Hospital, New York, N. Y.; the Connecticut Apartments, Washington, D. C.; St. Luke's Hospital, Chicago, Ill.; U. S. Naval Academy, Annapolis, Md.; Massachusetts General Hospital, Boston, Mass.; Bellevue Hospital, New York, N. Y.; Aphthorp Apartments, New York, N. Y.; Newhall Apartments, Brookline, Mass.

NORTHEY MANUFACTURING COMPANY

MANUFACTURERS OF

"S. Northey's" Patent Sectional Cooling Rooms

WATERLOO, IOWA

PRODUCTS.

We manufacture "S. NORTHEY'S" IMPROVED PATENT DRY-AIR, SLOPE-TOP SECTIONAL COOLING ROOMS for Residences, Hotels, Cafés, Clubs, Groceries, Meat Markets, Bakeries, Breweries, Saloons, Wholesale Groceries, Asylums, Convents, Public and Private Institutions. We also build SPECIAL COLD-STORAGE and WAGON COOLERS, FISH and OYSTER BOXES, COUNTERS, MEAT RACKS, and BUTCHERS' and PACKERS' SUPPLIES of all kinds.

PATENTS.

Our patents are protected by the Patent Title and Guarantee Co., New York, N. Y.

SPECIAL WORK.

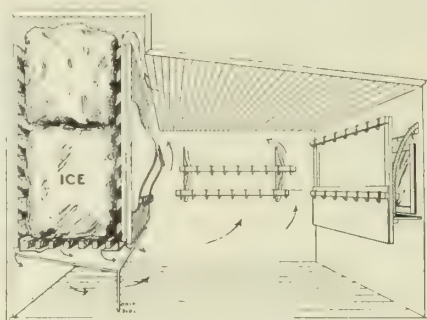
In addition to our regular line of Coolers we make up Special Designs and high-class work; Opal Glass and Tile Linings for fine residences and cafés, and Special Hardware, Finish, etc.

SYSTEM.

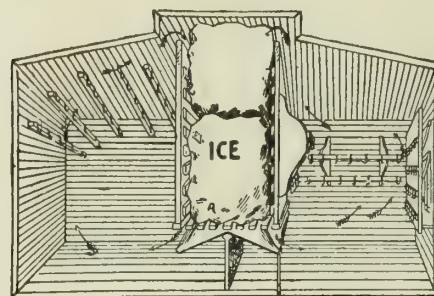
Our System is generally used in connection with natural ice. However, same can be used with brine tanks, or coils placed in the same position. No extra charge for this arrangement, when desired. *Brine Tanks and Coils can be installed at any time without changing the system.*



FACTORY OF THE NORTHEY MANUFACTURING CO.



A SINGLE ICE-COOLER RACKED FOR MEATS



A DOUBLE ICE-COOLER RACKED FOR MEATS

DRY AIR CIRCULATION.

In our System we get a Cold Dry-Air Circulation which preserves the contents of the cooler as well as the ice. Our cooler is specially adapted for preserving fruits, fresh meats, and all delicate food stuffs. Our System is so perfect that matches can be lighted readily on the ceiling or in the ice-chamber and even on the ice slats next to the ice. Wet paper hung in our cooler can be lighted and burned in a few hours' time. Circulation and dry air make the success of our cooler. Other coolers may be cold but they will not keep food nor food stuffs on account of being damp and, furthermore, will consume more ice.

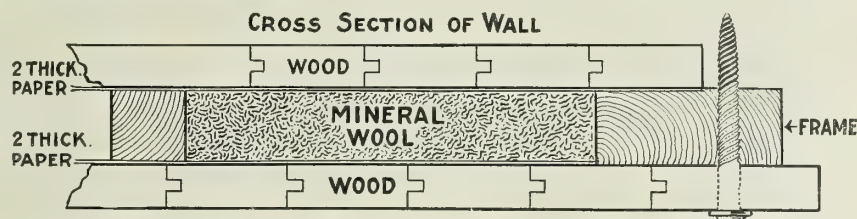
SUPERIOR POINTS IN BRIEF.

Mineral wool packed. Perfect construction. Triple matched joints. Cold, dry, pure air. Strong circulation. Odorless. No taint. No mould. Economical in the use of ice. Preserver of its contents. All wearing parts hardwood. Sills covered with iron. Substantial trimmings. Sections of a convenient size to handle; will go through common door. All doors and casings of hardwood. Pans and traps galvanized iron. Fine workmanship and elegantly finished.

Remember that the first cost of a cooling room is small in comparison with the cost of the ice that you will put into it for years to come. If we can save from one third to one half of your ice it will take only a few years to pay for a good cooler.

INSULATION
AND WALLS.

We use Mineral Wool as our standard insulation, it being one of the greatest non-conductors of heat and cold. We use a long fiber, and do not pack it fluffy but as solid as it is possible to tamp it in. It is held in place by headers every 18 inches, and guaranteed not to settle. Our Standard Wall is made up as follows, commencing with the inside of the wall: Two coats of heavy white asbestos paint; $\frac{7}{8}$ inch good, grooved and tongued lumber; two thicknesses of special insulating paper (joints broken); 2 x 2 inch headers placed every 18 inches apart and filled with No. 1 Mineral Wool between and packed very tight; two thicknesses of heavy insulating paper outside of this (joints broken), and $\frac{7}{8}$ inch thick of the finished lumber on the outside, practically 4 inches thick. All lumber is nailed with special cement-coated nails; joints in the sections are perfectly matched; all corners are held together with $\frac{7}{16}$ inch lag bolts, and are absolutely tight. This wall is suitable for any use excepting freezing. For such cases order three or four inches of wool, instead of two inches, according to the temperature desired.



DETAILS OF OUR STANDARD WALL, WITH 2-INCH MINERAL WOOL

SPECIAL
INSULATION.

Special Insulation of Cork Block or Granulated Cork, etc., made in the walls when desired.

MAIN AND
ICE DOORS.

Our standard main doors are of the following sizes: 22, 26, 30, and 36 inches wide by 6 feet long; and our standard ice doors are made in the following sizes: 26 inches wide, by 36, 42 and 54 inches long. All of the above can be had in maple, ash and oak. Special sizes and finish will be furnished if necessary, at extra charge. All ice doors are generally set up 48 inches from the floor. All door sills are covered with galvanized iron and rubber-stripped. All doors and jambs are hardwood regardless of outside finish.

WINDOWS.

All windows are made of hardwood, generally ash or oak, regardless of the finish, and have three glass panes in them with an air-space between.

HEIGHTS.

The general heights in the different kinds of coolers in the highest place, over the ice-chamber, are as follows: Residence, Saloon and Creamery Coolers 8 feet high; Grocers, Hotel, Club and Café Coolers 8 or $8\frac{1}{2}$ feet, owing to the size; Fresh Meat Coolers 9 feet or $9\frac{1}{2}$ feet, owing to the size; and Special Meat Coolers where they wish to hang full halves, or in packing houses, are made higher. Any of the above can be made to special height, as desired.

TRIMMINGS.

All our levers are of the "Cam" style, insuring an absolutely tight door, no matter how much it is worn. The finish and quality of trimmings depend on the style and finish of the cooler; but they are all made substantial and heavy and suitable for the work required.

ESTIMATES
AND PRICES.

When possible send sketch, stating your requirements and the height of ceiling. All our prices include interior fixtures suitable for the different kinds of work for which the cooler is intended, unless otherwise specified.

CATALOGUES
AND IN-
FORMATION.

Our complete catalogue with tables of specifications and sizes, and any other information regarding our System will be cheerfully sent on application.

GUARANTEE.

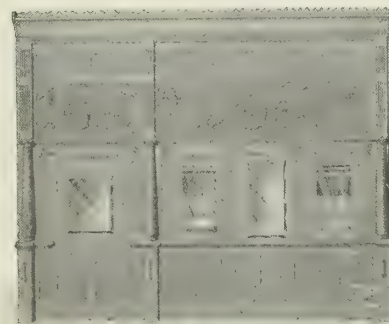
We absolutely guarantee all work put out under our manufacture to do just as represented.

AGENTS.

We have special agents in nearly all of the large cities over the country. Address all correspondence to the factory.

USERS.

Government and State Institutions, Catholic and Lodge Orders of all kinds, Y. M. C. A., Railroads and Hotels are some of the most prominent users in the United States. Send for our book giving list of users.



"NORTHEY'S" COOLER, FANCY
DESIGN "J"

ORR & LOCKETT HARDWARE COMPANY

ESTABLISHED 1872

71 and 73 Randolph Street

CHICAGO, ILL.

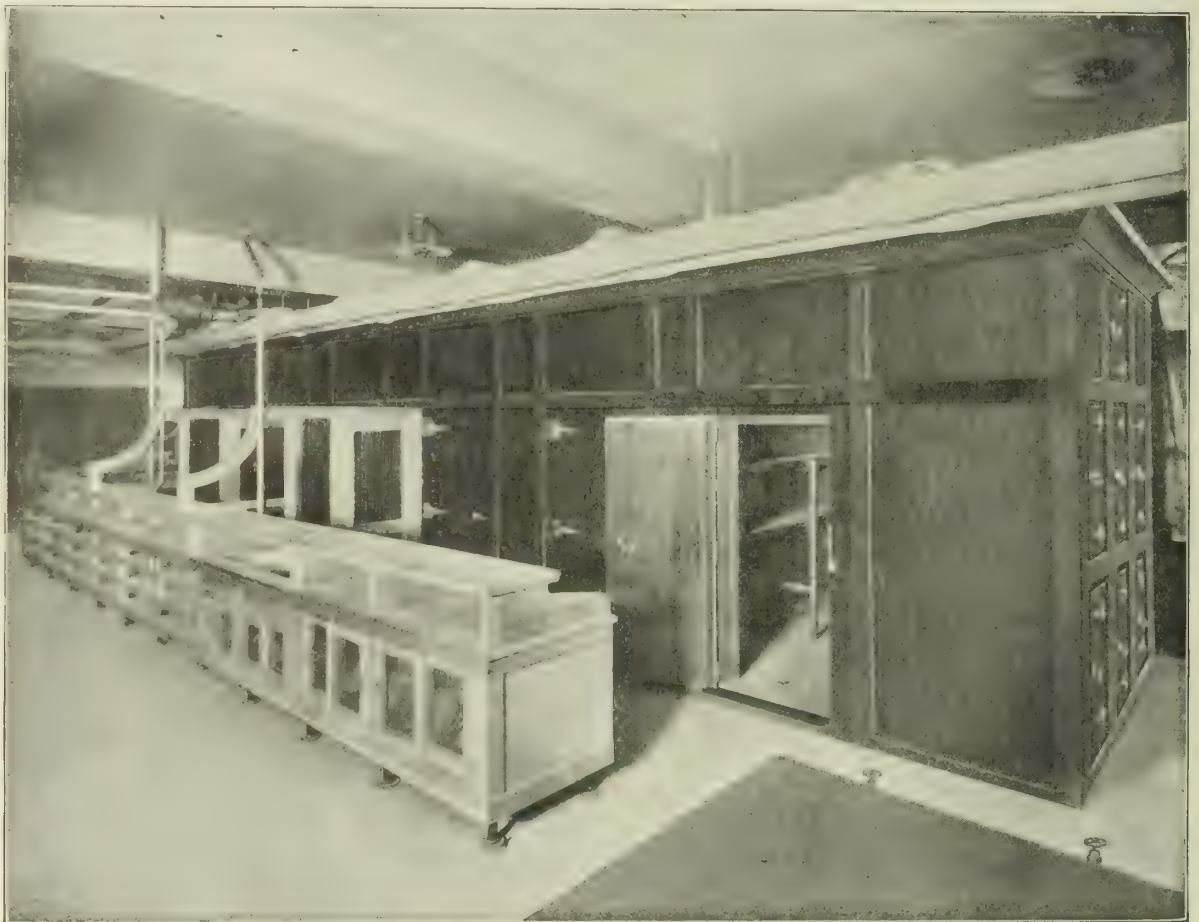
FACTORIES

CORNER TWENTY-SECOND AND JEFFERSON STREETS

TELEPHONE, CENTRAL 551

PRODUCTS.

Designers and manufacturers of COOLING ROOMS, REFRIGERATORS, COLD-STORAGE, MARKET and GROCERY FIXTURES; HOTEL and RESTAURANT KITCHEN EQUIPMENT; also, BUTCHERS' and PACKERS' MACHINERY, TOOLS and SUPPLIES.



COMBINATION STORAGE AND SERVICE COOLERS, WITH IMPROVED SERVICE COUNTER

Counter fitted with Cold Bain Marie, Sinks, Cake Griddles, etc.

SPECIAL SERVICE.

Many of the best known and largest architectural offices turn over to us the entire refrigerator and cold-storage equipment to design, on our record of having successfully built refrigerators and cooling rooms for the last forty years. The fact that our product is the accepted standard of efficiency, and the further fact that practically every club, hotel and institution in Chicago has its refrigeration equipment designed and installed by this firm, on a non-competitive basis, will give a good idea of the position which we hold in built-to-order refrigerator work.

ECONOMY.

The Orr & Lockett System of Refrigeration is an investment not measured by the first cost, but by the absolute preservation of all perishable material entrusted to it throughout the entire life of the building. The money value of meats and vegetables which are often lost in a cheap refrigerator, during its short life, will generally pay for the installation which we would recommend for the same location.

CRITICISM.

In no other city in the country does a refrigerating system have such close inspection or such expert criticism as in Chicago, with its tremendous packing-house industry, of which refrigeration forms so important a factor. The Orr & Lockett System has been repeatedly used and recommended by the largest packing houses, both by themselves and where their experts have been called into consultation.

CONSULTATION.

We shall be very glad to extend the list of offices where we are called into consultation.

We not only design the entire refrigerator and cooling-room equipment, but will lay out and specify the kitchen and pantry and service equipment best suited to the needs of any hotel, club, or institution. On contracts placed with us our experts will go to any part of the country at the suggestion of the architect. In the preliminary correspondence it will often save time to send us blue-prints of the kitchen, dining-room and service floors together with a statement of the number of rooms in the house.

REFERENCES.

From the list which comprises practically every installation of prominence in the Central States, we give below representative installations, which prove how thoroughly our past reputation has given us control of the special refrigerator problem:

PUBLIC AND PRIVATE INSTITUTIONS

University of Chicago, Keeley Hall, Chicago, Ill.
 St. Ignatius College, 312 West Twelfth Street, Chicago, Ill.
 Illinois Manual Training School, Glenwood, Ill.
 Chicago Polyclinic Hospital, La Salle and Oak Streets, Chicago, Ill.
 Home for Destitute Crippled Children, 46 Park Avenue, Chicago, Ill.
 Hutchinson Hall, Fifty-Eighth Street and Ellis Avenue, Chicago, Ill.
 Chicago Orphan Asylum, Fifty-First Street and Grand Boulevard, Chicago, Ill.
 Home for Aged Jews, Sixty-Second Street and Drexel Boulevard, Chicago, Ill.
 Mercy Hospital, Twenty-Sixth Street and Calumet Avenue, Chicago, Ill.
 Convent of Mercy, Forty-Ninth Street and Evans Avenue, Chicago, Ill.
 Academy of Sacred Heart, Lake Forest, Ill.
 Creighton College, Omaha, Neb.
 University of Illinois, Champaign, Ill.
 St. Mary's Hospital, Green Bay, Wis.
 Leslie Keeley Company, Dwight, Ill.
 Finley Hospital, Dubuque, Iowa.
 South Dakota Hospital for Insane, Yankton, S. D.
 St. Mary's Training School, Fehevville, Ill.

CLUBS

Homewood Country Club, Homewood, Ill.
 Midlothian Club, Midlothian, Ill.
 Riverside Golf Club, Riverside, Ill.
 Union League Club, Jackson Boulevard, Chicago, Ill.
 Hamilton Club, Clark and Monroe Streets, Chicago, Ill.
 South Shore Country Club, Seventy-First Street, Chicago, Ill.
 Woman's Athletic Club, Chicago, Ill.
 Glenview Golf and Polo Club, Glenview, Ill.
 Coleman Lake Club, Coleman Siding, Wis.
 Exmore Country Club, Highland Park, Ill.
 University Club, Monroe Street and Michigan Avenue, Chicago, Ill.
 Calumet Club, Twentieth Street and Michigan Avenue, Chicago, Ill.
 Chicago Athletic Club, Michigan Avenue and Monroe Street, Chicago, Ill.

HOTELS

La Salle Hotel, Madison and La Salle Streets, Chicago, Ill.
 Chicago Beach Hotel, Fifty-First Street and Lake Avenue, Chicago, Ill.
 Blackstone Hotel, Chicago, Ill.
 Wellington Hotel, Wabash Avenue and Jackson Street, Chicago, Ill.
 Lexington Hotel, Michigan Avenue and Jackson Street, Chicago, Ill.
 Kaiserhof Hotel, 266 South Clark Street, Chicago, Ill.
 Morrison Hotel, Clark and Madison Streets, Chicago, Ill.
 New Brevort Hotel, 143 Madison Street, Chicago, Ill.
 Palmer House, State and Monroe Streets, Chicago, Ill.
 Congress Hotel and Annex, Michigan Avenue and Congress Street, Chicago, Ill.
 Hotel Del Prado, Fifty-Ninth Street and Washington Avenue, Chicago, Ill.
 Sherman House, Clark and Randolph Streets, Chicago, Ill.
 Hotel Metropole, Twenty-Third Street and Michigan Avenue, Chicago, Ill.

Kenwood Hotel, Forty-Seventh Street and Kenwood Avenue, Chicago, Ill.
 Lakota Hotel, Thirtieth Street and Michigan Avenue, Chicago, Ill.
 Grand Pacific Hotel, Clark and Jackson Streets, Chicago, Ill.

DEPARTMENT STORES, CAFES

Marshall Field's, State and Washington Streets, Chicago, Ill.—Storage and Restaurant Coolers.
 Mandel Bros., State and Madison Streets, Chicago, Ill.—Storage and Restaurant Coolers.
 Carson, Pirie & Scott, State and Madison Streets, Chicago, Ill.—Storage and Restaurant Coolers.
 Hilman & Company, State and Washington Streets, Chicago, Ill.—Fresh Meats, Delicatessen, Fish and Restaurant Coolers.
 Boston Store, State and Madison Streets, Chicago, Ill.—Fresh and Smoked Meats, Delicatessen and Restaurant Coolers.
 Siegel, Cooper & Co., State and Van Buren Streets, Chicago, Ill.—Restaurant and Storage Coolers.
 Rothschild & Co., State and Van Buren Streets, Chicago, Ill.—Fresh and Smoked Meats, etc.

WHOLESALE MEAT AND PROVISION DEALERS

Irwin Bros. Co., 449-451 State Street, Chicago, Ill.
 Libby, McNeill & Libby, 242 South Water Street, Chicago, Ill.
 Union Stock Yards Co., 9 Exchange Avenue, Chicago, Ill.
 Froehling & Heppe, 16-18 State Street, Chicago, Ill.
 Cudahy Packing Co., 252 South Water Street, Chicago, Ill.

RESTAURANTS

Rector's Oyster House, Clark and Monroe Streets, Chicago, Ill.
 John Z. Vogelsang, 178 Madison Street, Chicago, Ill.
 St. Hubert's Chop House, Majestic Hotel, Chicago, Ill.
 Philip Henrici Co., 108 Randolph Street, Chicago, Ill.
 Chicago Oyster House, 140 Madison Street, Chicago, Ill.
 Café Lakota, National Life Building, Chicago, Ill.
 Fred Harvey, Dearborn Street Railroad Station, Chicago, Ill.
 John R. Thompson, 75 Randolph Street, Chicago, Ill.
 Tom Jones, 15 Jackson Boulevard, Chicago, Ill.
 Kuntz, Remmler Co., 303 Wabash Avenue, Chicago, Ill.
 Henrici Co., Inc., 79 Van Buren Street, Chicago, Ill.

SPECIAL FAMILY REFRIGERATORS

Marshall Field, Jr., 1919 Prairie Avenue, Chicago, Ill.
 Harold F. McCormick, Bellevue Place, Chicago, Ill.
 L. E. Laffin, Lake Forest, Ill.
 J. Hobart Moore, Lake Geneva, Wis.
 Mrs. Watson Blair, 164 Rush Street, Chicago, Ill.
 F. O. Lowden, 1012 Prairie Avenue, Chicago, Ill.
 Bishop Quigley, State Street and North Avenue, Chicago, Ill.
 Leon Mandel, 3409 Michigan Avenue, Chicago, Ill.
 Mrs. Chas. Netcher, 4427 Drexel Boulevard, Chicago, Ill.
 V. F. Lawson, Burton Place and Lake Shore Drive, Chicago, Ill.
 Wm. Grace, Barrington, Ill.
 E. A. Renwick, Sheridan Road, Chicago, Ill.
 Nathaniel Sears, Lake Geneva, Wis.
 F. M. Blount, Wheaton, Ill.
 E. A. Hamill, Lake Forest, Ill.
 Arthur Huertley, Oak Park, Ill.
 A. E. Wells, Fantana, Wis.
 Fred E. Lee, Dowagiac, Mich.

RIDGWAY REFRIGERATOR CO.

OFFICE AND SALESROOMS
615-619 North Broad Street
PHILADELPHIA, PA.

FACTORY
NORTH PENN JUNCTION, PA.

PRODUCTS.

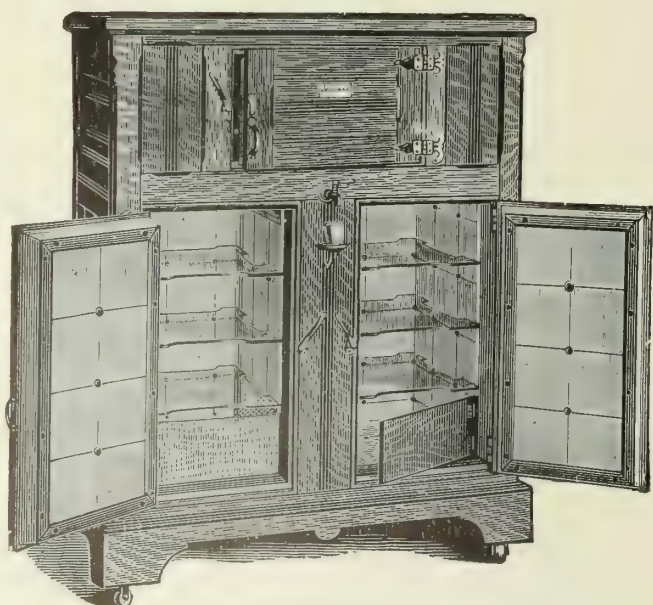
Manufacturers of "RIDGWAY" REFRIGERATORS for all uses; also, Builders of FREEZERS and COLD-STORAGE BUILDINGS of every description.



No. 126. Glass or tile lined. Capacity 50 lbs. of ice



No. 133. Glass or tile lined. Capacity 100 lbs. of ice
Plate glass or woven wire shelves
Size, 43 in. wide, 24 in. deep, 51 in. high



No. 900. Glass or tile lined. Plate glass shelves



No. 0. Combination tile lined, also glass lined
Size, 4 ft. 4 in. wide, 2 ft. 6 in. deep, 6 ft. high

"RIDGWAY" REFRIGERATORS

"RIDGWAY"
REFRIGERA-
TORS.

These Refrigerators are adaptable for use in private residences, meat markets, hotels, clubs, public and private institutions.

The main features of the "Ridgway" Refrigerator are the high grade of workmanship and the perfect insulation and circulation, producing dry cold air and insuring the preservation of goods placed inside.

STYLES.

"Ridgway" Refrigerators are made in all styles and sizes. They are made either tile or glass lined and with glass or woven-wire shelves. The base is of best quality oak trimmed with the best quality of hardware.

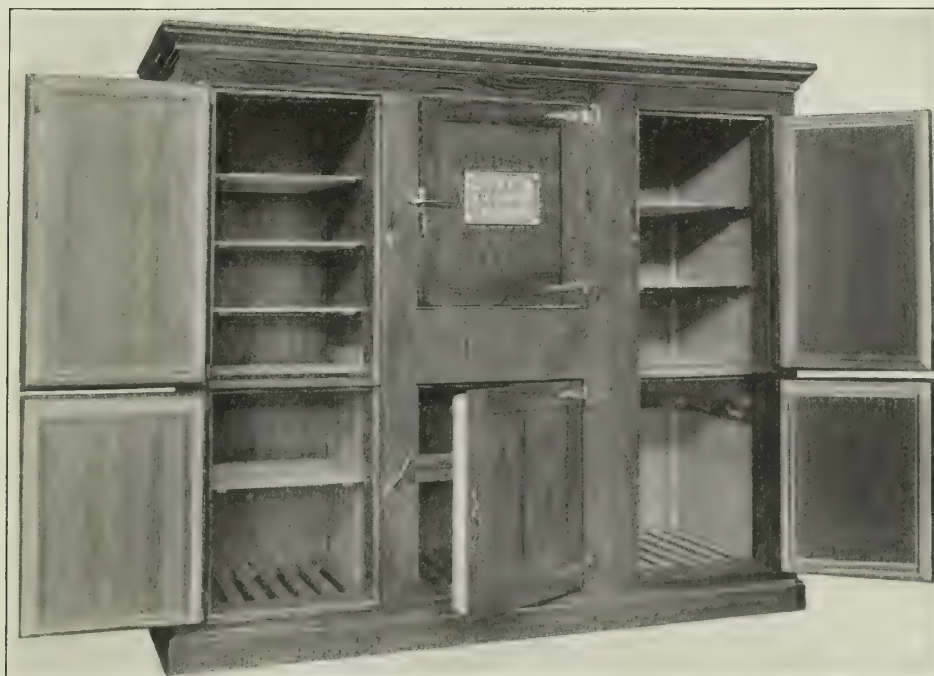
SERVICES.

Information regarding refrigerating problems either large or small, prices and details regarding our goods, will be cheerfully sent upon application.



"RIDGWAY" REFRIGERATOR NO. 2700. TILE LINED

A beautiful Refrigerator for Suburban Residences
Can be arranged with ice door in rear through wall of kitchen or pantry, so as to be filled from the outside



"RIDGWAY" REFRIGERATOR—OUTSIDE CASE, OAK; INTERIOR, WHITE SPRUCE OR TILE

Stock size, 7 feet 6 inches wide, 3 feet deep, 7 feet high

THE TRIUMPH ICE MACHINE CO.

CINCINNATI, OHIO

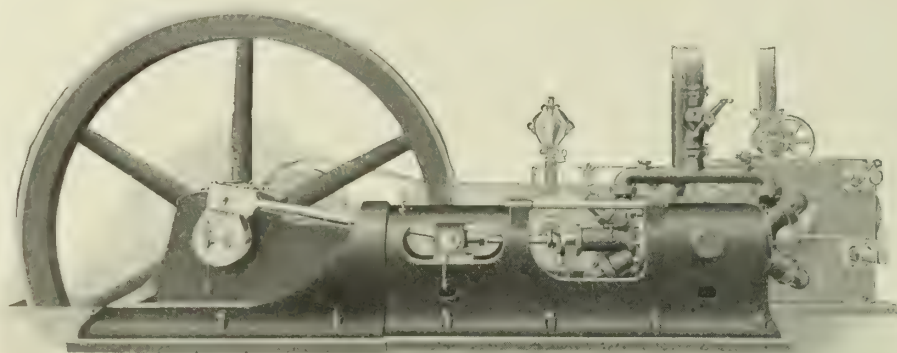
BRANCH OFFICES

NEW YORK, N. Y., 1 Madison Avenue
 BOSTON, MASS., 103 North High Street
 PHILADELPHIA, PA., 1119 North Howard Street
 BALTIMORE, MD., Equitable Building
 CLEVELAND, OHIO, Wade Building

COLUMBUS, OHIO
 ATLANTA, GA.
 NEW ORLEANS, LA., 643 Tchoupitoulas Street
 DALLAS, TEX., 613 South Ervay Street
 KANSAS CITY, MO.

PRODUCTS.

Manufacturers of COMBINATION ICE-MAKING and REFRIGERATING PLANTS for hotels, hospitals, asylums and apartment houses; ICE-WATER PLANTS for office and public buildings, hotels, institutions, etc.; REFRIGERATING PLANTS for creameries, candy factories, bakeries, oil refineries, cold-storage warehouses and fur storage; SPECIAL ICE-MAKING and REFRIGERATING PLANTS for breweries and packing houses; CONDENSERS; BRINE TANKS; STEEL AMMONIA FITTINGS and SUPPLIES; ELECTRIC GENERATORS and MOTORS of approved design.



THE "TRIUMPH" COMPRESSOR

THE "TRIUMPH" COMPRESSOR.

The "Triumph" Compressor is a double-acting, horizontal machine having a Tangye frame. It will pump either dry or saturated gas, and requires less headroom than a vertical machine.

The mechanical features include a minimum of moving parts, ensuring smallest possible friction; an exceptionally strong frame, built in one or two pieces; and a cylinder that can not get out of line. The piston is made in one piece, of special high-grade steel. The stuffing-box is easily adjusted, the crank shaft carefully designed with a liberal factor of safety, and the wearing parts are babbitted or are phosphor bronze. The compressor valve has proved so successful that it is frequently supplied for machines of other makes.

The "Triumph" Compressor is built in sizes from 2 to 225 tons refrigerating capacity, and in sizes above two tons refrigeration is constructed as shown in illustration. Greater service is produced by installing more than a single unit. "Triumph" installations are covered by a guarantee for one year from date of erection.

THE "YOUNGER TRIUMPH" COMPRESSOR.

The "Younger Triumph" Compressor, shown herewith, is the latest as well as one of the most popular products of THE TRIUMPH ICE MACHINE COMPANY. This machine ranges in capacity from 2 to 6 tons refrigerating duty, and, while small in size, retains practically all of the unique features found in the construction of the large "Triumph" Compressor.

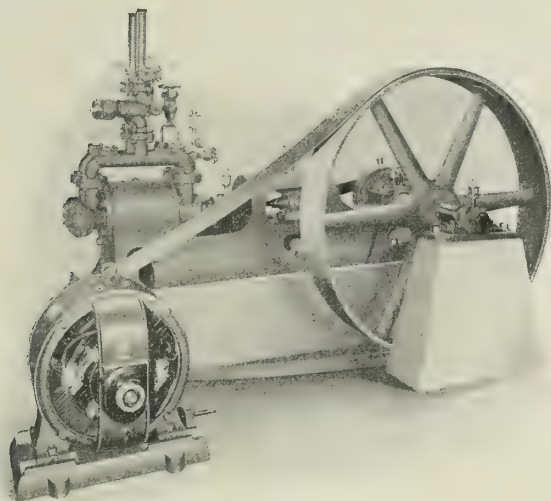
This small unit may be operated by steam or gasoline engine, water or electric power; electric power being the most general mode of operation. (See illustration.)

We especially recommend the installation of the "Younger Triumph" where a small but absolutely reliable refrigerating or ice-making outfit is needed.

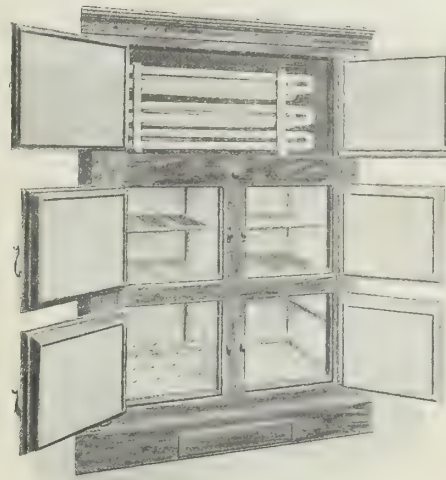


TRADE-MARK,
REGISTERED

We have taken into consideration that where this outfit is installed there will probably be no experienced engineer employed, and have accordingly made this unit practically "fool proof."



THE "YOUNGER TRIUMPH" COMPRESSOR
Motor-driven



REFRIGERATING SERVICE FOR HOTELS,
APARTMENT HOUSES, RESTAURANTS, HOSPITALS, ETC.

AMMONIA FITTINGS.

"Triumph" Fittings and Supplies are in use wherever modern ice making and refrigeration is practised. The "Triumph" Fitting is provided with a deep recess, which is completely flushed with solder after the joint is made. The care exercised in sweat soldering the "Triumph" Fitting onto the pipe, as well as the quality of the fitting, has caused it to be known as "The Fitting that doesn't leak."

ESTIMATES.

Our engineering corps is at the service of the architect, and will assist him in deciding the details of the installation most suited to each client's requirements. Our extended experience renders this service particularly valuable. We carry a number of compressors in stock to insure prompt delivery on rush orders.

INFORMATION REQUIRED.

State concisely the work the refrigerating machinery is to accomplish and conditions under which the plant is to be installed; also:

Amount of ice desired per twenty-four hours.

Size of each room to be refrigerated.

If machine is not to operate continuously, state period of operation per day.

If possible furnish sketch of building, showing dimensions and indicating where you prefer to locate machinery.

Kind of power to be used.

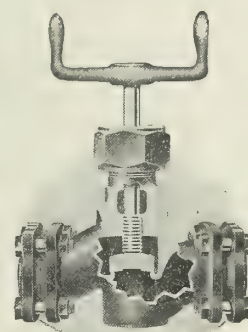
Temperature of condensing water in midsummer.

REFERENCES.

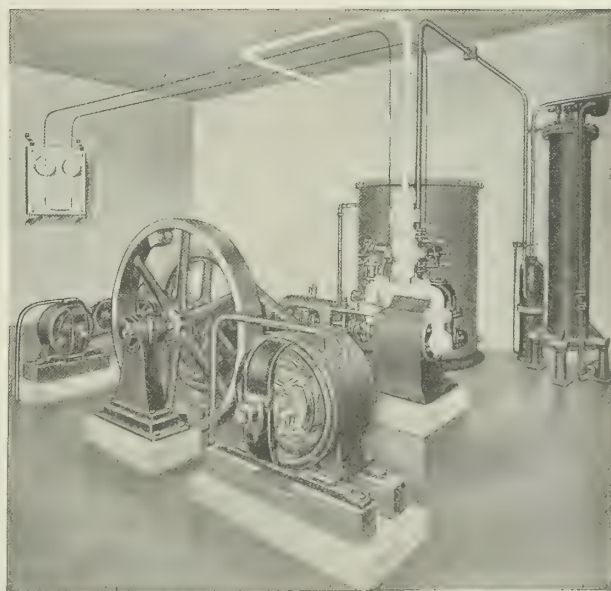
Let us send you a list of references from concerns in the same line of business as your client.



CAST-STEEL FITTING



AMMONIA VALVE



MODERN ICE-WATER PLANT, FOURTH NATIONAL BANK, CINCINNATI, OHIO

THE FRED W. WOLF COMPANY

MANUFACTURERS OF

The Linde Refrigerating and Ice-Making Machinery and Ammonia Fittings
827-831 Rees Street
CHICAGO, ILL.

POSTAL AND WESTERN UNION TELEGRAPH
LINES IN OUR OFFICE

CABLE ADDRESS, "WOLFTON, CHICAGO"

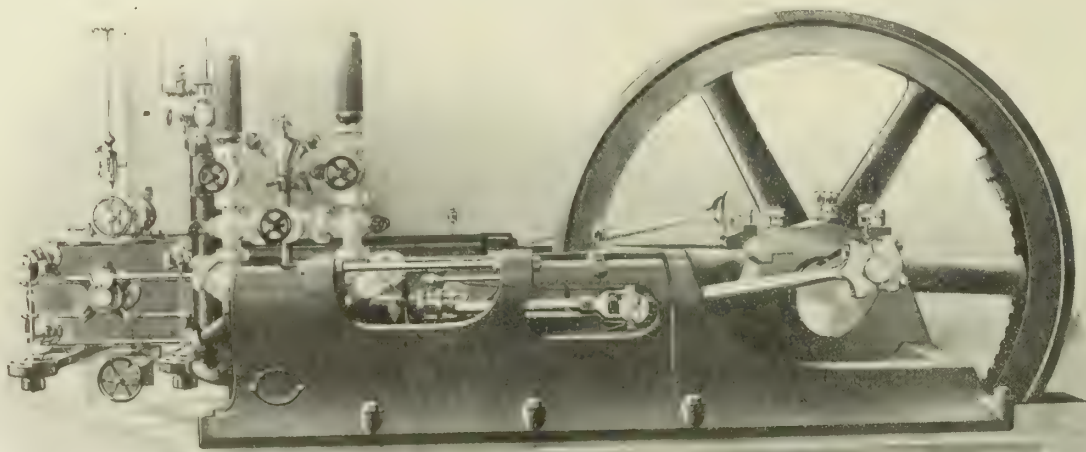
BRANCH OFFICES

ATLANTA, GA., Prudential Building
FORT WORTH, TEXAS

KANSAS CITY, MO., Shukert Building
SEATTLE, WASH., 914 First Avenue, South

PRODUCTS
AND
SERVICES.

Manufacturers of the LINDE REFRIGERATING and ICE-MAKING MACHINE and AMMONIA FITTINGS; also, ICE-PLANT SUPPLIES and AMMONIA.



THE TANGYE-FRAME LINDE REFRIGERATING MACHINE

INSTALLA-
TIONS.

Over 7,500 Linde Machines have been installed, and the first machines erected in this country, built in exact accordance with our present methods (except in some minor particulars), have for over twenty years continuously performed their full duty and are as serviceable to-day as when first put into operation.

INFORMA-
TION
NECESSARY.

It will greatly expedite matters if the following questions are answered when writing for estimates on machines:

Machine—For what purpose the machine is to be used. State whether you want compressor coupled direct on same shaft with engine, or whether it is to be driven by counter-shaft.

Power—State whether you want one or more boilers, or if you have boiler and engine, or other power with which to operate the machine.

Ice-Making—State how many tons of ice you wish to make per twenty-four hours, and how much you prefer each cake to weigh.

Packing-House—Number of cattle killed per day, and average weight of each in pounds. Number of hogs killed per day, and average weight of each. Sheep killed per day, and average weight of each.

Cold-Storage—Give the dimensions of the various rooms or cellars which you desire to have cooled; state separately the size and temperature, and for what each room will be used.

Breweries—State number of barrels at each brewing, and number of brewings per day or week; number and size of fermenting tubs; capacity of kettle.

Baudelot Cooler—If you want us to furnish the ammonia portion of Baudelot cooler, please give dimensions and description of the copper portion, especially the length.

Piping—State whether brine or direct-expansion piping is desired.

Water—The source and highest summer temperature of the water which will be used over the ammonia condenser.

Operation—Whether machine is to operate continuously for twenty-four hours daily.

CAPACITIES
AND FLOOR
SPACE OF
LINDE
MACHINES.

COMPRESSOR					ENGINE		AMMONIA CONDENSER							Oil Separator, Length in feet	Oil Separator, Diameter in inches	Receiver, Length in feet	Receiver, Diameter in inches
New number	Tons refriger- ating capacity per 24 hours	Size of connections, inches	Horse-power required	Revolutions per minute	FLOOR SPACE REQUIRED FOR COMPRESSOR AND ENGINE		Height of Machines	Number of sections	Number of pipes	Length of pipes in feet	SPACE REQUIRED IF SECTIONS ARE PLACED 20-INCH CENTERS						
					Width	Length					Length	Width	Height				
8	6	2	12	70	6 ft. 6 in.	x 11 ft. 9 in.	5'-6''	1	18	15	18 x 2 ft. 0 in.	x 9 ft. 3 in.	4	10	4	10	
10	12	2	18	70	8 " 0 "	x 12 " 6 "	6'-6''	2	18	15	18 x 3 " 9 "	x 9 " 3 "	4	10	4	10	
10A	15	2	23	70	8 " 0 "	x 12 " 6 "	6'-6''	2	18	17½	21 x 3 " 9 "	x 9 " 3 "	4	10	4	10	
11	18	2½	27	70	9 " 0 "	x 17 " 0 "	6'-8''	2	18	20	24 x 3 " 9 "	x 9 " 3 "	4	10	4	10	
11A	20	2½	30	70	9 " 6 "	x 17 " 0 "	6'-6''	2	20	20	24 x 3 " 9 "	x 10 " 6 "	4	10	4	10	
12	25	2½	38	70	9 " 6 "	x 18 " 0 "	7'-0''	2	24	20	24 x 5 " 0 "	x 12 " 0 "	6	10	6	10	
12A	25	2½	38	70	10 " 0 "	x 18 " 6 "	7'-6''	2	24	20	24 x 5 " 0 "	x 12 " 0 "	6	10	6	10	
12E	30	3	45	70	10 " 0 "	x 18 " 6 "	7'-9''	3	24	20	24 x 6 " 8 "	x 12 " 0 "	6	10	6	10	
13A	33	3	50	70	10 " 5 "	x 20 " 6 "	7'-9''	3	24	20	24 x 6 " 8 "	x 12 " 0 "	6	10	6	10	
13	33	3	50	70	10 " 0 "	x 20 " 6 "	7'-10''	3	24	20	24 x 6 " 8 "	x 12 " 0 "	6	10	6	10	
14	40	3	55	70	10 " 0 "	x 20 " 6 "	7'-10''	3	24	20	24 x 6 " 8 "	x 12 " 0 "	6	10	6	10	
14A	40	3	55	70	11 " 6 "	x 20 " 6 "	7'-6''	3	24	20	24 x 6 " 8 "	x 12 " 0 "	6	10	6	10	
15	50	3	63	66	11 " 6 "	x 21 " 9 "	8'-10''	4	24	20	24 x 8 " 4 "	x 12 " 0 "	6	10	6	10	
15B	50	3	63	66	12 " 3 "	x 21 " 9 "	8'-8''	4	24	20	24 x 8 " 4 "	x 12 " 0 "	6	10	6	10	
15A	65	3½	81	63	12 " 6 "	x 23 " 9 "	8'-10''	5	24	20	24 x 10 " 0 "	x 12 " 0 "	8	10	8	10	
16A	75	3½	94	60	13 " 0 "	x 25 " 0 "	10'-0''	6	24	20	24 x 11 " 8 "	x 12 " 0 "	8	10	8	10	
17	75	3½	94	60	12 " 3 "	x 25 " 0 "	10'-0''	6	24	20	24 x 11 " 8 "	x 12 " 0 "	8	10	8	10	
17A	85	4	106	57	13 " 9 "	x 26 " 0 "	10'-6''	7	24	20	24 x 13 " 4 "	x 12 " 0 "	8	10	8	10	
18	90	4	115	57	12 " 3 "	x 26 " 0 "	10'-6''	7	24	20	24 x 13 " 4 "	x 12 " 0 "	8	10	8	10	
18A	90	4	115	57	14 " 0 "	x 26 " 0 "	10'-9''	7	24	20	24 x 13 " 4 "	x 12 " 0 "	8	10	8	10	
19	100	5	125	50	13 " 6 "	x 26 " 6 "	11'-3''	8	24	20	24 x 15 " 0 "	x 12 " 0 "	8	10	8	10	
19A	100	5	125	60	14 " 6 "	x 26 " 6 "	10'-6''	8	24	20	24 x 15 " 0 "	x 12 " 0 "	8	10	8	10	
20A	120	5	150	57	15 " 0 "	x 26 " 6 "	11'-3''	10	24	20	24 x 18 " 4 "	x 12 " 0 "	8	10	8	10	
20C	150	5	188	57	17 " 6 "	x 31 " 0 "	11'-3''	12	24	20	24 x 21 " 8 "	x 12 " 0 "	8	10	8	10	
20B	175	5	220	50	15 " 6 "	x 29 " 0 "	12'-6''	14	24	20	24 x 25 " 0 "	x 12 " 0 "	8	10	8	10	
21A	225	6	280	50	15 " 6 "	x 30 " 9 "	12'-9''	18	24	20	24 x 31 " 8 "	x 12 " 0 "	8	10	10	15	
21B	225	6	280	45	16 " 6 "	x 31 " 0 "	11'-6''	18	24	20	24 x 31 " 8 "	x 12 " 0 "	8	10	10	15	
15C	125	3½	156	60	18 " 0 "	x 30 " 0 "	10'-10''	10	24	20	24 x 18 " 4 "	x 12 " 0 "	8	10	8	10	
19E	300	5	375	50	20 " 0 "	x 42 " 6 "	13'-3''	24	24	20	24 x 41 " 8 "	x 12 " 0 "	8	10	12	18	
22A	450	6	560	45	18 " 0 "	x 44 " 3 "	13'-1''	36	24	20	24 x 61 " 8 "	x 12 " 0 "	8	10	12	20	
23A	500	6	625	45	19 " 0 "	x 44 " 3 "	13'-1''	40	24	20	24 x 68 " 4 "	x 12 " 0 "	8	10	12	20	
24A	600	7	750	45	20 " 0 "	x 44 " 6 "	14'-6''	48	24	20	24 x 81 " 8 "	x 12 " 0 "	8	10	12	20	

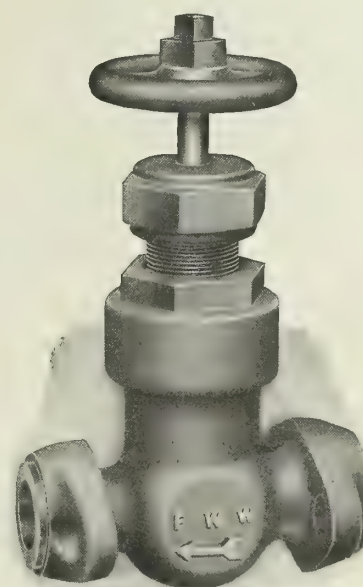
We have a complete line of cross compound compressors of one hundred tons' capacity and up, regarding which we will send complete information on request.

CO-OPERATION.

We shall be pleased to send lists of users and testimonials; also, to take up correspondence with any one interested in mechanical refrigeration, and to furnish estimates on requirements.



SQUARE AMMONIA FLANGES

SQUARE-FLANGED AMMONIA
RETURN-BEND

AMMONIA EXPANSION VALVE

AMMONIA
FITTINGS.

Our Ammonia Fittings are made of a special semi-steel casting which has been tried and tested and proved a high-grade composition for ammonia castings. All fittings are recessed male and female and are bolted together with gaskets between the joints. We use either wrought-iron lap-welded pipe or a pipe especially manufactured for ammonia use. The flanges on the pipes are screwed, shrunk and soldered on while the pipe is hot, and after the flange has been attached in this manner the back of same is flushed with solder to make a perfectly tight joint. All ammonia pipe and fittings are tested to a 500-pound air pressure before shipment.

YORK MANUFACTURING CO.

MANUFACTURERS OF

Ice-Making and Refrigerating Machines

MAIN OFFICE AND WORKS

YORK, PA.

GENERAL WESTERN OFFICE, CHICAGO, ILL., 1660 Monadnock Building

BRANCH OFFICES

NEW YORK, N. Y., 72-76 Trinity Place
 BOSTON, MASS., 88 Broad Street
 ST. LOUIS, MO., 20 South Main Street
 OAKLAND, CAL., United Iron Works Building

PHILADELPHIA, PA., 1001 North American Building
 PITTSBURG, PA., 318 Liberty Avenue
 ATLANTA, GA., 13 South Forsyth Street
 HOUSTON, TEXAS, 2010 Congress Avenue

PRODUCTS.

Manufacturers of complete ICE-MAKING and REFRIGERATING PLANTS; COMPRESSION SYSTEMS, including VERTICAL SINGLE-ACTING and HORIZONTAL DOUBLE-ACTING AMMONIA COMPRESSORS, in all sizes; MACHINES of the ABSORPTION TYPE, AMMONIA CONDENSERS, BRINE COOLERS, and AMMONIA FITTINGS and SUPPLIES of all kinds; BOILERS and TANK WORK.

CONSTRUCTION.

The illustrations on the opposite page show the construction of our Standard Ammonia Compressors. We also build these machines with tandem or cross compound engines, or belt drive, as may be required. Bulletins describing them in detail may be had upon application.

FITTINGS AND SUPPLIES.

Our Fittings and Supplies are carried in stock at the following places, and can be supplied promptly. Catalogue and price-list will be furnished upon application:

NEW YORK, N. Y., 72-76 Trinity Place, SHIPLEY
 CONSTRUCTION & SUPPLY Co.
 CHICAGO, ILL., 53-55 S. Clinton Street, WESTERLIN &
 CAMPBELL Co.
 PITTSBURG, PA., 318 Liberty Avenue, GREENWOOD
 CONSTRUCTION & SUPPLY Co.
 ATLANTA, GA., 13 South Forsyth Street, YORK MANU-
 FACTURING Co.

ST. LOUIS, MO., 20 South Main Street, PILSBRY-BECKER
 ENGINEERING & SUPPLY Co.
 BUFFALO, N. Y., Cor. Perry and Mississippi Streets,
 WEGNER MACHINE Co.
 BOSTON, MASS., 88 Broad Street, BAY STATE CONSTRUC-
 TION & SUPPLY Co.
 OAKLAND, CAL., UNITED IRON WORKS.
 LOS ANGELES, CAL., UNITED IRON WORKS.
 SEATTLE, WASH., UNITED IRON WORKS.

FACILITIES.

Our market covers the entire world. We are the largest manufacturers of Ice-Making and Refrigerating Machinery in the world, employing over 1,200 men in the manufacture of this class of machinery exclusively.

We build machines in sizes from one ton capacity per twenty-four hours, up to the largest sizes required by the market.

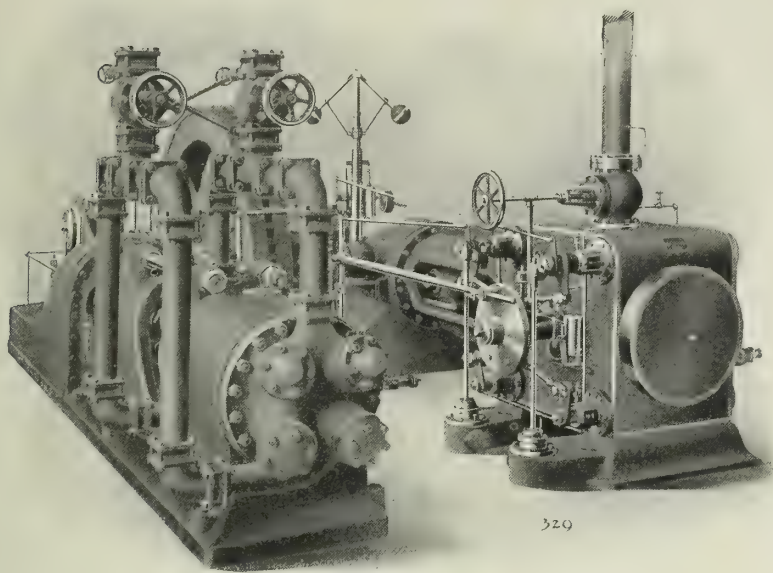
ESTIMATES.

We shall be pleased to furnish estimate on any installation requiring this class of machinery.

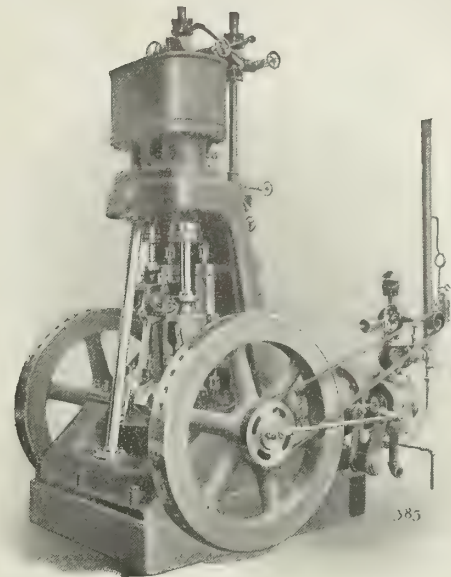
In sending requests for prices, kindly be careful to state concisely the work the refrigerating machine is to accomplish and the conditions under which the plant is to be installed.

INSTALLATIONS.

We have installed, in the past eleven years, over 1,600 Ice-Making and Refrigerating Plants of all sizes, aggregating a total approximately of 85,000 tons of refrigeration per day. A list of installations will be furnished upon application.



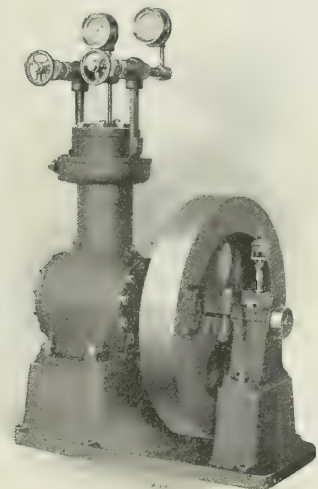
DOUBLE-ACTING REFRIGERATING MACHINE



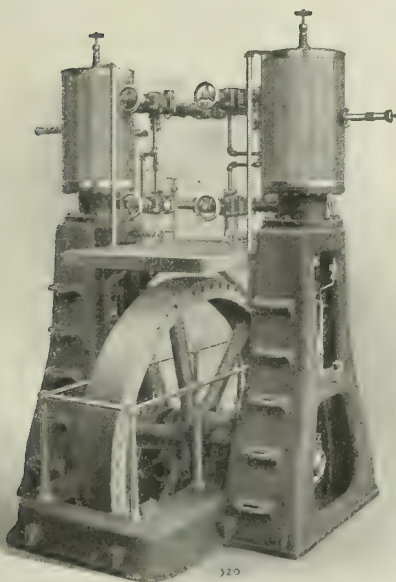
SINGLE-ACTING MACHINE
1 to 10 tons capacity



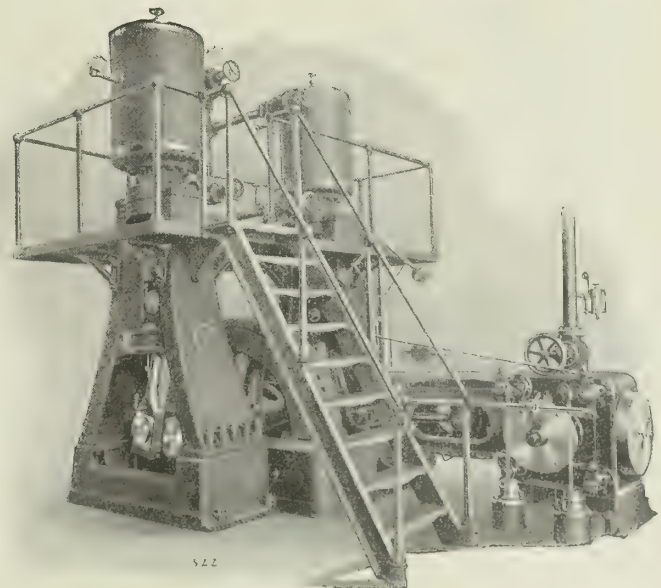
DOUBLE-PIPE COUNTER-CURRENT AMMONIA CONDENSER



ENCLOSED TYPE MACHINE
1 to 17 tons capacity



SINGLE-ACTING BELT-DRIVEN MACHINE



SINGLE-ACTING REFRIGERATING MACHINE

STEVENSON COMPANY

Cold-Storage and Freezer Doors

CHESTER, PA.

PRODUCT.

"STEVENSON'S" PATENTED AUTOMATIC DOORS for Refrigerating Apartments.

CONSTRUCTION.

These Doors are shipped with their door-frames, hinges and fasteners complete, ready to be set in place, screwed fast and used. As shown in the following diagram, the door makes an overlapping contact, with a soft hemp gasket in the joint, and is held to its seat against front of door-frame by powerful elastic hardware (two styles of fastener). The thick portion of the door fits loosely, so that considerable change of size, form, and position due to wear, swelling, etc., does not make it leak or bind.

All old-style doors when they work badly or leak must be eased, thus forever destroying their fit; a slight readjustment of our door-frame restores our door to its original perfection of fit and freedom in a minute at no expense. As these doors do not stand in the doorway when open, it can be six inches less in width than for old-style doors—an important economy in refrigeration.

ADVANTAGES.

A perfect seal at top, bottom, and corners; has patented adjustable, flexible door-frame; can not stick, leak, or wear out; works from either side; gives clear doorway; includes lock; made for concrete or asphalt floors; has beveled threshold where trucks are used.

The opening in wall to receive these door-frames should be $3\frac{1}{2}$ inches wider and $4\frac{1}{2}$ inches higher than the size of the doorway in the clear, following construction numbered 1 and 2, Page 11. For overhead track doors this rough opening should extend $13\frac{1}{2}$ inches above the lower edge of track. Door-frames are secured with lag screws $\frac{3}{8}$ x 4 inches inserted through front casing at A.

DETAILS.

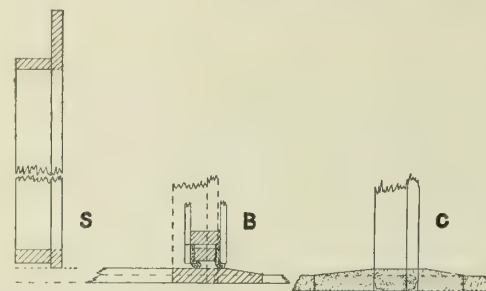
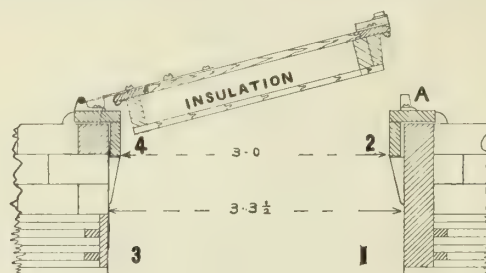
Fig. S shows door-frame with full standard sill and head used on all sizes of door-frames. Only for walking through.

Fig. B shows our wooden beveled threshold which connects lower ends of door-frame and forms a part of it, let down into floor. No jolt, no feather edge, no splinters. For warehouses; accommodates trucks.

Fig. C, concrete floor, shows lower ends of door-frame extending three inches below the surface of the floor and connected by angle irons extending across doorway from one side to the other below the surface.



"STEVENSON'S" AUTOMATIC DOOR
FOR REFRIGERATING APARTMENTS
Fastens and tightens itself



DIAGRAMS SHOWING CONSTRUCTION OF THE "STEVENSON" AUTOMATIC DOOR

SPECIAL PATTERNS.

Doors for abattoirs and beef houses with port in head of door-frame to accommodate over-head track.

Special freezer doors for icy doorways on a modified plan for intermittent or continuous freezers as well as for high temperature rooms; perfectly tight and perfectly free; regardless of temperature, moisture, or accumulation of ice.

Revolving doors for ice-cream hardening rooms.

Combined self-closing ice door and chute of two styles. Ice counters.

Fireproof metal-covered doors made the same as above, covered all over door and all over door-frame with metal sheets, lock-seamed in the most approved manner.

J. B. COLT COMPANY

MANUFACTURERS OF

"Colt" Acetylene Generators

21 Barclay Street
NEW YORK, N. Y.

TELEPHONES, 8120, 8121 CORTLAND

PRODUCTS.

"COLT STANDARD" DUPLEX CARBIDE-FEED ACETYLENE GENERATORS, for lighting country estates; "COLT STANDARD" CARBIDE-FEED ACETYLENE GENERATORS, for average requirements; "COLT MUNICIPAL" ACETYLENE GENERATORS for town plants; PORTABLE LIGHTING OUTFITS.

GENERAL INFORMATION.

Giving perfect light without addition of mantles, and a 25 candle-power flame, being not over $\frac{3}{4} \times \frac{3}{4}$ inch, this modern illuminant is ideal in adaptability to fixtures. Since the light is unvarying in candle power, also steady, the system is not "gas-lighting" as that term is generally understood. The acetylene flame is incandescence itself, for the gas (if generator is made right) is 93 per cent carbon. The light is cool; the consumption of oxygen nil in any normally ventilated place—hence healthful.

The gas is non-poisonous. It has no greater ignition hazard than ordinary coal-gas. The light costs less than kerosene, on equal candle-power basis.

ADVANTAGES.

Harmony in Decorations and Furnishings—Under acetylene, colors show their true values, and may be matched. What this means in an esthetic sense is immediately apparent. This perfect color-balance, i. e., natural quality, also proves greater suitability to human use. Our eyes were made for natural light.

Reliability of Service—There is no fast-moving mechanism in a "Colt" Generator. Chains and other non-positive devices are not used. Positive operation of the apparatus is based on the simple law of gravity. The machine merely replaces the gas as consumed. Movement of the working parts is slow.

First Cost Low—A plant of sufficient size to supply a given number of lights costs less than any other independent system of like capacity. Large demands are thus taken care of by comparatively small initial outlay.

The Simplest Independent System of Lighting—Since the apparatus is not subject to the wear and tear of power-driven machinery, maintenance cost is almost, and often is, nothing. Skilled attendance is never necessary. "Colt" Generators are self-operative.

INSURANCE.

The National Board of Fire Underwriters permits the installation of "Colt" Generators inside insured premises without increase of rates.

CO-OPERATIVE SERVICE.

Our engineering department is at command at all times in laying out complete installations, in order that conditions may be properly met and satisfaction assured the client. Our experience has been wide. Write us for catalogue and any technical information desired.

USERS.

"Colt" Generators have been adopted as standard by the United States Lighthouse Establishment. A special booklet, entitled "A Few Users of Modern Light," illustrates residences of prominent installations. This we will send on request. Catalogue gladly forwarded also. Address as above.

COLT
TRADE MARK.



ABOVE RESIDENCES LIGHTED
BY "COLT" ACETYLENE

BEARDSLEE CHANDELIER MANUFACTURING COMPANY

225-229 South Clinton Street

CHICAGO, ILL.

LOCAL AND LONG DISTANCE TELEPHONE, MAIN 1

CABLE ADDRESS, "BEARDSLEE"
WESTERN UNION CODE

PRODUCTS.

LIGHTING FIXTURES for Residences, Churches, Office Buildings, etc., consisting of GAS, ELECTRIC and COMBINATION FIXTURES, ELECTROLIERS, PORTABLES, CEILING LIGHTS, BRACKETS, ART-GLASS DOMES and SHADES (Coppered and Leaded), GAS FITTINGS, ELECTROLIER and CHANDELIER GLASSWARE, and ELECTRIC and GAS LIGHTING SUPPLIES.

OUR WORK.

We manufacture only first-class goods. First-class in design, material and workmanship. Our designs are thoroughly up-to-date, and cover all requirements. We carry at the factory ready to ship a large stock of finished material; not the complete line, but a sufficient variety for every-day wants, including fixtures designed for Tungsten lamps.

SPECIAL DESIGNS.

Our Designing Department is prepared to furnish special designs in any style or period upon request, when supplied with the necessary information such as style of architecture, size, use and character of room and location of the fixtures. We are always pleased to figure on architects' designs or to make sketches in accordance with the ideas or suggestions of architects, decorators or owners. Cuts on these pages give an idea of the different styles.



ELECTROLIER NO. 2598



ELECTROLIER NO. 2605



ELECTROLIER NO. 2630

PRICES, AND
INSTALLING.
SALESROOMS
AND MANU-
FACTORY.
GUARANTEE.

CATALOGUES,
ESTIMATES,
AND CO-
OPERATIVE
SERVICE.

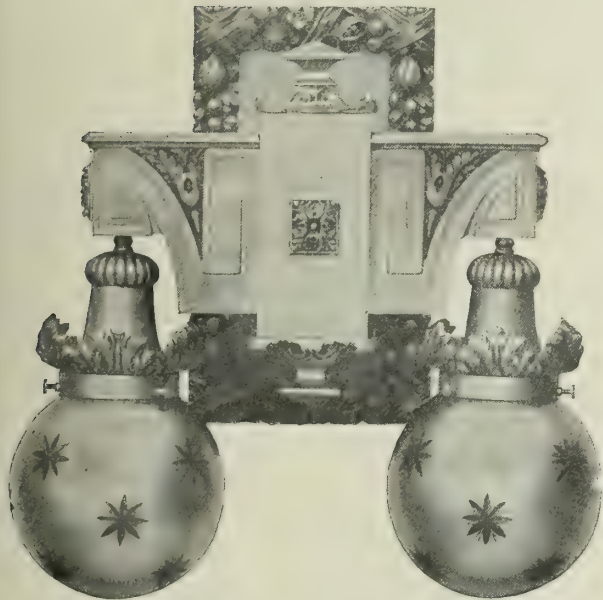
We do not install fixtures, but operate through local dealers who are in a position to quote prices on fixtures installed.

Our salesrooms are complete in every detail and we earnestly solicit a visit to same. We shall take pleasure in showing you our facilities for manufacturing the most elaborate as well as the medium or inexpensive fixtures and in any quantities.

Our name is readily accepted as a guarantee of anything of our manufacture. In fact "Beardslee" is synonymous with "quality" in lighting fixtures the world over.

Our catalogues are distributed to all dealers in lighting fixtures, to electrical contractors, plumbers and gas and electric companies, free of charge. These may usually be found in their catalogue libraries. Catalogues are issued from time to time and in this way are kept up to date. The material carried in finished stock is in separate catalogues called "S" (Stock) catalogues.

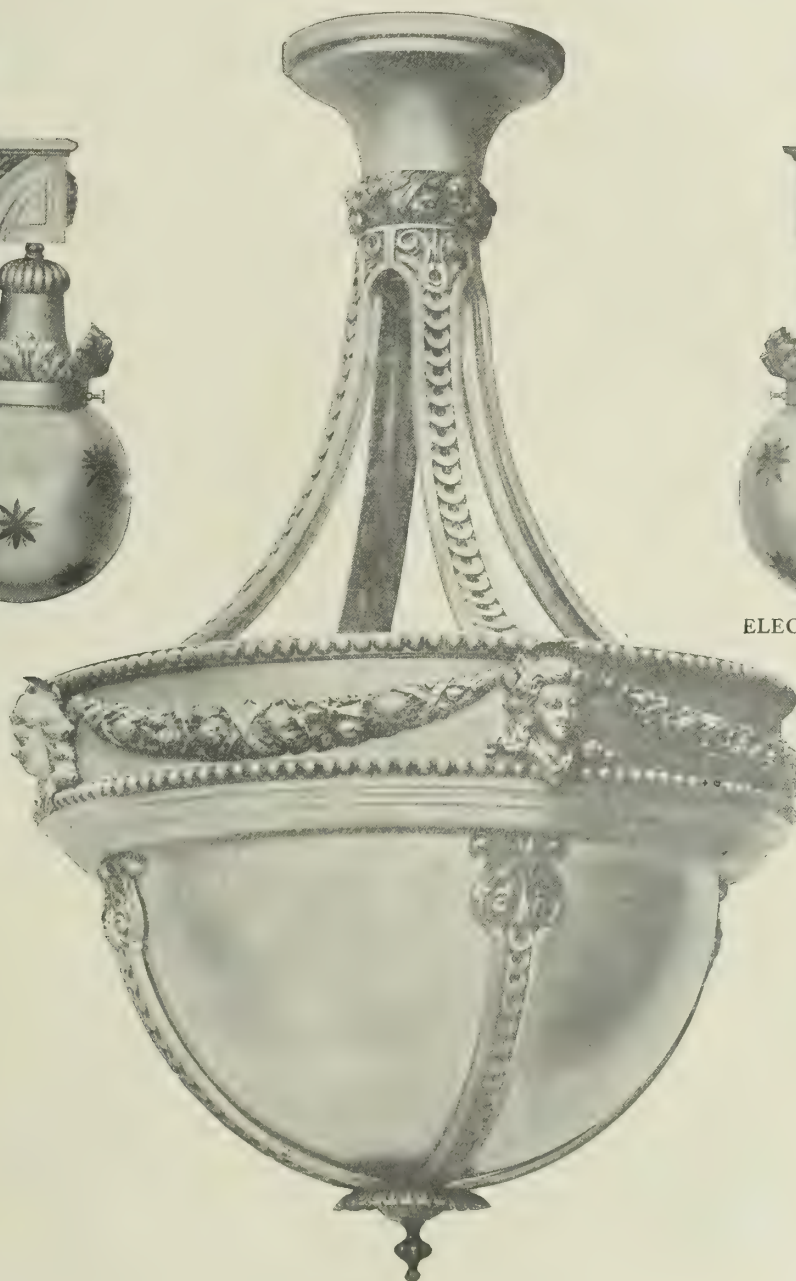
Dealers and contractors will be glad to make estimates on any material desired, or will call on architects when requested and furnish any information necessary in specifying our goods. We shall be glad at any time to furnish a list of local dealers or to furnish architects with our catalogues, express prepaid, for use in making selections or in specifying our goods. When selections can not be made complete from catalogues we will furnish special designs.



ELECTROLIER NO. 2631



ELECTROLIER NO. 2632



ELECTROLIER NO. 2636

BENJAMIN ELECTRIC MFG. COMPANY

Wireless Clusters, Electric Lighting Appliances

MAIN OFFICE AND FACTORY

CHICAGO, ILL.

BRANCH OFFICES

NEW YORK, N. Y., 27 Thames Street

TORONTO, CAN., 64 York Street

SAN FRANCISCO, CAL., 151 New Montgomery Street

PRODUCTS.

"BENJAMIN" WIRELESS CLUSTERS; ELECTRICAL FIXTURES; LAMP GUARDS; ATTACHMENT PLUGS; OUTLET-BOX RECEPTACLES; SOCKETS; LIGHTING SPECIALTIES for Stores, Windows and Show-Cases; GENERAL INDOOR and OUTDOOR ELECTRIC LIGHTING.

UTILITY.

"Benjamin" Wireless Clusters are used in store, office, municipal and government buildings; churches, schoolhouses, warehouses; in short, every place where reliable and efficient fixtures are required.

WIRELESS CLUSTERS.

"Benjamin" Wireless Clusters are made in Edison base, and range from two to seven lights. By simply attaching the two current wires to the cluster body, all lights are connected. Any standard reflector or shade may be used. Clusters have bushing at the bottom for pendant switch. They can be installed for less money than any other system of lighting.

FINISH.

Standard Finish is polished brass. Brushed (old) brass, dead black, or aluminum metal may be substituted without additional charge; nickel, oxidized, or mottled copper at an increase of 10 per cent list.

UNDER-WRITERS' APPROVAL. PRICES AND DISCOUNTS.

"Benjamin" Wireless Clusters and Fixtures are National Electrical Code Standard.

The prices quoted in the following tables are list, and subject to the usual trade discounts. Net prices may be secured from any jobber, dealer, or electrical contractor. Our new catalogue, B-18, will be sent on application.

STANDARD WIRELESS CLUSTERS.

Standard Wireless Clusters are provided with flange tapped for $\frac{3}{8}$ -inch iron pipe. Steel covers adapted for attaching to 3 or 4 inch outlet boxes will be furnished at an advance of 10 cents list.

SIZES, PRICES, ETC.



TYPE 2—DIAM. $2\frac{1}{2}$ "
Catalogue No. 22



TYPE 1—DIAM. 4"
Catalogue No. 15



TYPE 1K—DIAM. 4"
Catalogue No. 16K

STANDARD WIRELESS CLUSTERS

Cat. No.	No. of Lights	List Price Each	Cat. No.	No. of Lights	List Price Each
Type 2			Type 3		
22	2-Light	\$1.35	32	2-Light	\$1.60
23	3-Light	1.60	33	3-Light	1.85
Type 1			Type 3T		
12	2-Light	\$1.60	32T	2-Light	\$1.75
13	3-Light	1.85	33T	3-Light	2.00
14	4-Light	2.10	34T	4-Light	2.25
15	5-Light	2.35	35T	5-Light	2.50
16	6-Light	2.60	36T	6-Light	2.75
Type 1K			Type 600		
13K	3-Light	\$1.85	608	8-Light	\$5.00
14K	4-Light	2.10	610	10-Light	5.60
15K	5-Light	2.35	612	12-Light	6.20
16K	6-Light	2.60	615	15-Light	8.00
17K	7-Light	2.85	620	20-Light	10.00



TYPE 3—DIAM. $3\frac{3}{8}$ "
Catalogue No. 32



TYPE 3T—DIAM. $4\frac{3}{8}$ "
Catalogue No. 34T



TYPE 600—DIAM. $6\frac{3}{4}$ "-11 $\frac{3}{4}$ "
Catalogue No. 608

SEPARABLE
WIRELESS
CLUSTERS.
SIZES,
PRICES, ETC.

Separable Wireless Clusters consist of two principal parts, separably connected, making it possible to replace broken reflectors without disturbing wire connections.



TYPE 5
Catalogue No. 56

SEPARABLE WIRELESS CLUSTERS					
Cat. No.	Type 5	List Price Each	Cat. No.	Type 5 K	List Price Each
52	2-Light	\$1.60	53K	3-Light	\$1.85
53	3-Light	1.85	54K	4-Light	2.10
54	4-Light	2.10	55K	5-Light	2.35
55	5-Light	2.35	56K	6-Light	2.60
56	6-Light	2.60	57K	7-Light	2.85



TYPE 5K
Catalogue No. 55K

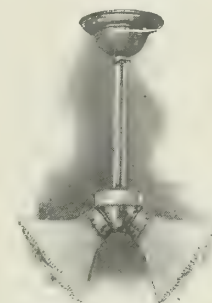
PENDANT
FIXTURES.



14-INCH OPAL REFLECTOR
Catalogue No. 052P

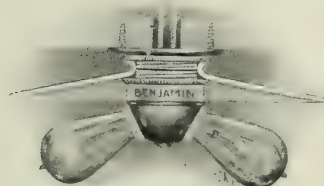
PENDANT FIXTURES					
052P	2-Light	\$3.15	012V	2-Light	\$3.95
053P	3-Light	3.40	013V	3-Light	5.05
054P	4-Light	3.65	014V	4-Light	6.15
055P	5-Light	3.90	015V	5-Light	7.25
056P	6-Light	4.15	016V	6-Light	8.35
053KP	3-Light	3.40	013KV	3-Light	5.05
054KP	4-Light	3.65	014KV	4-Light	6.15
055KP	5-Light	3.90	015KV	5-Light	7.25
056KP	6-Light	4.15	016KV	6-Light	8.35
057KP	7-Light	4.40	017KV	7-Light	9.45

The letter "K" in above listing indicates cluster has a bottom light.



HOLOPHANE SHADES
Catalogue No. 012V

CEILING
FIXTURES.



14-INCH OPAL REFLECTOR
Catalogue No. 512P

CEILING FIXTURES						
512P	2-Light	\$2.70	331B	1-Light	6-in. Globe	\$2.10
513P	3-Light	2.95	332B	2-Light	8-in. Globe	5.20
514P	4-Light	3.20	333B	3-Light	8-in. Globe	5.45
515P	5-Light	3.45				
516P	6-Light	3.70				



C. R. I. GLOBE 6" x 3 1/4"
Catalogue No. 331B

ANGLE
SOCKETS,
WEATHER-
PROOF
SOCKETS.



ANGLE SOCKET
Catalogue No. 411

ANGLE SOCKETS			WEATHER-PROOF SOCKETS		
411	Polished Brass	1/8 in. \$0.35	4200	Aluminum Shell tapped	1/2 in. \$0.70
451	Polished Brass	1/4 in. .35	4201	Aluminum Shell tapped	3/8 in. .70
431	Polished Brass	3/8 in. .40	4201M	Aluminum Shell tapped	3/8 in. male .70

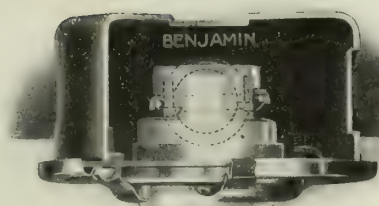
For nickel-plated finish on Angle Sockets add 4 cents to list price.

For weather-proof sockets with 2 1/4 inch and 3 1/4 inch shade holders add 20 and 35 cents respectively to list price.



W. P. SOCKET
Catalogue No. 4200

OUTLET-BOX
RECEPTACLES
AND COVERS.

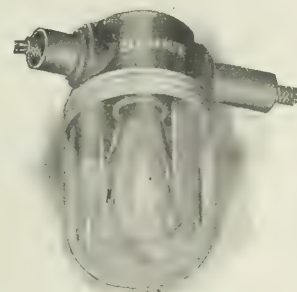


RECEPTACLE MOUNTED
3" OUTLET BOX WITH 3623B COVER
Catalogue No. 6B

OUTLET BOX RECEPTACLES	
Cat. No.	
6B	Outlet-Box Receptacle with Bolts \$0.20
3623	Steel Plate for 3-inch Outlet Box .10
3624	Steel Plate for 4-inch Outlet Box .12
3623B	Plate with 3-inch Polished Brass Cover .20
3624B	Plate with 4-inch Polished Brass Cover .25

MOISTURE PROOF OUTLET BOXES	
Cat. No.	
622	Less Globe or Holder tapped 1/2-inch \$0.90
623	Less Globe or Holder, tapped 3/4-inch .90
624	With Globe and Holder, tapped 1/2-inch 2.00
625	With Globe and Holder, tapped 3/4-inch 2.00
626	Globe only, 5 inches deep .70

Prices do not include aluminum reflector.



M. P. OUTLET BOX
Catalogue No. 624

MOISTURE-
PROOF OUT-
LET BOXES.

THE DALE COMPANY

MANUFACTURERS OF

Electric, Gas, and Combination Fixtures

Ninth Avenue, Thirteenth and Hudson Streets

NEW YORK, N. Y.

PRODUCTS.

GAS, ELECTRIC, and COMBINATION FIXTURES; LIGHTING SPECIALTIES; REGULAR and DETACHABLE WIRELESS CLUSTERS; CANOPY INSULATOR COLLAR.

WIRELESS CLUSTERS.

The "Dale" Detachable Cluster is made in two parts, the base and the cluster body, and is completely insulated with best quality porcelain, no fiber insulation being used.

ADVANTAGES.

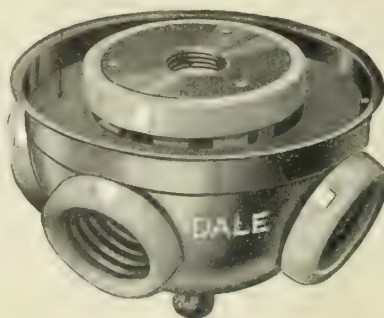
A simple push securely locks the body of the cluster to the base, and a pull detaches it. One of the advantages of the Detachable Cluster is that the base may be wired up, but the body, shade, lamps, etc., need not be installed until after the workmen are out of the building. The body and shade may be quickly removed without disturbing any wire connections, thus proving the Detachable Cluster to be a time and money saver.



DETACHABLE CLUSTER



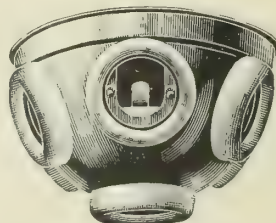
WIRELESS CLUSTER PENDANT
No. 298, Detachable
No. 198, Regular



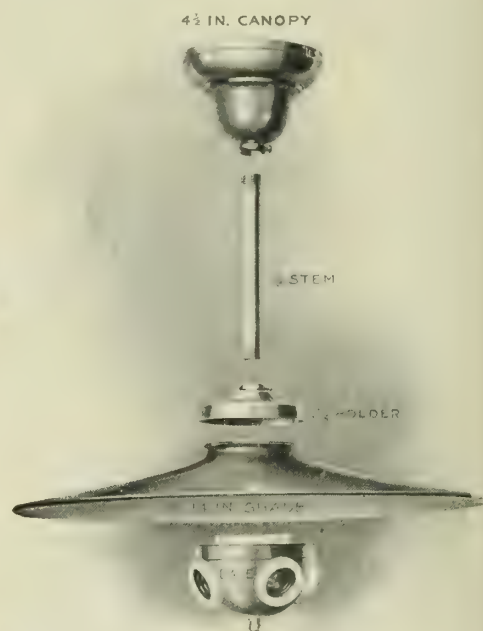
WIRELESS CLUSTER
No. 210, Detachable Type
No. 197, Regular Type



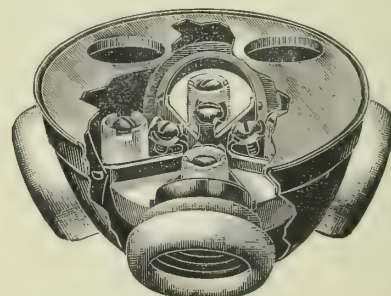
WIRELESS CLUSTER
No. 221, Detachable Type
No. 202, Regular Type



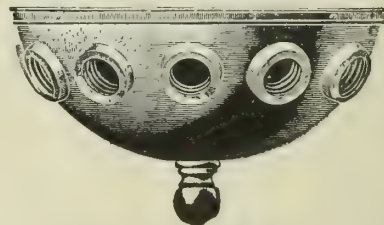
WIRELESS CLUSTER
No. 213, Detachable Type
No. 227, Regular Type



DETACHABLE CLUSTER PENDANT



CONVERTIBLE CLUSTER NO. 130



GIANT CLUSTER NO. 179

DESCRIPTION
AND PRICES.

A few Wireless Clusters are herewith described and list prices given:

No. 210, Detachable; No. 197, Regular. Multiple or series; with removable knob or with bushing for pendant switch.

List prices: Multiple, 2-Light, \$1.60; 3-Light, \$1.85; 4-Light, \$2.10; 5-Light, \$2.35; 6-Light, \$2.60.
Series, 2-Light, \$1.70; 3-Light, \$1.95; 4-Light, \$2.20; 5-Light, \$2.45.

No. 213, Detachable; No. 227, Regular. Multiple only; light on bottom.

List prices: 3-Light, \$1.85; 4-Light, \$2.10; 5-Light, \$2.35; 6-Light, \$2.60; 7-Light, \$2.85.

No. 221, Detachable; No. 202, Regular. Multiple only, with ten ampere, 220 volt dead center, metal key, snap switch.

List prices: 2-Light, \$2.60; 3-Light, \$2.85; 4-Light, \$3.10; 5-Light, \$3.35; 6-Light, \$3.60.

No. 298, Detachable; No. 198, Regular. Multiple or series; wireless cluster pendant complete with twelve-inch stem and sixteen-inch flat opalescent shade.

List prices: Multiple, 2-Light, \$3.45; 3-Light, \$3.70; 4-Light, \$3.95; 5-Light, \$4.20; 6-Light, \$4.45.
Series, 2-Light, \$3.55; 3-Light, \$3.80; 4-Light, \$4.05; 5-Light, \$4.30.

Giant Cluster No. 179. Multiple type only; takes 8, 10, 12, 15 or 20 lights in a single row; tapped for three-eighths-inch iron pipe; also 30, 40, or 50 lights in double row; tapped for half-inch iron pipe.

List prices: 8-Light, \$5.00; 10-Light, \$5.60; 12-Light, \$6.20; 15-Light, \$8.00; 20-Light, \$10.00; 30-Light, \$15.00; 40-Light, \$20.00; 50-Light, \$25.00.

Convertible Cluster No. 130 is unique in construction, as it combines the features of a multiple and series type. It can be used either way, and also allows any individual light or combination of lights to be connected up separately.

List prices: 2-Light, \$1.70; 3-Light, \$1.95; 4-Light, \$2.20; 5-Light, \$2.45; 6-Light, \$2.70.

FINISH.

Prices cover the standard finishes, viz., polished brass, brushed (old) brass, rich gilt, and black iron. For nickel, steel or copper finishes add ten per cent, and for silver, gold, white enamel or verd-antique finishes add twenty per cent. Where finish is not specified on the order, polished brass will be furnished.

CANOPY
INSULATOR
COLLAR.

This is a new product to fill the demand for insulation between fixture and wall or ceiling. It consists of a receptacle, split insulating bushing and a locking collar with tapering screw thread. The advantage in the tapering thread is the elimination of the set screw which is otherwise necessary to hold the canopy in position. These can be obtained in all standard sizes. National Code standard. List price, unfinished, \$25.00 per hundred.

STOCK.

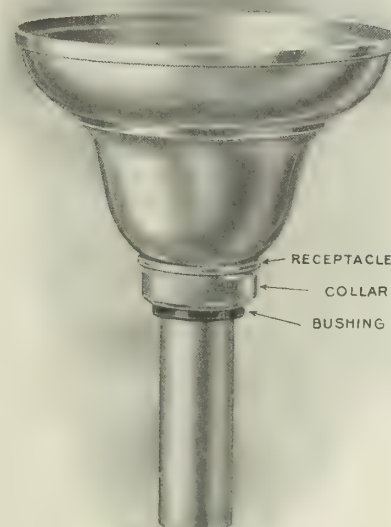
Owing to the large assortment of fixtures, etc., manufactured by us, and the variety of finishes, it is impossible to carry a complete stock of the finished products on hand. We can, however, by reason of our large supply of the unfinished product, fill orders, on short notice, in the finish desired.

SPECIFICA-
TIONS.

Architects should specify: "All electric, gas and combination fixtures and supplies to be manufactured and furnished by THE DALE COMPANY."



PARTS OF CANOPY INSULATOR
COLLAR



CANOPY INSULATOR COLLAR
IN PLACE

THE INCANDESCENT LIGHT AND STOVE COMPANY

MANUFACTURERS OF

Gasoline Lighting, Heating, and Cooking Stoves

413-426 East Pearl Street

CINCINNATI, OHIO

CABLE ADDRESS, "AIRLIGHT, CINCINNATI"
A B C CODE, 5TH EDITION

PRODUCTS.

We are manufacturers of "F-P" GAS MACHINES; "F-P" GAS STOVES; "STUBBERS" LIGHTS and FIXTURES.

FIRST.

Ordinary stove gasoline is used as base for gas, and after initial starting the quantity produced is regulated by the consumption.

DESCRIPTION AND GENERAL CONSTRUCTION.

Every part that comes in contact with gasoline is made of copper or brass. Tank (A) is of seamless copper, with brass head fused on, tested to withstand pressure of 500 pounds to the square inch. Generator (B) is of one piece and seamless. There is therefore no possibility of leaking joints. The generating burner entirely surrounds the generator, thereby directing flame horizontally against it, so reducing to a minimum the amount of gas required to heat generator. Quick and smokeless generation can be accomplished in thirty seconds; no alcohol torches or liquid gasoline needed. By the use of a governor (C), which is adjusted to release the gas into a pipe (E), that conducts it to the outside of the building when the pressure in the tank reaches 75 pounds, there is no possibility of explosion. The entire generating mechanism is enclosed in a metal box (D), which does not take up a space of more than one square foot. This enclosure is made, not to prevent draughts from blowing out the generating flame (which in other gasoline lighting machines allows liquid gasoline to run out of the valves, causing fire), but to keep inflammable material from coming in contact with the flame. This machine should not be confounded with applications for using gasoline for heating or cooking. The "F-P" is a gas machine pure and simple.

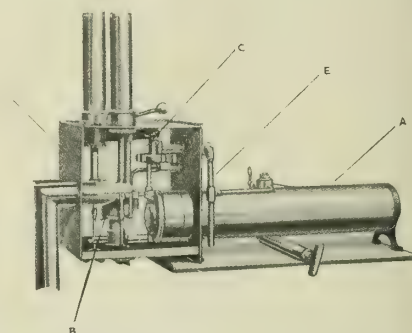


FIG. 1. MODEL "H" GAS MACHINE

LOCATION OF MACHINE.

The gas machine can be placed where most convenient for operation. It is usually placed in the kitchen or a back room.

EFFICIENCY.

The following table shows the increased illumination derived from an "F-P" Gas Machine. Candle-power is based on the ordinary burners now in use, and figures are, of course, estimates only.

Kerosene Lamps (dependent upon size),	5 to 50 candle-power.
Electric Lamps,	12 to 16 candle-power.
Electric Lamps, Tungsten 25 W.,	25 to 27 candle-power.
Electric Lamps, Tungsten 40 W.,	32 to 40 candle-power.
Coal Gas (burning without a mantle),	14 to 18 candle-power.
Coal Gas (burning with a mantle),	75 to 100 candle-power.
"Stubbers" Lights,	300 to 400 candle-power.

ECONOMY.

A gallon of gasoline will furnish sufficient gas to run one "Stubbers" Light for 40 to 45 hours. When the "F-P" stove is used, a gallon of gasoline will give 40 per cent more heat for cooking purposes than will any gasoline stove on the same amount of fuel.

DURABILITY.

The machine can not explode. It will last indefinitely with trifling repairs.

SAFETY.

Either overflows or leaks are directly responsible for all gasoline accidents. Filling the "F-P" machine to overflowing is impossible. Our Safety Filling Can prevents it and is furnished free with each machine. The construction of the can is shown in cut, Fig. 2. Because of equalized air-pressure (see cut) leaks from open valves are impossible. Through the use of noncorrosive metals fused together in the construction of the tank it can not leak. It is impossible to create pressure of more than one fifth of what the tank will stand without the vapor being automatically conducted through the escape-pipe to the outside of the building. Gas can not escape into the room while the tank is being filled, as a pipe connects fill opening to main escape pipe that will convey all vapor to the outside of building before fill plug can be removed. Pressure is governed automatically after the machine is started, thus eliminating any possibility of explosion. No liquid gasoline is conveyed into or through the building.

INSURANCE.

Insurance Companies give permission for the installation of "F-P" machines without extra charge.

"STUBBERS"
LIGHTS.

These lights are the most brilliant and powerful, yet the softest and easiest on the eyes, of any artificial lights known. "Stubbers" Lights can not be compared to any other, as the quality of light supplied is so superior. They give less heat per candle-power than does electricity. "Stubbers" Indestructible Mantles can be crumpled before use without danger of breaking. They cost but \$1.00 per dozen, postage prepaid. Because of the superior construction of our Lights and our perfectly mixed gas, there is no odor from unburned gas or products of combustion. Through the use of the inverted mantles, we overcome shadows. The "Stubbers" Light is the most brilliant, steady and satisfactory, yet the cheapest light on the market.

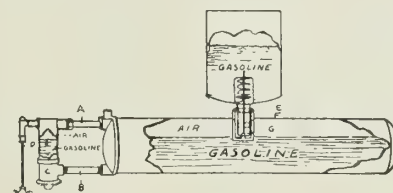


FIG. 2. CAN-FILLING GASOLINE TANK

COST AND
TERMS.

We can not quote prices with any degree of accuracy unless we know the number and different styles of fixtures desired, length of piping necessary, size of machine, etc., and have a floor plan of the building, showing exact size of the rooms and where piping, fixtures, etc., are to be located. To make the matter of quotation and terms convenient for those interested, upon receipt of an inquiry, one of our representatives, who are located generally in the United States, is notified at once, and will take measurements, quote prices, make terms and install. The "F-P" machine will pay for itself in a short time in the amount that it will save.

USE OF
MACHINE.

The "F-P" will be found satisfactory for any service that natural or artificial gas can be put to.

PIPING.

Architects should provide for the use of "F-P" gas by installing piping of proper size and quality throughout the building during its construction. We shall be glad to advise size of piping necessary (which is dependent upon number of lights to be used) upon receipt of information as to the number of lights desired.

FACILITIES.

We have a force of about 500 employees, and a factory floor space of 65,000 feet, and are prepared to make prompt shipment upon receipt of order, as we carry a large stock on hand at all times.

USERS.

Over 65,000 "F-P" machines are now, August 10, 1909, in use. Names and addresses of users, together with catalogue, gladly furnished on request.

WILLY H. LAU CO.

Manufacturers of Lighting Fixtures

26-28 East Lake Street
CHICAGO, ILL.

TELEPHONE, RAND 1895-6

PRODUCTS.

We design and manufacture LIGHTING FIXTURES for Residences, Banks, Offices and Public Buildings, Churches, Hospitals, Railroad Stations and Government Buildings; also, WROUGHT-IRON and ORNAMENTAL BRONZE WORK for various purposes.

STOCK PATTERNS.

We carry an extensive line of Stock Designs, consisting of staple patterns for use in apartment buildings, etc.

SPECIALTIES.

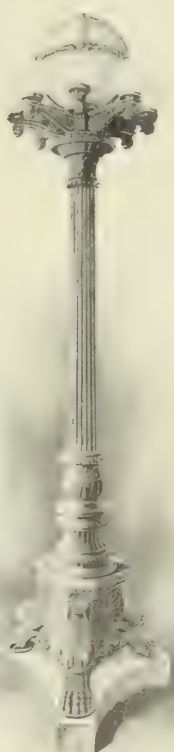
While making a specialty in general of high-class Fixture Work, we wish to announce to our patrons that we are prepared to execute Ornamental Bronze and Wrought-Iron Work on a larger scale than heretofore, and shall be pleased to furnish designs and estimates for both Lighting effects and Ornamental Bronze Work, upon request.

FACILITIES.

We have the most satisfactory facilities for the execution of special designs sent us by architects, from the most intricate to the very simplest, and are in a position to fill orders very promptly.



LAMP, CAST IN STERLING SILVER FOR J. T. TALBOT, CHICAGO, ILL.

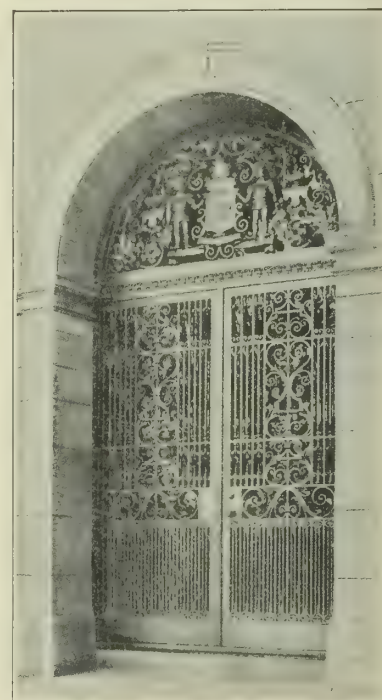


BRONZE STANDARD IN COMMERCIAL NATIONAL BANK, CHICAGO ILL.



LIGHTING FIXTURE IN UNIVERSITY OF CHICAGO, CHICAGO, ILL.

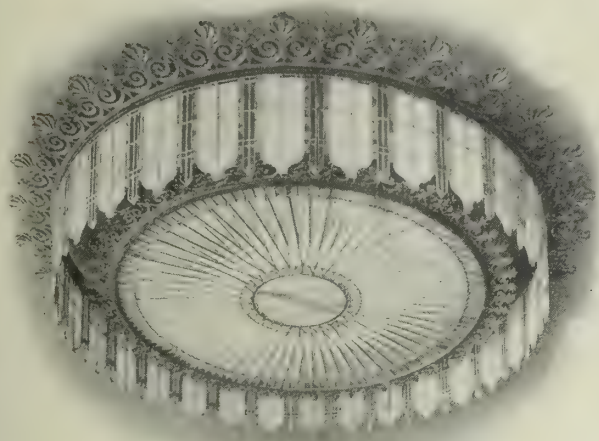
SHEPLEY, RUTAN & COOLIDGE, Architects



BRONZE DOOR IN RESIDENCE OF J. H. BARKER, MICHIGAN CITY, IND.

ILLUSTRATIONS.

We desire to call your attention to a few of the ornamental bronze work, wrought-iron fences, and lighting effects produced in our shop.



CEILING FIXTURE IN CHICAGO, BURLINGTON &
QUINCY RAILROAD OFFICE, CHICAGO, ILL.



BRACKET LAMP, COMMERCIAL NATIONAL BANK,
CHICAGO, ILL.

Height 8 feet 9 inches; Extension 4 feet
F. P. DINKELBERG, Architect



WROUGHT-IRON ORNAMENTAL FENCE FOR RESIDENCE OF
JAMES A. PATTEN, EVANSTON, ILL.



No. 2992



No. 4789



No. 4822

STOCK DESIGNS OF LIGHTING FIXTURES

MOORE ELECTRICAL COMPANY

Sole Manufacturers of The Moore Light

WORKS AND OFFICES

169 Malvern Street

NEWARK, N. J.

PRODUCTS.

THE MOORE LIGHT, an Electric Light from Vacuum Tubes. It comes in two colors, *white* and *yellow*.

DESCRIPTION.

The Moore Light—"A Light that Shineth like the Light of Day"—is produced by an electric current flowing through a long glass tube ($1\frac{3}{4}$ inches in diameter) containing a rarefied gas. The gas is automatically replenished, and thus the life of these tube lamps is extremely long.

WHITE LIGHT FOR COLOR MATCHING.

The *white* Moore Light is produced by using rarefied carbon dioxide. The resultant light is an accurate duplication of average daylight under its varied changes. Wherever it is necessary or desirable to obtain absolute and correct color values the *white* Moore Light is the *only* light found to be perfect. It is used by the largest silk dyers to the exclusion of daylight for their color matching. Art galleries should use no other form of light. It is preferable to daylight for the selection of diamonds. Photographers, florists, department stores and color printers find the perfectly diffused soft white light indispensable for increasing sales and improving the quality of their work.

YELLOW LIGHT FOR ILLUMINAT- ING LARGE AREAS.

The *yellow* Moore Light is produced by using in the tubes rarefied nitrogen obtained from the atmosphere. The illumination thus produced is a reproduction of sunlight, and it is the most efficient light known for illuminating large areas, factories, mills, churches, halls, theaters, offices, department stores, restaurants—in fact, all places where people congregate or many employees work. It is also adaptable to sign and spectacular work.

EFFICIENCY.

Careful tests show that the *yellow* Moore Light produces about four times as much useful illumination as a system of incandescent electric lamps consuming an equal amount of current. The *white* Moore Light is about twice as efficient as incandescent lamps.

RELIABILITY.

Since there are no filaments to burn out or carbons to renew, the cost of maintenance of the Moore Light is extremely low. The Moore Tubes are unaffected by temperature changes. Icicles have often formed on out-of-door tubes without the least harmful effect.

SAFETY.

The Moore Light is by far the safest system of illumination, as is shown by Fig. 1.



FIG. 1. EXTERIOR OF THE MOORE LIGHT TERMINAL BOX

Showing the safety of this system, which requires only a simple feeder from the alternating-current supply, as contrasted to the score of wires shown on the ceiling required by the system previously used in lighting this area, with the accompanying danger of fire. The Moore terminal box is securely sealed and absolutely fireproof



FIG. 2. THE MOORE ELECTRIC LIGHT AS IT IS USED IN THE LARGE MAIN ENTRANCE CORRIDOR OF MADISON SQUARE GARDEN, NEW YORK, N. Y.

PATENTS.

The Moore Light and the special apparatus used in its installation is covered by scores of basic patents issued to D. McFarlan Moore, the pioneer vacuum-tube lighting inventor.

SIZES AND
INTENSITIES.

The Moore Light is furnished in the following approximate lengths of tubes and intensities:

THE WHITE MOORE LIGHT			THE YELLOW MOORE LIGHT		
Length	Intensity per foot	Watts	Length	Intensity per foot	Watts
66 ft.	7 hefners	2400	66 ft.	12 hefners	1600
66 ft.	10 hefners	3250	66 ft.	18 hefners	2400
100 ft.	8 hefners	3250	114 ft.	12 hefners	2400
			114 ft.	18 hefners	3000

The approximate lengths of Moore Tubes listed above can be fashioned into almost any artistic form or shape desirable, but the tube is generally installed either as a large rectangle or a straight run or bent back and forth a number of times. It is sometimes used both under and over skylights and behind cornices, but since the intensity of the light is many times less than that of all other electric lights it is the only one that can justifiably be used without diffusing shades of any kind. By applying an enamel paint to the upper side of the Moore Light Tube, or by using a reflector, all the illumination can be thrown downward.



FIG. 3. THE COLOR MATCHING ROOM OF THE LARGEST SILK DYEING WORKS. USING EXCLUSIVELY THE WHITE MOORE LIGHT

Fig. 3 illustrates the most severe practical test of the white Moore Light; and the Bureau of Standards of the United States Government has also stated after exhaustive tests that it duplicates daylight.

In order that you may secure no imitation specify as follows:

"The lighting throughout shall be that known as The Moore Light, manufactured by the MOORE ELECTRICAL COMPANY, of Newark, N. J."

PRACTICAL
TESTS.
SPECIFICA-
TION.

FIG. 4. THE MOORE LIGHT IN THE REGISTRY DIVISION OF THE NEW YORK POST OFFICE, NEW YORK, N. Y.

Illustration shows only three of the thirty-five straight-run Moore Tubes used by the United States Government over this area approximating nearly one mile of glass-tube lighting, and illuminating 40,000 square feet of floor area. This is probably the best and most efficiently illuminated area in the world.

MUNICIPAL LIGHTING CO.

Gas Lighting Supplies

109 West Forty-First Street

NEW YORK, N. Y.

BRANCHES IN NEW YORK CITY

112 WEST 42D STREET
2310 BROADWAY
2 IRVING PLACE

2084 THIRD AVENUE
350 ALEXANDER AVENUE
1815 WEBSTER AVENUE

32-38 WEST 125TH STREET
139 WEST 125TH STREET
1911 AMSTERDAM AVENUE

PRODUCTS.

GAS LIGHTING SUPPLIES; LAMPS; MANTELS; INVERTED LIGHTS; PORTABLE LIGHTS;
PNEUMATIC GAS LIGHT SYSTEMS; MAINTENANCE OF INCANDESCENT GAS LAMPS.

BUSINESS
AND
SERVICES.

We rent Gas Arc Lamps.

We sell Gas Mantels, Inverted Lights, Portable Lights and
all up-to-date Gas Lighting Devices.

Pneumatic Gas Light Systems.

We are Distributors of Incandescent Gas Lighting Supplies of
all kinds. All lights and supplies including Mantels, Globes,
Chimneys, Shades and Fittings are for sale at all of our branches.

We contract for the Maintenance of Incandescent Gas Lamps.

All orders receive prompt attention.

GAS ARC
LAMPS.

The Gas Arc Lamp is used as an exterior illuminator of the
shop window. Its soft diffusive brilliancy and the remarkable
intensity of its light make this lamp an essential requisite of up-to-
date successful window display.

INSIDE GAS
ARC LAMP

RENTAL.

Our Rental System of Arc Lighting insures the best lighting
at the lowest possible cost to the consumer.

Our Rental and Maintenance System insures the highest
efficiency.

RATES.

Outside Gas Arc Lamps are rented and maintained for one
dollar per month, including installation.

Inside Gas Arc Lamps are rented and maintained for seventy
cents per month, including installation.

Single Incandescent Burners maintained at proportionate low
rates.

OUTSIDE GAS
ARC LAMP

INVERTED
GAS
LIGHTS.

The inverted, incandescent gas burner is at present the last word in illumination. It is the most efficient and effective device which we now have, and it lends itself readily to all schemes of decoration. It can be used in single units or in clusters, in which case pilot lights are provided and all the burners are controlled by one central valve.

ADVANTAGES
OF INVERTED
LIGHTS.

Being inverted they are absolutely shadowless, and cast the greatest portion of their light immediately downward where most needed. They are therefore specially adapted for use where a direct light downward is required, as is the case in restaurants and other public places, as well as in hospitals and buildings where drafting, cloth cutting and other manufacturing operations are carried on.

Nothing yet attempted in illumination can equal these fixtures in attractiveness, or can yield so soft and pleasant a light, diffused evenly within its zone of effectiveness. The lamps are designed in many sizes, and globes and glassware can be had in designs to suit any decoration.

Fancy shades, both in glass and silk, with or without beaded fringe, can be used with these lights and the effect is most attractive. All parts of this appliance are readily removed for cleaning or renewal and the mantles are specially durable by reason of their small size and the method of their attachment to the burner, which permits of suitable vibration, so that the expense of maintaining these lights is much less than in the case of the older types.

These lights have been in use abroad for a number of years, and since their introduction into this country their use has increased so rapidly that now they are in demand wherever gas is used.

GAS
FIXTURES.

Fixtures are made in a number of elaborate designs, both in chandeliers and brackets, of which we carry an extensive line.

These inverted lights can readily be attached to any chandelier or bracket now in use.

RESUME.

This mode of illumination appeals particularly to those who have given thoughtful study to the question of interior illumination, and we believe our devices have without question solved the problem.

Our prices are extremely low and our terms reasonable, and our equipment carries with it our guarantee that the service furnished will be satisfactory.

BIJOU INVERTED
GAS BURNERREFLEX INVERTED
GAS BURNER

CHANDELIER

SHAPIRO & ARONSON

Lighting Fixtures

MAIN OFFICE AND FACTORY

20-30 Morton Street

BROOKLYN, N. Y.

SALESROOM

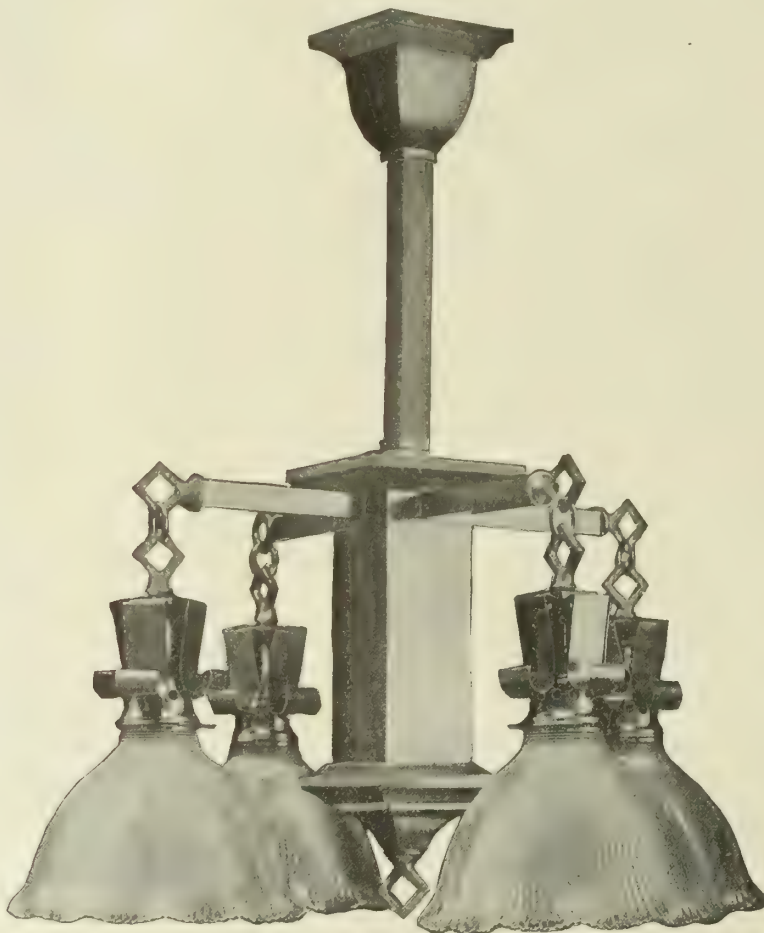
NEW YORK, N. Y., 67 Centre Street

PRODUCTS.

Manufacturers of a complete line of LIGHTING FIXTURES for GAS, ELECTRICITY and ACETYLENE; GAS and ELECTRIC SPECIALTIES; the S & A PATENT SAFETY GAS COCK; the S & A SHOCK ABSORBER, for use with Tungsten Lamps.

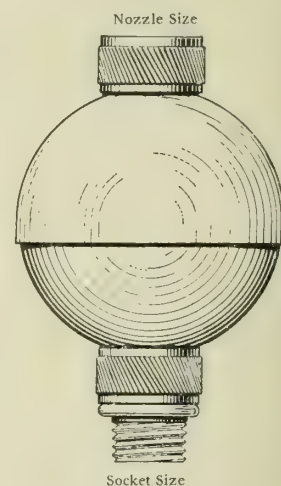
GRADE.

Our Lighting Fixtures are all of a medium grade, well made and finished in the best manner. They are made up in attractive designs, and are suitable for use in residences, stores, office buildings, or any place where gas, electricity or acetylene is provided and where special high-grade fixtures are not required.



NO. 1561 E. CEILING LIGHT DESIGN

Length, 24 inches; spread, 18 inches

S & A SHOCK
ABSORBER

Takes off the jar from Tungsten Lamps. All the wire is out of sight. Can be used on any fixture

STOCK
DESIGNS.

Our fixtures are manufactured only in stock designs. Our line is complete, and prompt delivery is guaranteed.

INSTALLA-
TION.

We do no installing, our goods being supplied through local dealers.

THE S & A
SAFETY
GAS COCK.

The S & A Patent Safety Gas Cock is similar in appearance to the old-style gas cock, but has the advantage of being absolutely safe.

The important features found only in the S & A Safety Gas Cock, and which insure positive protection against all accidents, are the patent safety thumb-lock, the improved stop-pin, the safety jam-nut, and the oval lock-nut.

The thumb-lock is attached directly to the key as shown in the illustration, and so placed that it comes directly under the thumb, and when the key is turned off it is locked and can not be accidentally turned on again. The stop-pin, being securely screwed in, can not work loose or fall out, and the safety jam-nut and the oval lock-nut prevent the screw and washer from becoming loose, as in the old-style gas cock.

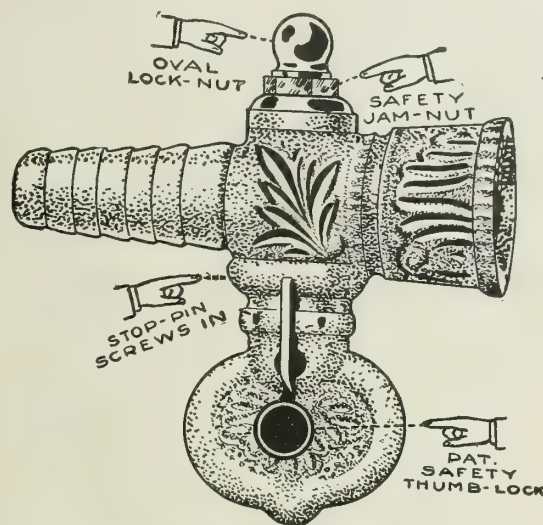
ADVANTAGES.

In the old-style fixture the key, making a full half turn, is easily turned too far, or may be carelessly left partly open, the cause of frequent fatal accidents. In the S & A Safety Gas Cock this is impossible, as the key makes only a quarter turn, and when it is turned off it is locked and stays locked.

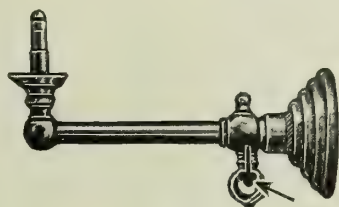
The S & A Safety Gas Cock is simple in design, strongly made, and can not get out of order. The cost is only slightly greater than for the old-style fixtures.

ADAPTABILITY.

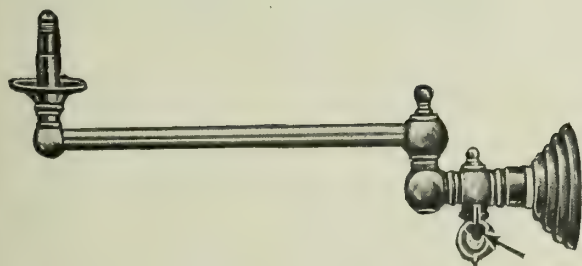
The S & A Safety Gas Cock is furnished on chandeliers, brackets, hose cocks, etc. A complete line of fixtures and fittings, with the safety device attached, are carried in stock.



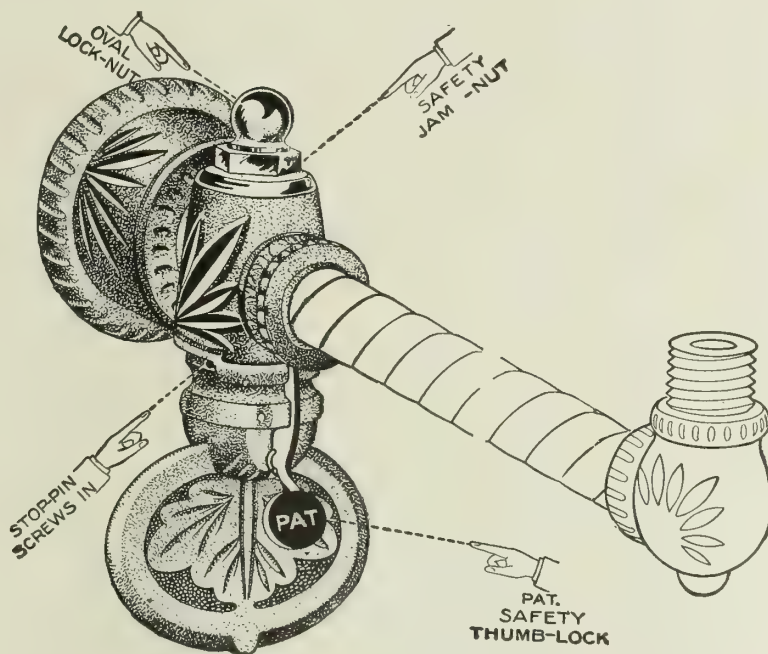
S & A PATENT SAFETY HOSE COCK



NO. 926. STIFF ARM BRACKET



NO. 928. SWINGING BRACKET



S & A PATENT SAFETY GAS BRACKET

THE F. W. WAKEFIELD BRASS COMPANY

Lighting Fixtures

40 Water Street

VERMILION, OHIO

LOCATION OF JOBBING DISTRIBUTERS

BRADFORD, PA.
BUFFALO, N. Y.
CEDAR RAPIDS, IOWA
CHARLOTTE, N. C.
CHICAGO, ILL.

CLEVELAND, OHIO
COLUMBUS, OHIO
DULUTH, MINN.
NEW YORK, N. Y.
PHILADELPHIA, PA.

PITTSBURG, PA.
PORTLAND, ORE.
RICHMOND, VA.
ST. LOUIS, MO.
SAN FRANCISCO, CAL.

SPOKANE, WASH.
SYRACUSE, N. Y.
TORONTO, CAN.

PRODUCTS.

We are manufacturers of High-Grade, Medium Priced LIGHTING FIXTURES, ELECTRIC, GAS and COMBINATION.

STYLES.

"Wakefield" Fixtures are confined to staple styles and designs and such as are most popularly used in residences, public buildings, halls, etc.

HIGH-GRADE.

They are made of high-grade yellow brass, are of solid and substantial construction and are noted for their superior class of workmanship and material as well as artistic merit.

SPECIAL FEATURES.

Since the advent of the "Tungsten" Lamp fixtures having chain supports have become extremely popular. "Wakefield-Tungsten" fixtures contain a variety of designs to suit almost any taste or requirement, from the single one-light chain drop to the variety of arm fixtures and art dome effects.

We use a specially constructed chandelier chain on all of our chain fixtures by means of which a fixture can very readily be lengthened or shortened.

The special patented fixture body used on all "Wakefield" fixtures is also worthy of note. By means of this body any fixture can be changed to two, three or four light fixtures very easily by adding the necessary arms.

This feature is especially desirable in the Combination Fixtures, as either the gas or electric arms can be added or removed at any time to suit requirements.

FOR GENERAL USE.

"Wakefield" Fixtures are found in all classes of buildings, from the lower priced fixtures used in humble homes to the higher priced designs used in the more pretentious residences, stores, and office buildings, the same high standard of workmanship predominating throughout the entire line.

FINISHES AND DESIGNS.

Our finishes are in Brushed Brass, Rich Gilt, Oxidized Copper, Steel, Dead Black and Nickel. We offer herewith a few illustrations, but we make fixtures of almost unlimited design for almost any purpose or requirement. We make a line of fixtures that is specially desirable for public buildings, office buildings, etc., that are of plain yet substantial construction. The prices are reasonable and lower than is usually asked for this class of material.



ELECTROLIER

Stem No. 708

Arm No. 213

BOOK OF
DESIGNS.

We will gladly forward catalogue showing designs on request. We will also forward samples to responsible parties to prove that "Wakefield" Fixtures are all and more than we claim for them and that they deserve your specifications on all buildings using staple fixtures.



Stem No. 601S



Stem No. 709

ELECTROLIER

Arm No. 215

ELECTROLIER

Arm No. 223

PRICE LIST OF ELECTROLIERS

Stem No. 601S.

Arm No. 215

Length, 18 inches; Spread, 17 inches

	Bare, not Wired	Wired and Sockets
1 Light (bottom)	\$3.45	\$4.15
2 " (2 arms)	5.20	6.60
3 " (3 arms)	6.30	8.40
3 " (2 arms and bottom)	5.65	7.75
4 " (4 arms)	7.40	10.20
5 " (4 arms and bottom)	7.85	11.35

Stem No. 608

Arm No. 204

Spread, 15½ inches; Length, 36 inches

	Bare, not Wired	Wired and Sockets
1 Light (bottom)	\$3.20	\$3.90
2 " (2 arms)	3.45	4.85
3 " (3 arms)	3.80	5.90
3 " (2 arms and bottom)	3.90	6.00
4 " (4 arms)	4.15	6.95
4 " (3 arms and bottom)	4.25	7.05
5 " (4 arms and bottom)	4.60	8.10

Stem No. 708

Arm No. 213

Length, 24 inches; Spread, 12 inches

	Bare, not Wired	Wired and Sockets
1 Light (bottom)	\$3.68	\$4.38
2 " (2 arms)	5.13	6.53
3 " (3 arms)	6.08	8.18
3 " (2 arms and bottom)	5.58	7.68
4 " (4 arms)	7.03	9.83
5 " (4 arms and bottom)	7.48	10.98

Stem No. 709

Arm No. 223

Length, 24 inches; Spread, 30 inches

	Bare, not Wired	Wired and Sockets
1 Light (bottom)	\$7.00	\$7.70
2 " (2 arms)	8.95	10.35
3 " (3 arms)	10.15	12.25
3 " (2 arms and bottom)	9.40	11.50
4 " (4 arms)	11.35	14.15
5 " (4 arms and bottom)	11.80	15.30



Stem No. 608

ELECTROLIER

Arm No. 204

GLEASON-TIEBOUT GLASS COMPANY

Manufacturers of Illuminating Glassware

99 Commercial Street

BROOKLYN, N. Y.

BRANCH OFFICES

NEW YORK, N. Y., 37 Murray Street

SAN FRANCISCO, CAL., 667 Mission Street

FACTORIES

METROPOLITAN, BOROUGH OF QUEENS, N. Y.

GREENPOINT, BOROUGH OF BROOKLYN, N. Y.

PRODUCTS.

ILLUMINATING GLASSWARE; GAS and ELECTRIC GLOBES and SHADES of BLOWN, PRESSED, CRYSTAL, COLORED, CUT, and ETCHED GLASS.

ASTRAL, BANQUET, and PORTABLE GLOBES and SHADES, BOULEVARD GLOBES, REFLECTORS, CEILING DISHES, WELSBACH GLASSWARE; OUTER and INNER GLOBES for ELECTRIC ARC LAMPS; TUNGSTENWARE.

DESCRIPTION.

We make all grades of Glass Globes and Shades.

FACILITIES.

The location of our offices and system of representation enable us to cover the entire country. The two factories are ample in size to handle any contract for globes and shades.

ESTIMATES ON

Estimates will be furnished on any special designs that may be submitted. Moulds for these designs can be supplied, where necessary, from our own machine shops.

SPECIAL

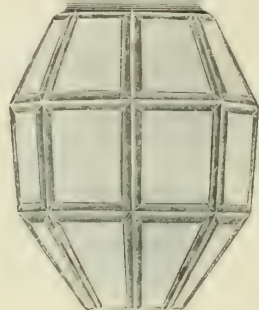
DESIGNS.

REFERENCES.

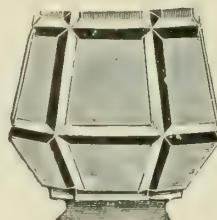
Our product is in use in many of the finest public and private buildings: Waldorf-Astoria, Hotel Astor, New York Hall of Records, New York State Capitol; Executive Mansion at Washington; United States Mint at Denver; Capitols of Minnesota, Virginia, and Rhode Island; Boston Public Library; Columbia University Buildings, Syndicate Building, Ansonia Apartments, Wanamaker's New Store, Savoy Hotel, Holland House, new Knickerbocker Hotel, the new Altman and McCreery stores, the Washington Terminal, Singer Building, and Hudson River Tunnels.



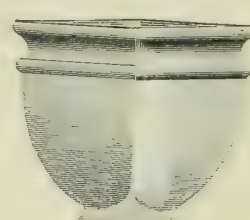
B5213



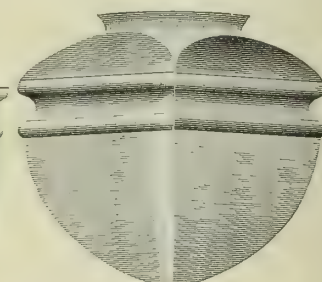
S5226



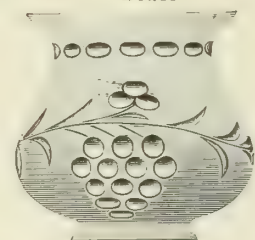
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E4917



5289



E4795



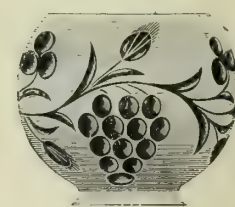
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E4460



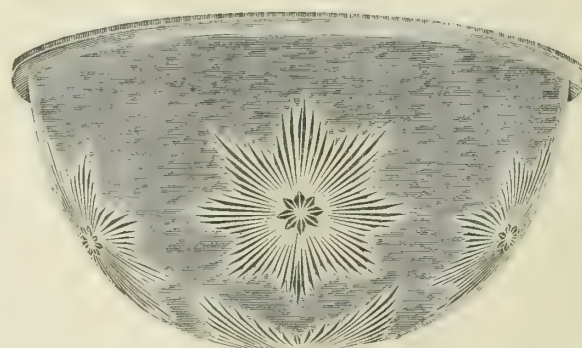
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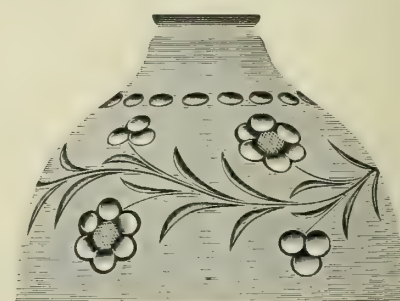
2732



5335



4086



9118

EXAMPLES OF OUR ILLUMINATING GLASSWARE

STANDARD SYMBOLS FOR WIRING PLANS

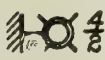
AS ADOPTED AND RECOMMENDED BY

The National Electrical Contractors' Association of the United States

Printed copies may be had on application to the Secretary, Utica, N. Y.

Sets of rubber stamps for use in preparing wiring plans will be furnished at cost price.

STANDARD
SYMBOLS.

	Ceiling Outlet; Electric only. Numeral in center indicates number of Standard 16 C. P. Incandescent Lamps.
	Ceiling Outlet; Combination. $\frac{4}{2}$ indicates 4-16 C. P. Standard Incandescent Lamps and 2 Gas Burners.
	Bracket Outlet; Electric only. Numeral in center indicates number of Standard 16 C. P. Incandescent Lamps.
	Bracket Outlet; Combination. $\frac{4}{2}$ indicates 4-16 C. P. Standard Incandescent Lamps and 2 Gas Burners.
	Wall or Base-board Receptacle Outlet. Numeral in center indicates number of Standard 16 C. P. Incandescent Lamps.
	Floor Outlet. Numeral in center indicates number of Standard 16 C. P. Incandescent Lamps.
	Outlet for Outdoor Standard or Pedestal; Electric only. Numeral indicates number of Standard 16 C. P. Incandescent Lamps.
	Outlet for Outdoor Standard or Pedestal; Combination. $\frac{6}{6}$ indicates 6-16 C. P. Standard Incandescent Lamps; 6 Gas Burners.
	Drop Cord Outlet.
	One Light Outlet, for Lamp Receptacle.
	Arc Lamp Outlet.
	Special Outlet, for Lighting, Heating and Power Current, as described in Specifications.

Continued on next page

STANDARD
SYMBOLS,
CONTINUED.

Ceiling Fan Outlet.

S¹

S. P. Switch Outlet.

S²

D. P. Switch Outlet.

S³

3-Way Switch Outlet.

S⁴

4-Way Switch Outlet.

S^o

Automatic Door Switch Outlet.

S^e

Electrolier Switch Outlet.



Meter Outlet.



Distribution Panel.



Junction or Pull Box.



Motor Outlet; Numeral in center indicates Horse-Power.



Motor Control Outlet.



Transformer.



Main or Feeder Run concealed under Floor.



Main or Feeder Run concealed under Floor above.



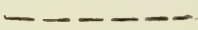
Main or Feeder Run exposed.



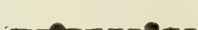
Branch Circuit Run concealed under Floor.



Branch Circuit Run concealed under Floor above.



Branch Circuit Run exposed.



Pole Line.



Riser.



Telephone Outlet; Private Service.



Telephone Outlet; Public Service.



Bell Outlet.



Buzzer Outlet.



Push-Button Outlet; Numeral indicates number of Pushes.



Annunciator; Numeral indicates number of Points.



Speaking-Tube.



Watchman Clock Outlet.



Watchman Station Outlet.



Master Time Clock Outlet.



Secondary Time Clock Outlet.



Door Opener.



Special Outlet; for Signal Systems, as described in Specifications.



Battery Outlet.

Show as many Symbols as there are Switches. Or, in case of a very large group of Switches, indicate number of Switches by a Roman numeral, thus: S¹ XII; meaning 12 Single Pole Switches.

Describe Type of Switch in Specifications, that is, Flush or Surface Push Button or Snap.

STANDARD
SYMBOLS,
CONTINUED.



{ Circuit for Clock, Telephone, Bell or other Service, run under Floor,
Concealed.
Kind of Service wanted ascertained by Symbol to which line connects.



{ Circuit for Clock, Telephone, Bell or other Service, run under Floor
above, concealed.
Kind of Service wanted ascertained by Symbol to which line connects.

NOTE.

If other than Standard 16 C. P. Incandescent Lamps are desired, Specifications should describe capacity of Lamp to be used. Copyright 1906, by the National Electrical Contractors' Association of the United States.

SUGGESTIONS.

Indicate on plans or describe in specifications the height of all outlets located on side walls.

It is important that ample space be allowed for the installation of feeders, branches, and distribution panels.

It is desirable that a key to the symbols accompany all plans.

If mains, feeders, branches, and distribution panels are shown on the plans it is desirable that they be designated by letters or numbers.

AMERICAN CIRCULAR LOOM COMPANY

Conduit and Conduit Fittings for Interior Electric Wiring

BOSTON, MASS.

FACTORIES

NORTH CAMBRIDGE, MASS.
KENILWORTH, N. J.

BRANCH OFFICES AND AGENCIES

NEW YORK, N. Y., R. B. COREY Co., 39 Cortlandt Street
CHICAGO, ILL., THOMAS G. GRIER, 128 West Jackson Boulevard
NEW ORLEANS, LA., JOHN S. BLACK, 617 Hennen Building

SAN FRANCISCO, CAL., JOHN R. COLE Co., 766-770 Folsom Street
ATLANTA, GA., F. M. BYRNE, 1509 Candler Building

PRODUCTS.

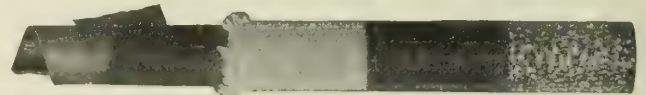
GENUINE "CIRCULAR LOOM" FLEXIBLE FIBRE CONDUIT for Electric Wires; "ELECTRODUCT" (trade-mark) RIGID ENAMELED STEEL CONDUIT and FITTINGS for Electric Wires; "LUTZ" METAL MOLDING, ELECTRO-GALVANIZED STEEL MOLDING, and FITTINGS for Electric Wires.

GENUINE "CIRCULAR LOOM" FLEX- IBLE FIBRE CONDUIT.

CONSTRUC- TION OF GENUINE "CIRCULAR LOOM."

Genuine "Circular Loom" is a thoroughly flexible Fibre Conduit for electric wires and allows for the many bendings and turnings necessary in installation. It is tough and strong and does not collapse. This conduit fishes easily and wires will not stick in it. It is moisture-proof and does not carry fire and is not affected by climatic conditions.

The Inner tube of Genuine "Circular Loom" is made of a special, strong, tough, springy fibre wound in a continuous spiral with a perfectly smooth inside surface which permits the rapid and unobstructed insertion of the wires. This inner tube is covered by a substantial tape, also spirally wound, which assists in keeping out moisture and adds to the insulating qualities of the tube. A heavy cotton covering is woven over the tape. It adds strength, resists abrasion and its longitudinal threads prevent elongation of the tube. A special waterproof insulating compound is boiled under pressure into every part of the heavy woven cotton covering. It also acts as a preservative and moisture repellent. The Armor of Mica (our distinguishing trade-mark) acts as a further moisture repellent and insulator, resists abrasion and renders the tube fireproof.



CONSTRUCTION OF GENUINE "CIRCULAR LOOM"
FLEXIBLE FIBRE CONDUIT

INSPECTION, TEST AND GUARANTEE.

Genuine "Circular Loom" is carefully inspected and thoroughly tested at our factory and every coil is guaranteed to be a perfect product. It is included in the list of materials examined under the standard requirements of the National Board of Fire Underwriters by the Underwriters' National Electric Association, and each coil bears the special approval stamp of the Underwriters' Laboratories.

SHIPMENTS, SIZES AND PRICES.

We have a large stock of Genuine "Circular Loom" on hand at all times and make immediate shipment of all sizes in any quantity. Discounts and freight allowances will be quoted on application.

Genuine "Circular Loom" is shipped in coils each of which bears a tag with the accompanying trade-mark.

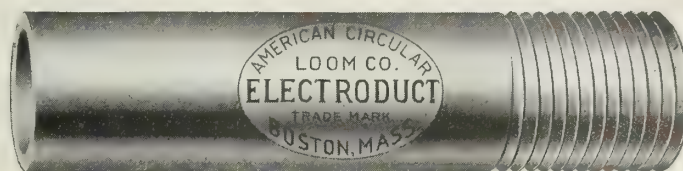


SIZES AND PRICES OF GENUINE "CIRCULAR LOOM" CONDUIT

Inside Diam.	Feet in Coil	Weight per 1,000 Feet	Cubic Feet per Coil	Price per Foot
$\frac{1}{4}$ in.	250	75 lbs.	1.18	6 cts.
$\frac{3}{8}$ "	250	110 "	1.38	7 "
$\frac{1}{2}$ "	200	125 "	1.58	8 "
$\frac{5}{8}$ "	200	155 "	2.28	10 "
$\frac{3}{4}$ "	150	200 "	2.38	12 "
1 "	100	275 "	2.48	16 "
1 $\frac{1}{4}$ "	100	360 "	3.74	20 "
1 $\frac{1}{2}$ "	100	400 "		34 "
1 $\frac{3}{4}$ "	100	440 "		40 "
2 "	Odd Lengths	600 "		50 "
2 $\frac{1}{4}$ "	do.	700 "		65 "

"ELECTRO-
DUCT"
ENAMELED
STEEL
CONDUIT.

"Electroduct" is made from a selected, high-grade mild steel tube which bends easily in installation. The tube is thoroughly cleaned by a series of mechanical and chemical processes until it shows throughout the clear metal as a base for our special and exclusive enamel. All burrs are removed and the tube is carefully threaded on both ends. "Electroduct" Enamel protects the tube against rust from exposure to the weather or water, acids or alkalis. It is uniform throughout and adheres firmly to the metal, allowing the tube to be hammered or bent in curves of short radii without cracking. Its toughness and elasticity are not lessened by rapid or great changes in temperature. The interior of "Electroduct" is perfectly smooth and has no blisters or other obstructions which might prevent the passage of the wires or injure their insulation.



"ELECTRODUCT" ENAMELED STEEL CONDUIT
Showing Trade-Mark Label

INSPECTION,
TEST AND
GUARANTEE.

Each length of "Electroduct" and all Fittings are carefully inspected and thoroughly tested at our factory, and we guarantee a uniform and perfect product unequaled in quality and economical in installation cost. It is included in the list of materials examined under the standard requirements of the National Board of Fire Underwriters by the Underwriters' National Electric Association and each length bears the special approval stamp of the Underwriters' Laboratories.

"ELECTRO-
DUCT"
STANDARD
DIMENSIONS,
PRICES, AND
SHIPMENTS.

"Electroduct" is furnished in 10-foot lengths, threaded on both ends with coupling. We have a large stock on hand at all times and make immediate shipment of all sizes in any quantity. Discounts, freight allowances, or any special information, will be furnished on application.

SIZES AND PRICES OF "ELECTRODUCT"

Size	Actual Outside Diam.	Nominal Inside Diam.	No. Threads per Inch of Screw	Nominal Weight per Foot	Radius	Elbows Offset	Conduit, Price per 100 Feet	Couplings, Price per 100	Elbows Price per 100
Ins.	Ins.	Ins.		Lbs.	Ins.	Ins.			
$\frac{1}{2}$	.84	.62	14	.85	4.25	7.50	\$12.50	\$8.00	\$22.00
$\frac{3}{4}$	1.05	.82	14	1.12	5.37	9.25	16.00	11.00	27.00
1	1.31	1.04	$11\frac{1}{2}$	1.67	5.75	10.12	21.00	13.00	45.00
$1\frac{1}{2}$	1.66	1.38	$11\frac{1}{2}$	2.24	7.25	11.50	30.00	17.00	70.00
$1\frac{1}{2}$	1.90	1.61	$11\frac{1}{2}$	2.68	8.50	12.62	34.00	21.00	115.00
2	2.37	2.06	$11\frac{1}{2}$	3.61	9.50	15.25	47.00	28.00	200.00
$2\frac{1}{2}$	2.87	2.46	8	5.74	10.50	17.75	73.00	40.00	310.00
3	3.50	3.06	8	7.54	13.00	19.37	107.00	60.00	900.00
$3\frac{1}{2}$	4.00	3.54	8	9.00	15.00	21.00	141.00	100.00	2,000.00
4	4.50	4.02	8	10.66	16.00	22.50	175.00	140.00	2,295.00
$4\frac{1}{2}$	5.00	4.50	8	12.49	18.00	24.50	190.00	150.00	3,500.00
5	5.56	5.04	8	14.50	24.00	32.00	200.00	165.00	4,850.00
6	6.62	6.06	8	18.76	30.00	36.75	250.00	240.00	6,015.00

$\frac{1}{4}$ " Conduit, 12 $\frac{1}{2}$ cts. per foot.

$\frac{3}{8}$ " Coupling, 8 cts. each.

$\frac{3}{8}$ " Conduit, 11 $\frac{1}{2}$ cts. per foot.

$\frac{3}{8}$ " Elbows, 18 cts. each.

REFERENCES.

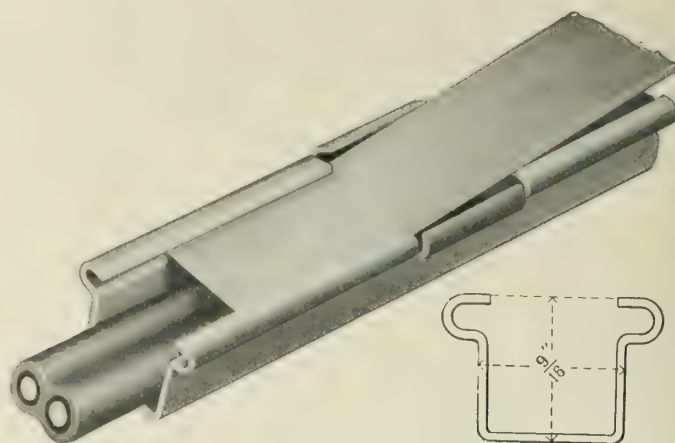
Below will be found a list of some of the structures in which "Electroduct" is installed:

Hotel Belmont, New York, N. Y.
Hotel Astor, New York, N. Y.
Hall of Records, New York, N. Y.
Singer Building, New York, N. Y.
Fifth Avenue Building, New York, N. Y.
Stock Exchange, New York, N. Y.
Rockefeller Institute, New York, N. Y.
Bellevue Hospital, New York, N. Y.
National Park Bank, New York, N. Y.
Engineers' Club, New York, N. Y.
Blackwell's Island Bridge, New York, N. Y.
Hendrik Hudson Apartments, New York, N. Y.

State Library, Hartford, Conn.
John Wanamaker's, Philadelphia, Pa.
Department of Agriculture, Washington, D. C.
Hotel Raleigh, Washington, D. C.
University Buildings, Syracuse, N. Y.
Y. M. C. A. Building, Syracuse, N. Y.
Onondaga Court House, Syracuse, N. Y.
Seneca Hotel, Rochester, N. Y.
Federal Building, Cleveland, Ohio
St. Luke's Hospital, Chicago, Ill.
County Building, Chicago, Ill.
Fort Leavenworth, Leavenworth, Kan.

**"LUTZ"
METAL
MOLDING.**

"Lutz" Metal Molding is a steel raceway of suitable dimensions to contain two wires or twin conductors which are "laid in," not "drawn in." It is electro-galvanized inside and out, which permits the painting of it to harmonize with any surface upon which it is installed. The base has two exterior flanged grooves through which the flexible capping slides, thus entirely closing the raceway and supporting and protecting the wires. Countersinks are provided at intervals to readily receive nails or screws for fastening to walls or ceilings.

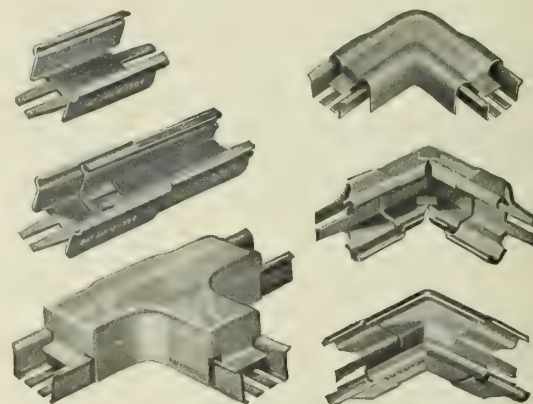


"LUTZ" METAL MOLDING

The capping is of flat, flexible steel which slides into the flanged grooves of the base. It can be inserted or removed at either end, or at any point desired, by making two hack-saw cuts through flanges and slightly opening the cut portion to insert or release the ends of the capping.

**"LUTZ"
FITTINGS.**

"Lutz" Fittings meet every requirement of installation in the simplest and at the same time most substantial manner. The several lengths of "Lutz" Base are joined together by couplings or bonds with pronged ends to engage with slots cut in the base and which furnish a rigid and effectual bond. The several elbows and tees have bases with similar pronged ends to engage with the base. "Lutz" Metal Molding is thus a compact, complete and continuous raceway.



"LUTZ" COUPLING, ELBOWS AND TEES

"Lutz" Fittings include Adapters, to connect with rigid conduit installations and with Panel Boxes, Porcelain Rosettes, Receptacles and Switch Bases, Fixture Straps, Outlet Boxes and Toggle Bolts. All of these are readily installed on the "Lutz" Base and preserve the capping from any danger of contact with the wiring connections.

**INSPECTION,
TEST AND
GUARANTEE.**

Every length of "Lutz" Metal Molding and all Fittings are carefully inspected and thoroughly tested at our factory and we guarantee a perfect product, easily installed with the minimum amount of labor. It is included in the list of materials examined under the standard requirements of the National Board of Fire Underwriters by the Underwriters' National Electric Association and each length bears the special approval stamp of the Underwriters' Laboratories.

**SHIPMENTS
AND PRICES.**

"Lutz" Metal Molding is furnished in lengths of 10 feet, base and capping complete. We have a large stock on hand at all times and make immediate shipment in any quantity. Discounts, freight allowances, or any special information, will be furnished on application. Catalogue on request.

PRICES OF "LUTZ" METAL MOLDING AND FITTINGS

"Lutz" Metal Molding.....\$6.50 per 100 feet (Base and Capping Complete)	"Lutz" 3-Way Tees \$14.00 per 100	"Lutz" Outlet Boxes, B-1, with Covers \$40.00 per 100
"Lutz" Couplings or Bonds, Regular 3.50 per 100	"Lutz" 4-Way Tees 17.00 per 100	"Lutz" Outlet Boxes, B-2, with Covers 30.00 per 100
"Lutz" Outlet Bonds..... 4.50 per 100	"Lutz" Adapters, 1-in. 16.00 per 100	"Lutz" Outlet Boxes, B-3, without Covers 20.00 per 100
"Lutz" Elbows, Regular, with Cover 10.00 per 100	"Lutz" Adapters, 1½ in. 18.00 per 100	"Lutz" Porcelain Rosettes..... 40.00 per 100
"Lutz" Elbows, Inside.....10.00 per 100	"Lutz" Angle Adapters..... 20.00 per 100	"Lutz" Porcelain Receptacles.. 40.00 per 100
"Lutz" Elbows, Outside.....10.00 per 100	"Lutz" Fixture Straps..... 14.00 per 100	"Lutz" Porcelain Switch Bases. 25.00 per 100
"Lutz" Elbows, Adjustable... 14.00 per 100	"Lutz" Toggles, 3-16 x 3 in... 11.00 per 100	"Lutz" Hand Punches..... 16.00 each
	"Lutz" Toggles 3-16 x 4 in... 12.00 per 100	
	"Lutz" Toggles, 3-16 x 5 in... 13.00 per 100	
	"Lutz" Toggles, 3-16 x 6 in... 14.00 per 100	

CROCKER-WHEELER COMPANY

Electric Motors, Generators, Transformers, Fans, Hoists, etc.

AMPERE, N. J.

DISTRICT OFFICES

BOSTON, MASS.
NEW HAVEN, CONN.
NEW YORK, N. Y.
BALTIMORE, MD.

SYRACUSE, N. Y.
PHILADELPHIA, PA.
CHARLOTTE, N. C.
BIRMINGHAM, ALA.

PITTSBURG, PA.
CLEVELAND, OHIO
CHICAGO, ILL.
DENVER, COLO.

NEWARK, N. J.
DETROIT, MICH.

CANADIAN CROCKER-WHEELER CO., LTD., MONTREAL, CAN.

TELEPHONES IN ALL OFFICES

CABLE ADDRESS, "CROCKWHEEL, AMPERE"

WESTERN UNION AND POSTAL TELEGRAPH WIRES DIRECT TO MAIN OFFICE

PRODUCTS.

DIRECT-CURRENT MOTORS; INDUCTION and SYNCHRONOUS MOTORS; DIRECT and ALTERNATING CURRENT GENERATORS for Lighting, Power, and Railways; SWITCHBOARDS, TRANSFORMERS; ELECTRIC VENTILATING FANS, PUMPS, HOISTS, etc.

DESCRIPTION.

All Crocker-Wheeler Apparatus is designed with a view to efficiency, economy, and durability, rather than low first cost. The following tables give the principal data on small Engine-Type Direct-Current Generators and small Belt-Type Direct-Current Motors carried in stock at Ampere and at our various District Offices.

SIZES, WEIGHTS, ETC.

SMALL ENGINE-TYPE DIRECT-CURRENT GENERATORS

K. W.	Speed at 125 or 250 Volts	Shipping Weight
25*	325 to 350 R. P. M.	2000 lbs.
35	300 to 320 R. P. M.	3100 lbs.
50	275 to 290 R. P. M.	5500 lbs.
75	275 to 290 R. P. M.	8200 lbs.
100	250 to 260 R. P. M.	9400 lbs.
125	250 to 270 R. P. M.	13000 lbs.
150	200 to 215 R. P. M.	15000 lbs.

*125 Volts only

SMALL BELT-TYPE DIRECT-CURRENT MOTORS

Form	Output H. P.	115 V.	R. P. M. 230 V.	500 V.	Shipping Wt.
L	$\frac{1}{8}$	1900	1900		45
	$\frac{1}{4}$	1800	1800		70
	$\frac{3}{8}$	1600	1600	1740	90
	$\frac{1}{2}$	1200	1200	1300	135
	1	1600	1600	1740	135
	1	1200	1200	1300	175
	1 $\frac{1}{2}$	1800	1800	1950	175
	1 $\frac{1}{2}$	1200	1200	1300	240
	2	1600	1600	1740	240
	2	1150	1150	1250	300
	3	1725	1725	1875	300
	3	1040	1040	1140	380
	5	1750	1750	1870	380
	5	950	950	1030	450
	6	1190			450
	7 $\frac{1}{2}$		1425	1550	450
I	7 $\frac{1}{2}$	875	875	950	800
	10	1470	1260	1260	800
	10	825	825	880	1300
	13	1100	1100	1175	1300
	15	775	775	840	1900
	20	1200	1200	1250	1900
	20	750	750	780	2400
	26	1025	1025	1100	2400
	25	750	750	780	2900
	32	1000	1000	1050	2900
	35	700	700	730	4000
	45	950	950	1000	4000

Shipping weights are approximate, and include pulleys, rails, and starter for Motor and field regulator for Generator.



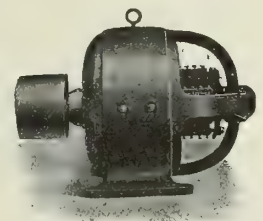
FORM "Q" INDUCTION MOTOR

Two and Three Phase
All sizes and speeds from
 $\frac{1}{4}$ H. P. up



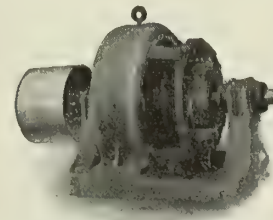
FORM "L" MACHINE

Outputs $\frac{1}{20}$ to $7\frac{1}{2}$ H. P.;
 $\frac{9}{10}$ to 5 K. W.



FORM "I" MACHINE

Outputs $7\frac{1}{2}$ to 45 H. P.;
 $6\frac{1}{2}$ to 40 K. W.



FORM "D" MACHINE

Outputs 50 to 275 H. P.;
45 to 225 K. W.

PRICES.

Prices and detailed description of any Crocker-Wheeler Apparatus will be furnished promptly by any District Office or by the Main Office.

AMERICAN STEEL & WIRE CO.

MANUFACTURERS OF

Electrical Wire Cables and Wire Rope

CHICAGO

NEW YORK

WORCESTER

DENVER

SAN FRANCISCO

VICE-PRESIDENT AND GENERAL SALES AGENT, Chicago, Ill., FRANK BAACKES

ASSISTANT GENERAL SALES AGENTS, Chicago, Ill., DENNIS A. MERRIMAN and GEORGE F. RUMMEI

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LOS ANGELES, CAL., Jackson and Central Avenues

MONTREAL, CAN., Bank of Ottawa Building

NEW YORK, N. Y., 30 Church Street

PITTSBURG, PA., Frick Building

PORTLAND, ORE., Ninth and Irving Streets

ST. LOUIS, MO., Third National Bank Building

ST. PAUL and MINNEAPOLIS, MINN., Pioneer Press Building, St. Paul

SALT LAKE CITY, UTAH, 736 South Third West Street

SAN FRANCISCO, CAL., Sixteenth and Folsom Streets

SEATTLE, WASH., 1115 First Avenue, South

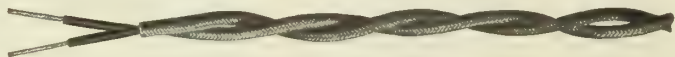
WORCESTER, MASS., North Works

PRODUCTS.

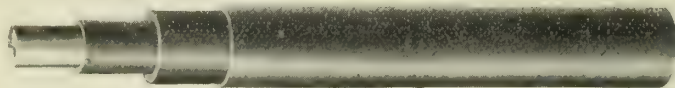
We manufacture BARE COPPER WIRES and CABLES for Telegraph, Telephone, Street-Railway and Long-Distance Power Transmission purposes; also, INSULATED WIRE of all kinds, such as WEATHER-PROOF WIRES and CABLES for Arc Lighting and Street-Railway Feeders, SLOW-BURNING WIRES for Mill Construction, MAGNET, OFFICE and ANNUNCIATOR WIRES, LAMP CORD, SUBMARINE CABLES, CAR WIRES, together with all kinds of RUBBER WIRES for the interior wiring of offices and buildings. We are also manufacturers of LEAD-ENCASED CABLES for underground service, the same being insulated with either rubber or paper for electric lighting or power.

DESCRIPTION OF ELECTRICAL WIRES AND CABLES.

The cuts shown herewith illustrate a few of the many varieties of Electrical Wires and Cables made by the AMERICAN STEEL & WIRE COMPANY.

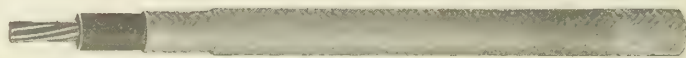


TELEPHONE WIRE



SOLID CONDUCTOR CROWN RUBBER-COVERED BRAIDED WIRE

Fulfilling National Code Specifications, with varying thicknesses of rubber, according to required working voltage



STRANDED GLOBE RUBBER-COVERED DOUBLE-BRAIDED WHITE FIREPROOF-FINISHED CABLE

For station wiring, car wiring, and other places where a wire impervious to flame is required



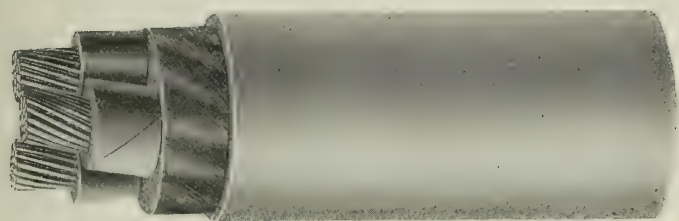
STRANDED TRIPLE-BRAIDED RELIANCE WEATHER-PROOF CABLE

For street-railway and general power-line equipment



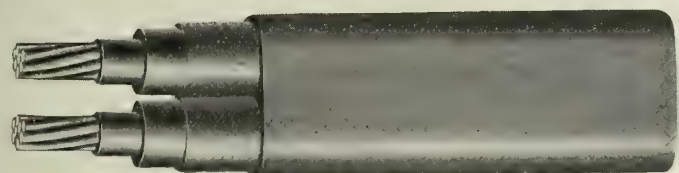
SOLID CONDUCTOR TRIPLE-BRAIDED RELIANCE WEATHER-PROOF WIRE

For general power-house equipment and street-railway use



THREE-CONDUCTOR PAPER-INSULATED, LEAD-ENCASED CABLE

For underground use. Always made to specifications



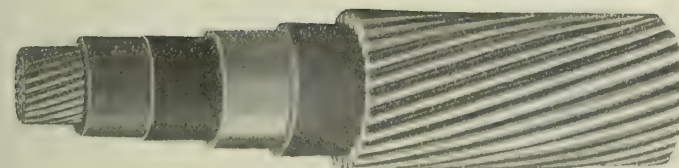
STRANDED CONDUCTOR DUPLEX CROWN RUBBER-COVERED BRAIDED CABLE

Made to National Code Specifications and also insulated for special requirements



STRANDED CONDUCTOR CROWN RUBBER-COVERED TAPED AND BRAIDED CABLES

National Code thickness of rubber as well as heavier thicknesses for special voltages, both ordinary black finish and fireproof finish for station wiring and general use



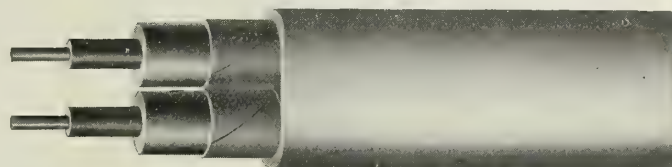
STRANDED CONDUCTOR CROWN RUBBER-COVERED TAPED, LEAD-ENCASED, JUTED AND ARMORED SUBMARINE CABLE

Made to specifications as to thicknesses of rubber, lead and size of armoring



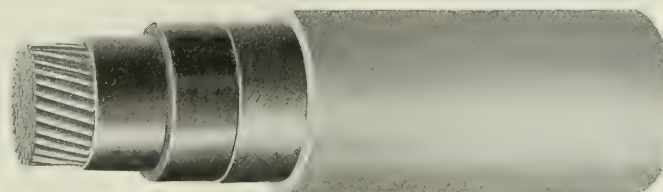
SOLID CONDUCTOR GLOBE RUBBER-COVERED TAPED AND LEAD-ENCASED WIRE

For underground use. Thickness of rubber and lead varying with requirements



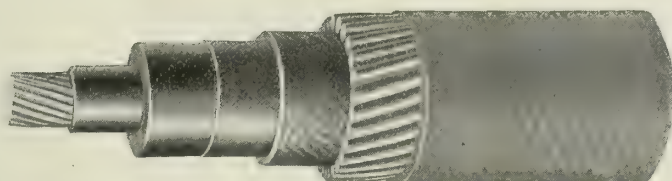
SOLID CONDUCTOR DUPLEX CROWN RUBBER-COVERED LEAD-ENCASED CABLE

Varying thicknesses of rubber and lead as required



STRANDED CONDUCTOR CROWN RUBBER-COVERED TAPED AND LEAD-ENCASED CABLE

For underground use. Varying thicknesses of rubber according to working voltage



SPECIALLY CONSTRUCTED SUBMARINE CABLE

Lead sheath being omitted, and a heavy serving of jute protecting the braid as well as the armoring wires



ANNUNCIATOR WIRE IN COILS AND SPOOLS

CROUSE-HINDS COMPANY

Manufacturers of Electrical and Mechanical Appliances
SYRACUSE, N. Y.

BRANCH OFFICES

NEW YORK, N. Y., 25 Dey Street

CHICAGO, ILL., Cor. Clinton and Washington Streets

CINCINNATI, OHIO, 234 West Fourth Street

PRODUCTS.

We manufacture PANEL BOARDS, DISTRIBUTING-BOARDS, PANEL-BOARD CABINETS, DIRECT-CURRENT SWITCHBOARDS, ALTERNATING-CURRENT SWITCHBOARDS, KNIFE SWITCHES, both front and back connections; VOLTMETER, AMMETER, and END-CELL BATTERY SWITCHES; "SYRACUSE" CHANGEABLE and "SYRACUSE" STATIONARY INCANDESCENT HEADLIGHTS; "IMPERIAL" ARC HEADLIGHTS for trolley service; IMPERIAL MINE ARC and INCANDESCENT HEADLIGHTS; CONDUIT OUTLET BOXES and FITTINGS, known as "CONDULETS"; PORCELAIN RECEPTACLES and ROSETTES, known as "NORBITT SPECIALTIES"; HARPOON GUY ANCHORS; COMMUTATORS for GAS ENGINES; "HAWLEY" TIME-REGISTERS.

QUALITY.

Workmanship and material are of the highest grade throughout. A complete equipment of special tools and gauges for every part insures absolute uniformity of product, and each part undergoes a thorough inspection before leaving the factory.

PANEL BOARDS, SWITCH- BOARDS.

The usual Panel Board and Switchboard mounting is Black Enameled Slate, but White Italian, Blue Vermont, Pink Tennessee or Gray Knoxville Marble will be furnished if desired.

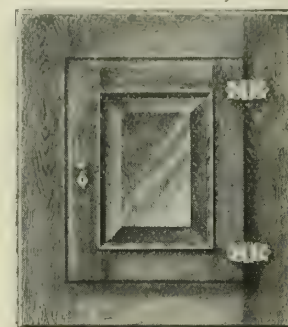
Templets for a complete line of standard panels are carried in stock, thereby making quick delivery possible. Attention is called to our improved Metering Panels, Wood and Metal Boxes and Trims, which are made in various styles.

SWITCHES.

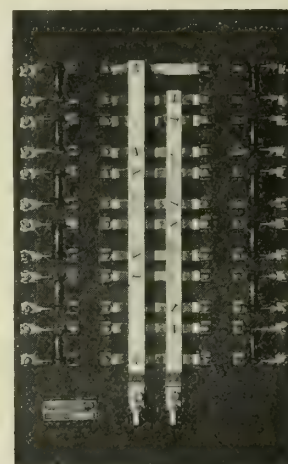
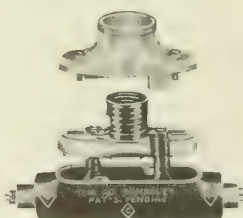
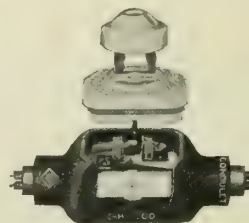
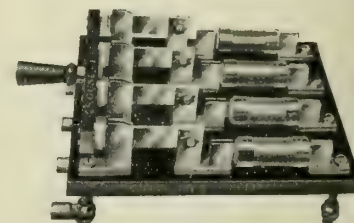
A full line of high-grade Knife Switches from 30 to 5,000 amperes' capacity, made in both front and back connection, single and double break.

"NORBITT SPECIAL- TIES."

This is the most modern line of porcelain fittings for moulding, conduit or open wiring. The designs are simple and provide for enclosed contacts, thereby affording a complete, safe and workmanlike installation.



TYPE M. S. T. CABINET

2-2 WIRE 12-CIR-
CUIT BLACK ENAMEL
SLATE PANEL"NORBITT"
CLEAT
RECEPTACLE
With Shade-
Holder Groove"NORBITT"
MOULDING
RECEPTACLE
With Shade-Holder
Groove"NORBITT"
CONDUIT-BOX
RECEPTACLE
Without Shade-Holder
Groove"CONDULETTO"
RECEPTACLE
With Shade-Holder
Groove. Mounted on
Type "C" Condulet"NORBITT" CON-
DULET" CORD
ROSETTE
Mounted on Type "J"
Condulet"HUBBELL"
ATTACHMENT
PLUG RECEPTACLE
Mounted on Type "J"
ConduletTYPE "B" SWITCH
BACK CONNECTION
Four-Pole, Single-Throw, with
N. E. C. Enclosed Fuses

"CONDU-
LETS."

The most modern line of Conduit Outlet Boxes and Fittings. Made in styles and sizes to meet all requirements. They provide the simplest, neatest and most perfect conduit installation. No lock-nuts and bushings are required in an installation of "Condulets," as the pipe screws directly into the "Condulet," thereby insuring continuity of conduit system.



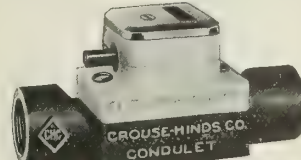
Type "FS" With Flush Rotary Switch Cover†



Type "FS" With Push-Button Switch Cover†



Type "W" With "Hubbell" Attachment Plug Receptacle*



Type "CHC" With Cutler-Hammer Push-Button Switch†



Type "B"



Type "J" With Receptacle



Type "N" With Flush Pocket Receptacle*



Type "A"



Type "K" With "Hubbell" Attachment Plug Receptacle



Type "S" With Pony Receptacle*



Type "JL" With Cord Rosette



Type "X"†



Type "C"



Type "G" With Snap Switch*



Type "KA" With Fixture Rosette (Angular Fitting)



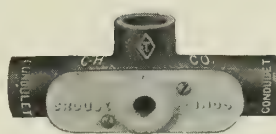
Type "JX" With Cord Rosette



Type "U"



Type "TR"



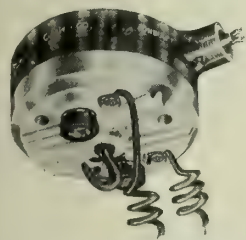
Type "T"



Type "TL"



Type "JB" With Fixture Rosette



Type "R" With Plug Fuse Hanger Board*



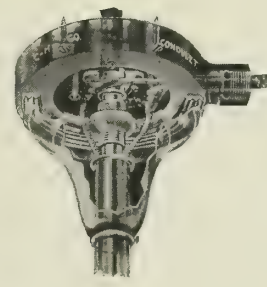
Type "QKC" With Lock-Snap Switch*



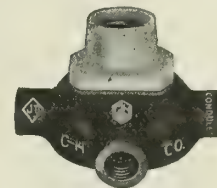
Type "VC" With Globe and Guard*



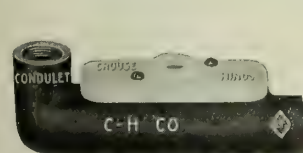
Type "QHC" With Thumb-Knob Snap Switch*



Type "R" Arranged for Combination Fixture or Electrolier*



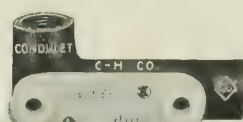
Type "JT" With Receptacle



Type "LF"



Type "LB"



Type "LL"



Type "LR"



Type "KB" With Receptacle (Angular Fitting)



Type "JA" With "Hubbell" Attachment Plug Receptacle (Angular Fitting)

VARIOUS TYPES OF CONDULETS

*Made in Dead End, Through Feed, "L," "T" and "X" Styles †Made in Dead End and Through Feed Styles

CO-OPERATIVE
SERVICE AND
PRICES.

Our detailed catalogue will be of service in drawing up plans and specifications because of its completeness and comprehensive arrangement. Estimates upon special or standard work will be gladly furnished upon request.

FORT WAYNE ELECTRIC WORKS

INCORPORATED

Manufacturers of Electrical Machinery

MAIN OFFICE

FORT WAYNE, IND.

FACTORIES

FORT WAYNE, IND.

MADISON, WIS.

BRANCHES

ATLANTA, GA.
BOSTON, MASS.
CHICAGO, ILL.
CINCINNATI, OHIO

GRAND RAPIDS, MICH.
MADISON, WIS.
MILWAUKEE, WIS.
NEW ORLEANS, LA.

NEW YORK, N. Y.
PHILADELPHIA, PA.
PITTSBURG, PA.
SAN FRANCISCO, CAL.

SEATTLE, WASH.
ST. LOUIS, MO.
ST. PAUL, MINN.
YOKOHAMA, JAPAN

PRODUCTS.

ARC LAMPS, ARC LIGHTING SYSTEMS, ALTERNATORS, BLOWER MOTORS, BUFFERS, ALTERNATING and DIRECT CURRENT COMPENSARCS, CALIBRATORS, CRANE MOTORS, FAN MOTORS, ALTERNATING and DIRECT CURRENT GENERATORS, HOIST MOTORS, ALTERNATING and DIRECT CURRENT MOTORS, PREPAYMENT WATTMETER DEVICES, ROCK DRILLS, SWITCHBOARDS, TRANSFORMERS and WATTMETERS (INTEGRATING).

ALTERNATORS.

We manufacture belted, coupled and engine type machines for steam or internal combustion engines, water-wheel or other prime movers.

CONTINUOUS CURRENT—Series, shunt or compound, belted or engine type machines. Special attention to small machines for gas or gasoline engines. Cast welded laminated poles or detachable laminated poles.

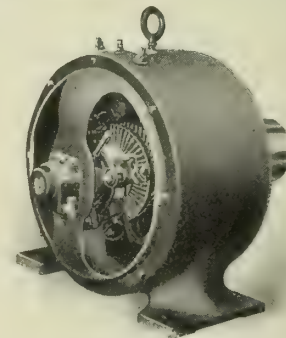
We are fully equipped to build and furnish dynamo electric generating apparatus of any description.

MOTORS.

Our Motors are built in all capacities and speeds, both alternating and direct current, and both constant and adjustable speed. We make a specialty of motors for machine tool-drive and electric-drive in industrial plants.



FORT WAYNE ALTERNATOR



FORT WAYNE TYPE "EF" DIRECT-CURRENT MOTOR

SWITCH-
BOARDS.

Our Switchboards are built from standard or special panels, combined in a way to meet every requirement of the customer and still to retain simplicity and effectiveness of control. All instruments and accessories used on these switchboards are of the latest approved design.

FORT WAYNE
ONE-PANEL
SWITCHBOARDFORT WAYNE
TRANSFORMERTRANSFORM-
ERS.

Our Transformers are built on a design that years of experience have proved to be the most practical, economical and efficient. We make Transformers of any voltage, capacity and frequency to meet all conditions.

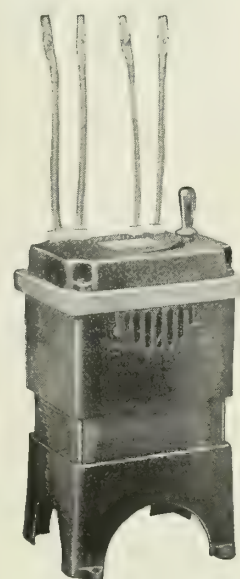
WATTMETERS.

Our Wattmeters have gained the reputation of being the most popular meters now on the market, because of the uniform satisfaction they give under any and all conditions of actual service. They are suited to almost any class of service. They read in kilowatt hours, have large overload capacity and are protected from stray fields. They are made in from 5 to 1200 ampere capacities (standard), and larger when wanted.

FORT WAYNE
INTEGRATING
WATTMETER

COMPENSARCS.

The Compensarc is a special device for cutting down the current consumption on motion-picture arc lamps. In actual use these devices continually demonstrate that they save from 65 to 68 per cent of the lighting bill. They are approved by the National Board of Fire Underwriters, and are made with three adjustments for regulating intensity of light. Besides reducing the lighting bill and eliminating all danger caused by overheating, etc., they make a clearer, better light, which can not flicker in passing from one adjustment to another.



COMPENSARC

CO-OPERATIVE
SERVICE AND
ESTIMATES.

The FORT WAYNE ELECTRIC WORKS maintains an efficient Engineering Department, and will be glad to confer and co-operate with consulting engineers, architects and contractors concerning any details of design, construction, installation, etc. Our extensive experience in all classes of work makes it possible to render this co-operation of real value.

Information regarding anything that this company manufactures will be sent promptly upon request.

GENERAL ELECTRIC COMPANY

SCHENECTADY, N. Y.

BRANCHES

ATLANTA, GA., Empire Building
BALTIMORE, MD., Continental Trust Building
BOSTON, MASS., 84 State Street
BUFFALO, N. Y., Ellicott Square Building
BUTTE, MONT., Phoenix Building
CHARLESTOWN, W. VA., Charlestown National Bank Building
CHARLOTTE, N. C., Trust Building
CHICAGO, ILL., Monadnock Building
CINCINNATI, OHIO, Provident Savings Bank & Trust Co. Building
CLEVELAND, OHIO, Citizens Building
COLUMBUS, OHIO, Columbus Savings & Trust Building
DALLAS, TEX., Scollard Building (Office of Soliciting Agent)
DENVER, COLO., Kittredge Building
DETROIT, MICH., Majestic Building (Office of Soliciting Agent)
DULUTH, MINN., Providence Building
KANSAS CITY, MO., Dwight Building
LOS ANGELES, CAL., Delta Building

MINNEAPOLIS, MINN., Phoenix Building
NASHVILLE, TENN., Stahlman Building
NEW HAVEN, CONN., Malley Building
NEW ORLEANS, LA., Hennen Building
NEW YORK, N. Y., 30 Church Street
OKLAHOMA CITY, OKLA., Culbertson Building, (Office of Soliciting Agent)
PHILADELPHIA, PA., Witherspoon Building
PITTSBURG, PA., Park Building
PORTLAND, ORE., Worcester Building
RICHMOND, VA., 712 Mutual Building
ST. LOUIS, MO., Wainwright Building
SALT LAKE CITY, UTAH, Newhouse Building
SAN FRANCISCO, CAL., Union Trust Building
SEATTLE, WASH., Colman Building
SPOKANE, WASH., Paulsen Building
SYRACUSE, N. Y., Post-Standard Building

FOREIGN DEPARTMENT: SCHENECTADY, N. Y., and 30 Church Street, New York, N. Y.

LONDON OFFICE: 83 Cannon Street, E. C., London, England

For all Canadian Business: CANADIAN GENERAL ELECTRIC COMPANY, LTD., Toronto, Ontario

PRODUCTS.

ELECTRICAL MACHINERY and EQUIPMENT as follows:

A—ELECTRIC GENERATING SETS for Light and Power, including CURTIS STEAM TURBINE SETS, GAS-ENGINE SETS and MARINE-ENGINE SETS.

B—SWITCHBOARDS for Electric Light and Power Plants, direct or alternating current, singly and in any combination; MERCURY ARC RECTIFIERS, VOLTAGE REGULATORS, MOTOR CONTROLLING PANELS, INDICATING and MEASURING INSTRUMENTS, and all other Instruments and Appliances of Switchboards.

C—ELECTRIC WIRING EQUIPMENT: WIRES and CABLES, TUBING, PORCELAIN INSULATORS, CUT-OUT BOXES, FLOOR OUTLETS, ENCLOSED FUSES, SWITCHES, DISTRIBUTING PANEL BOARDS, CABINETS, CIRCUIT BREAKERS, TRANSFORMERS and METERS.

D—ELECTRIC MOTORS for operation of PUMPS, BLOWERS, DESK and CEILING FANS, and other purposes.

E—ELECTRIC LIGHTING APPLIANCES: INCANDESCENT LAMPS, ARC LAMPS, LAMP SOCKETS, FIXTURES, REFLECTORS, DIFFUSERS, SHADES, GLOBES, etc.

F—ELECTRIC HEATING and COOKING EQUIPMENTS.

FACILITIES.

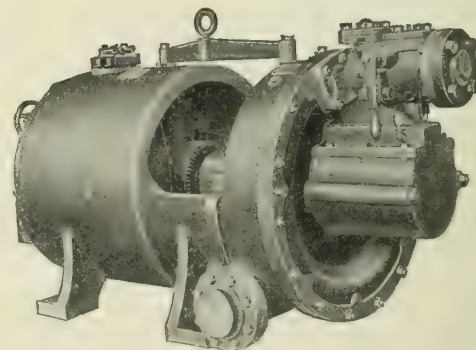
The GENERAL ELECTRIC COMPANY is the largest electrical manufacturer in the world. Its extensive engineering and manufacturing resources enable it to produce completely developed apparatus and accessories for the generation and transmission of electricity and its application to all lighting and power purposes. Widely distributed sales offices and warehouses enable this company to serve customers efficiently and promptly, from the filling of small mail orders to train-load shipments.

CATALOGUES AND BULLETINS.

This Company maintains an extensive Publication Bureau and can supply General Catalogues covering its several lines, and Special Bulletins on all the more important apparatus. Such literature and any special information desired are gladly supplied by any of the branch offices.

CURTIS STEAM TURBINE GENERATING SETS.

Curtis Steam Turbine Generating Sets are admirably adapted for supplying electric light and power to office buildings, mills, machine shops, foundries, apartment houses, hotels, etc. They require minimum floor space, head room and attendance.

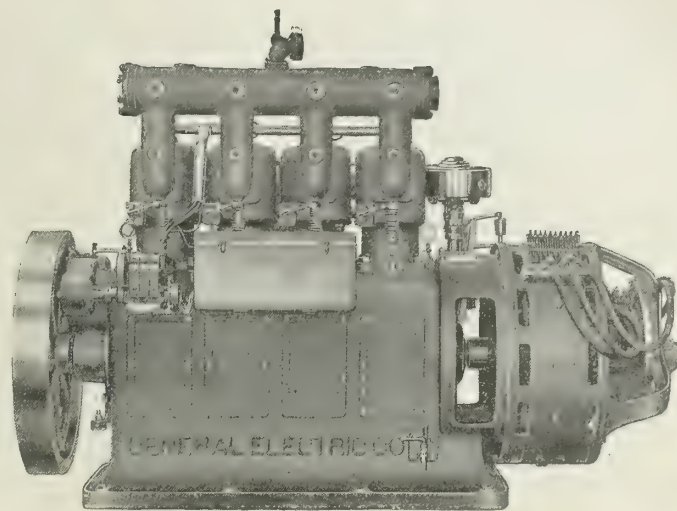


35 KILOWATT CURTIS TURBO-GENERATOR

The exhaust steam is free from oil and may be used for heating systems. Turbine sets are available in sizes ranging from 7 kilowatts to 14,000 kilowatts, direct or alternating current.

GAS-ENGINE GENERATING SETS.

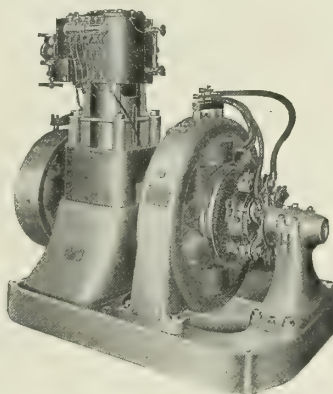
General Electric Gas-Engine Generating Sets can be used to great advantage when steam is not available or desirable. These sets are self-contained, compact, and operate without flickering of lights. They are built in various sizes and are suitable for furnishing electric light and power in hotels, private residences, on the farm, etc. The Engine is four-cylinder, four-stroke cycle water-cooled, built to conform to rigid United States Government specifications. Many of them are installed in fortifications of the Government.



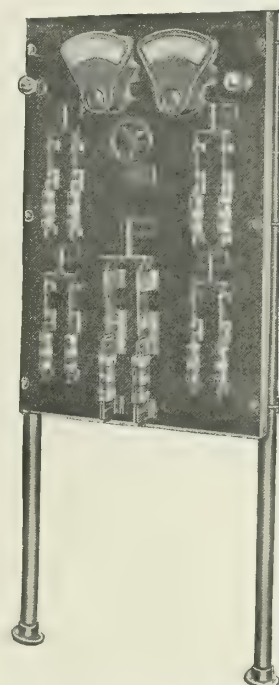
25 KILOWATT GASOLINE-ENGINE SET
560 revolutions per minute, 125 volts

MARINE- ENGINE GENERATING SETS.

A line of small direct-connected Marine-Engine Generating sets is manufactured by the GENERAL ELECTRIC COMPANY in sizes from 2½ to 100 kilowatts. Designed originally to meet severe conditions of marine work, which demand light, compact and durable sets of close regulation and quiet operation, they are also well adapted and have been used extensively for both power and lighting in isolated plants.



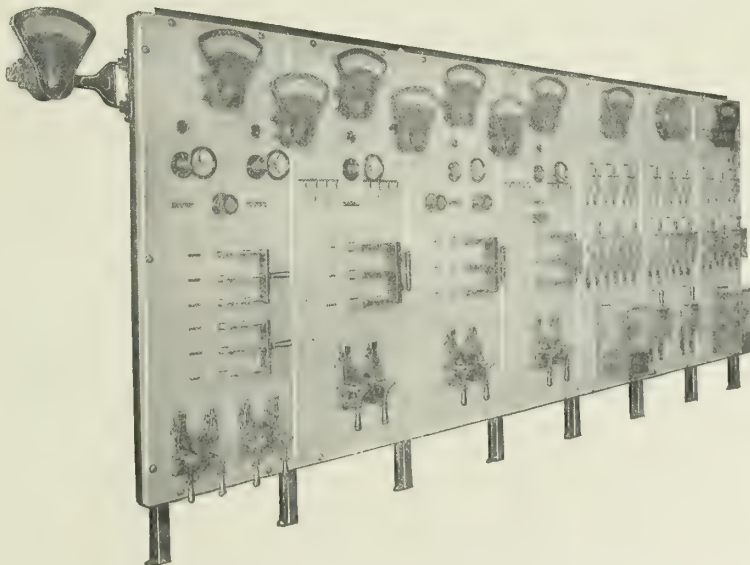
20 KILOWATT MARINE-ENGINE
SET



ISOLATED PLANT
SWITCHBOARD

SWITCH- BOARDS.

The GENERAL ELECTRIC COMPANY offers a line of Switchboards for isolated plants, equipped with the latest improved controlling devices. Expert engineering ability and modern manufacturing facilities are at the customer's service. A large number of standard type of panels is held in stock ready for shipment, and switchboards of any capacity and for any service can be manufactured at short notice.



SWITCHBOARD FOR OFFICE BUILDING USE

MERCURY ARC REC- TIFIERS.

The General Electric Mercury Arc Rectifier is a simple and efficient device for changing alternating to direct current by means of mercury vapor in a vacuum.

There are two general types of rectifiers. The series rectifier is used in connection with a constant-current transformer for furnishing constant direct current for series direct-current arc lighting. The multiple rectifier is used for furnishing constant potential direct current for charging storage batteries, operating arc lamps, motors, etc.

STARTING PANELS.

The requirements of motor control, either hand or automatic, are fully covered by the GENERAL ELECTRIC COMPANY's Type CR apparatus. The Motor Starting and Speed Controlling Rheostats are made in sizes from $\frac{1}{8}$ horse-power up, for voltages of 110, 220, and 550. General Electric Automatic Starting Panels are thoroughly reliable. In connection with positive-acting Float Switches they will automatically maintain a predetermined water level in supply tanks for office buildings or residences. By the use of Pressure Governors a constant pressure may be maintained.

SWITCH- BOARD INSTRU- MENTS.

The Thomson Horizontal Edgewise Instruments, Type H, as manufactured by the GENERAL ELECTRIC COMPANY, have for several years been recognized as the standard for alternating-current service, and are undoubtedly the most accurate and attractive instruments used for switchboard work. A complete line of instruments is made, consisting of Ammeters, Voltmeters, Single-Phase Wattmeters, Polyphase Wattmeters, Frequency Indicators and Power Factor Indicators. While primarily designed for alternating-current service, the Voltmeters, Ammeters and Wattmeters can be used with good results on direct current. Ammeters and Voltmeters of the Round Pattern Type for both direct and alternating current circuits are also manufactured in various styles.

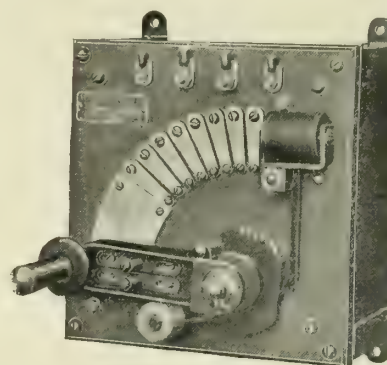
RECORDING WATT- METERS.

The GENERAL ELECTRIC COMPANY manufactures a complete line of direct and alternating-current Recording Wattmeters adapted to both house and switchboard service. They are of first-class mechanical and electrical construction and are noted for high torque and minimum friction increases, thus insuring long life and accuracy. The standard meters for house service are Thomson Recording Wattmeters, Types C-6 and C-7 for direct current, and Type I Thomson High Torque Induction Meter for alternating-current circuits. The principal switchboard meters are Types IS-2 and IS-3 for single phase, DS-4 and DS-5 for polyphase circuits, and Thomson Astatic meters, Types CS and G-2 for direct-current circuits.



CR-223 SINGLE-POLE
SELF-CONTAINED
FLOAT SWITCH

For mounting
directly above
water tank or for
attaching to it



CR-107 MOTOR-STARTING
RHEOSTAT



TYPE T-A
VOLTAGE
REGULATOR



CR-120 SELF-
STARTING
RHEOSTAT



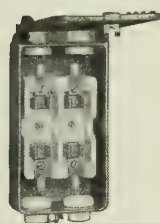
HORIZONTAL
EDGEWISE
AMMETER

AUTOMATIC
VOLTAGE
REGULATORS.

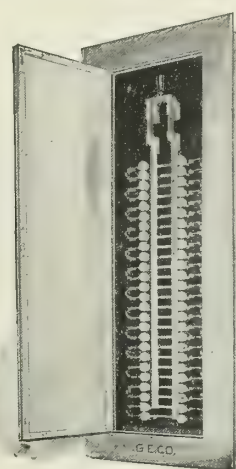
General Electric types TA and TD Regulators are designed for automatic voltage regulation of alternating and direct current generators, respectively. General Electric Regulators are the most accurate and economical of all devices made for this purpose. They are manufactured for plants of any capacity and voltage.

INSIDE
WIRING
EQUIPMENT.

Wire and Cable are manufactured by the GENERAL ELECTRIC COMPANY in varieties suitable for all uses of the architect. This product includes cable with weather-proof, flame-proof, rubber, paper, varnished cambric, or asbestos insulation. General Electric Wiring Appliances fully meet the requirements of the National Board of Fire Underwriters. General Electric Standard Service Switches and Cut-Out Boxes are made in many different styles. General Electric Knife Switches are manufactured for all combinations of circuits and all capacities. Over 15,000 styles of Panel Boards and Cabinets are listed in our catalogues, which are of high-grade construction throughout. General Electric Enclosed Fuses

ENCLOSED
FUSE-BOX

SNAP SWITCH

PUSH-BUTTON
SWITCHENCLOSED FUSE
CUT-OUTLOCKING
SOCKET AND
KEY2-POLE SWITCH
WITH FUSESTANDARD CABINET
AND PANEL

and Cut-Outs meet the most exacting specifications. General Electric water-tight Floor Outlet Boxes embody all necessary good features and are adaptable to all styles of flooring. General Electric Surface Snap, Flush Rotary, Flush Push-Button, Pendant and Ceiling-Pull Switches are thoroughly well made and can be relied upon under all conditions. General Electric Sockets and Receptacles are available in many styles, not only for every kind of permanent lighting outlet, but for special problems such as electric-heating devices, fan motors, etc. Complete assortments of long-established wiring accessories are carried in stock.

LIGHTING
TRANSFORM-
ERS.

Safety, durability and economy receive careful consideration in the production of General Electric Type H, or Lighting Transformers. These transformers operate continuously with a minimum cost for current, and are insulated so as to provide a greater degree of safety to the user of electricity than any transformer on the market. General Electric transformers, ranging in capacity from 600 to 50,000 watts, are designed to permit of either two or three wire operation. Motors may be supplied with power from the lighting circuit without any noticeable effect on the brightness of the lights.

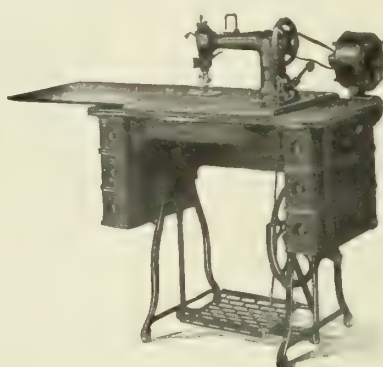
IMPROVED TYPE H
TRANSFORMERCIRCUIT
BREAKERS.

General Electric Automatic Circuit Breakers afford the best insurance against interruptions of electrical service. They have the advantages of a liberal design, neat and compact

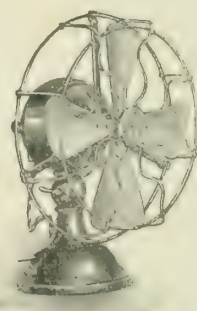
appearance and are absolutely reliable. They are made for either alternating or direct current circuits, ranging in capacities from 3 to 10,000 amperes, and up to 650 volts, either electrically or hand operated.

ELECTRIC MOTORS.

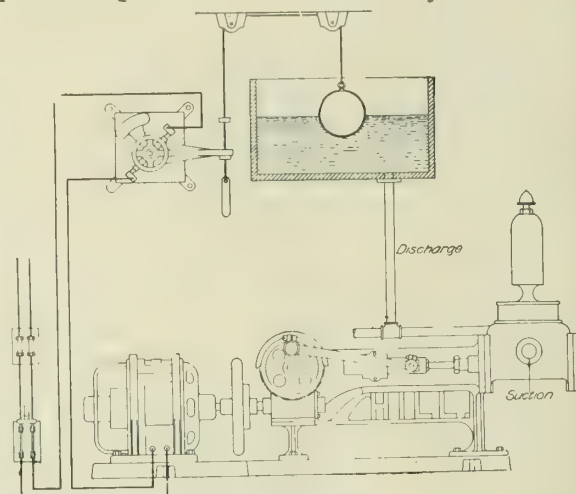
General Electric Motors cover a wide range of applications of electric power to mechanical service. Constant and variable speed motors for both alternating and direct current are built. The complete line of small alternating current and direct-current motors is manufactured in sizes from $\frac{1}{30}$ horse-power up, applicable to sewing machines, buffers, ice-cream freezers, mangles, washing-machines, and similar household uses. The GENERAL ELECTRIC COMPANY manufactures every kind of stationary and oscillating fan motors for wall, ceiling, floor or desk, and blade motors for ceiling or columns. Motors may be had in capacities from $\frac{1}{6}$ horse-power up, for all commercial voltages. They are specially adapted for use with ventilating apparatus, desk and ceiling fans, etc. General Electric Motors are designed to meet the requirements of pumping outfits for independent plants. The motor may be started or stopped manually, or equipped with an automatic starting device.



SEWING-MACHINE
OPERATED BY $\frac{1}{30}$ HORSE-
POWER MOTOR



12-INCH DESK FAN

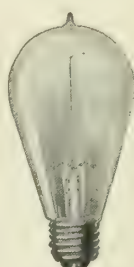


TYPE RI MOTOR WITH AUTOMATIC
CONTROL, DRIVING HILL SILENT PUMP

INCANDESCENT LAMPS.

The highest attainment in incandescent lamp efficiency has been secured by the Tungsten Lamp, as now manufactured by the GENERAL ELECTRIC COMPANY. The Tungsten Lamp gives an average life of 800 hours at the remarkable efficiency of 1 to $1\frac{1}{4}$ watts per candle, producing practically three times the light of an ordinary carbon filament lamp of equal life and current consumption. This striking economy is coupled with a superior quality of light. General Electric Tungsten Lamps are made with Edison bases and can be used in ordinary sockets, receptacles, etc.

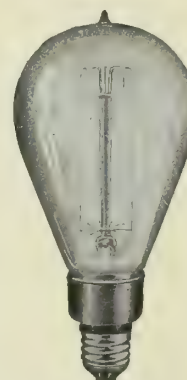
This feature greatly facilitates the introduction of the improved light, as in many cases Tungsten Lamps can be substituted for the old in the ordinary course of renewals. They may be used on either alternating or direct current circuits, and burn in any position. The GENERAL ELECTRIC COMPANY manufactures twelve sizes of multiple Tungsten Lamps.



SMALL BASE
TUNGSTEN LAMP
100-125 Volts,
25 and 40 Watts



MERIDIAN
TYPE TUNG-
STEN LAMP
100-125 Volts
40 and 60
Watts



STANDARD
MULTIPLE
TUNGSTEN
LAMP
100-125 Volts,
40, 60, 100,
150, and 250
Watts



MULTIPLE
TUNGSTEN
LAMP
200-250 Volts,
45, 70, 110, and
180 Watts

TUNGSTEN ECONOMY DIFFUSERS.

Tungsten Lamps are made available for lighting large spaces by the use of Tungsten Economy Diffusers, which give the light not only a lower intrinsic brilliancy but also a much better diffusion. A number of ornamental fixtures are made for single lights or groups of lights, to which various kinds of metallic finish can be given and for which plain and fancy globes are furnished.



TUNGSTEN ECONOMY DIFFUSER

INTENSIFIED ARC LAMPS.

General Electric Intensified Arc Lamps are of an entirely new design. For high-grade lighting of large interiors they are without an equal. Particular points of merit are high efficiency, low maintenance cost and excellent color value. They can be furnished for use on direct-current or alternating-current multiple circuits. Various designs are made having a uniformly neat and artistic appearance.

ILLUMINAT- ING ENGI- NEERING.

Illuminating engineering has made great advances in the past few years. Not only have improvements been made in the arrangement of lamps, but the lamps themselves have been modified so as to increase their effectiveness. These facts are particularly well illustrated in the adaptation of arc lamps to the field of interior lighting. With the invention of the Concentric Diffuser and the Light-Balancing Selective Diffuser Ceiling, the electric light has attained a quality, steadiness and diffusion hitherto unapproached.

The Illuminating Engineers of the GENERAL ELECTRIC COMPANY have made the selection of lamps and diffusers and their distribution in any particular lighting problem a special study, and their skill and experience is at the service of architects, engineers and customers. We have directed the lighting of most of the principal armories, stores, railway stations and factories in the United States.

INTENSIFIED
ARC LAMP
Ornamental Casing

HEATING AND COOKING EQUIPMENTS.

The GENERAL ELECTRIC COMPANY manufactures a complete line of heating and cooking appliances, which have become a necessary part of the equipment of modern homes, hotels, hospitals, etc. The Cooking and Baking Outfit consists of a hardwood table with Cereal Cooker, Tea Kettle, Coffee Percolator, Frying-Pan, Broiler, Grid, Oven and Combination Cooker, each of which appliances may be purchased separately. General Electric Products also include Flatirons, Water-Heaters, Chafing-Dishes, Toasters, Stoves, Cigar Lighters, Heating-Pads, Luminous Radiators and Tubular Air-Heaters.

ADVANTAGES.

The advantages possessed by the foregoing electrically heated devices are instant readiness, cleanliness, absence of smoke, flame or soot, and reliability and economy. Each device is designed for its particular purpose, constructed in a practically indestructible manner and with all desirable sanitary features.

LUMINOUS
ELECTRIC
RADIATORELECTRIC
FLATIRONELECTRIC COOKING
AND BAKING OUTFIT

HABIRSHAW WIRE COMPANY

MANUFACTURERS OF

Rubber-Covered Wires and Cables

OFFICES

253 Broadway

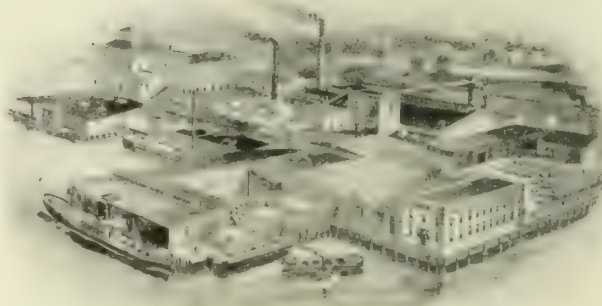
NEW YORK, N. Y.

TELEPHONE, 5795 BARCLAY

WORKS

YONKERS, N. Y.

TELEPHONE, 2340



WORKS OF HABIRSHAW WIRE CO., YONKERS, N. Y.

PRODUCTS.

All forms of INSULATED WIRES and CABLES, including HOUSE WIRES, TELEPHONE and TELEGRAPH WIRES, SIGNAL WIRES, CAR WIRES, "HABIRSHAW" TREE WIRE, HIGH-TENSION WIRES and CABLES, UNDERGROUND LEADED CABLES, ARMORED SUBMARINE CABLES, MINE and TORPEDO CABLES, THEATER and STAGE CABLES, "ATTIX" PATENT FLEXIBLE TUBE and WIRE, and "HABIRSHAW WHITE and RED CORES."

"ATTIX" TUBE AND WIRE.

"Attix" Patent Flexible Tube and Wire is a double, flexible woven fibrous tube, weather-proof and flame-proof, over Standard "Habirshaw" Red Core wires and cables.

"HABIRSHAW" TREE WIRE.

"Habirshaw" Tree Wire is the smallest, lightest, strongest and most durable tree wire on the market. It is made only by the HABIRSHAW WIRE COMPANY.

"HABIRSHAW WHITE CORES."

"Habirshaw White Cores" are high-grade rubber insulated wires and cables. They are always good and always the same.

"HABIRSHAW RED CORES."

"Habirshaw Red Cores" are the best grade of house wires made. They are recommended where a specially fine installation is desired. Recently some of our red core wire was taken from a building where it had been in use twenty years. It was as good as the day it was installed.

QUALITY AND SERVICE.

There are twenty-five years of experience and satisfactory service behind the "Habirshaw" wires. It will pay you to specify them. They may cost a little more, but are cheaper in the end. Cheap insulated wires never pay. It is better to specify a good standard make.

TESTS.

All our House Wires are on the approved list of the National Board of Fire Underwriters, and are inspected and tested by the Wire Inspection Bureau. A test stamp will be found on the tag of every coil.

SPECIAL
CONDITIONS.

Many architects and electrical contractors and engineers have their own specifications for insulated wires. We are glad to meet any special conditions that may arise.

PRICES.

Constant changes in prices and discounts due to fluctuations in raw materials, particularly copper and rubber, and the large variety of our products make an adequate price-list impossible, except in catalogue form. Catalogues will be sent on application, and also a pamphlet on "Rubber Insulation for Electrical Conductors," in which the subject is fully and simply treated. Correspondence is invited on any question that may arise regarding rubber insulation.

REFERENCES.

"Habirshaw" Wires and Cables are installed in thousands of well-known buildings all over the world. Below we give a list of a few buildings in which these wires were exclusively used.

BUILDING	LOCATION	BUILDING	LOCATION
Astor Hotel	New York, N. Y.	New York State Insane Asylum	Utica, N. Y.
American Surety Building	New York, N. Y.	Produce Exchange	New York, N. Y.
Bloomington Insane Asylum	New York, N. Y.	Prudential Life Insurance Building	Newark, N. J.
Cotton Exchange	New York, N. Y.	Park & Tilford	New York, N. Y.
Columbia College	New York, N. Y.	Post Office	Brooklyn, N. Y.
Residence of Andrew Carnegie	New York, N. Y.	Post Office	Chicago, Ill.
Drexel Building	Philadelphia, Pa.	Princeton Commencement Hall	Princeton, N. J.
Engineers' Club	New York, N. Y.	Patent Office	Washington, D. C.
Equitable Building	New York, N. Y.	Residence of W. R. Rockefeller	Tarrytown, N. Y.
Farmers Loan & Trust Co.	New York, N. Y.	Residence of J. D. Rockefeller	Tarrytown, N. Y.
Hanover Bank Building	New York, N. Y.	St. Francis Xavier's College	New York, N. Y.
Herald Building	New York, N. Y.	St. Regis Hotel	New York, N. Y.
Madison Square Garden	New York, N. Y.	Tuxedo Club	Tuxedo, N. Y.
Manhattan Life Insurance Co.	New York, N. Y.	University Club	New York, N. Y.
Museum of Art	New York, N. Y.	Union League Club	New York, N. Y.
Museum of Natural History	New York, N. Y.	Residence of C. Vanderbilt	New York, N. Y.
Metropolitan Opera House	New York, N. Y.	Residence of W. H. Vanderbilt	New York, N. Y.
Metropolitan Club	New York, N. Y.	Residence of W. H. Vanderbilt	Newport, R. I.
Marshall Field Co.	Chicago, Ill.	W. H. Vanderbilt's Yacht	
Residence of J. P. Morgan	New York, N. Y.	West Point (New Buildings)	West Point, N. Y.
Residence of D. O. Mills	New York, N. Y.	Waldorf-Astoria Hotel	New York, N. Y.
Mormon Temple	Salt Lake City, Utah	White House	Washington, D. C.
New York Yacht Club	New York, N. Y.	Gimbel Building	New York, N. Y.

THE HART MANUFACTURING CO.

"Diamond H" Electric Switches
HARTFORD, CONN.

NEW YORK OFFICE
203 BROADWAY
BOSTON OFFICE
170 SUMMER STREET



CHICAGO OFFICE
269 SOUTH CANAL STREET
TORONTO OFFICE
62 WELLINGTON STREET, WEST

PRODUCTS.

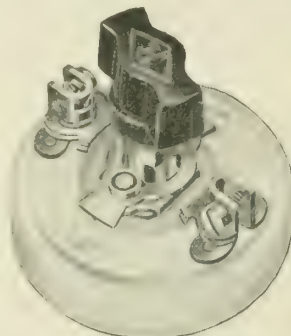
ELECTRIC SWITCHES of the following types: PUSH-BUTTON, ROTARY FLUSH, ROTARY SURFACE and AUTOMATIC DOOR; AUTOMATIC FLUSH RECEPTACLES and STEEL WALL CASES. We also design SPECIAL SWITCHES, or make them to specification.

DESCRIPTION.

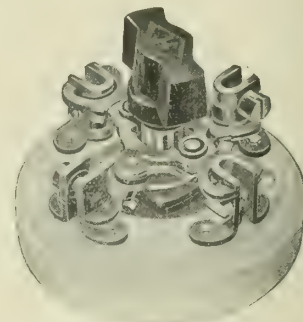
"Diamond H" Switches are designed and constructed to give long and continuous service under the most severe conditions. All wearing parts are made of steel, case hardened and tempered, and the mechanism of each switch is thoroughly insulated from the current carrying parts by sheet mica which will not wear or burn out.



"DIAMOND H" SURFACE SWITCH, WITH DIAL
5, 10, 20 and 35 Amperes



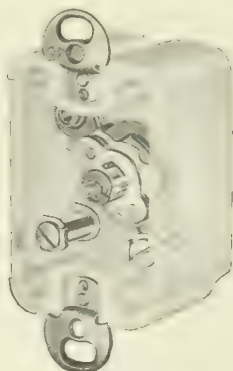
"DIAMOND H" SWITCH
Nos. 220 and 221 Single Pole



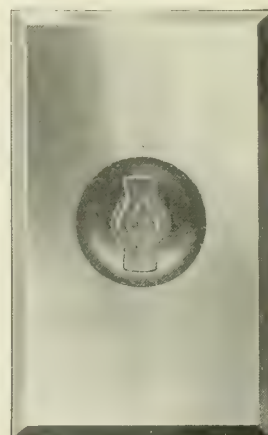
"DIAMOND H" SWITCH
Nos. 122 and 222 Double Pole

EQUIPMENT OF STANDARD SWITCHES.

Unless otherwise specified all surface switches, except 3-way and 4-way, are equipped with dials which are removable to facilitate connecting up; 3-way and 4-way switches can not be made to indicate.



"DIAMOND H" FLUSH SWITCH
No. 0110, Single Pole



"DIAMOND H" FLUSH SWITCH, WITH PLATE



"DIAMOND H" FLUSH SWITCH
No. 0120 Double Pole

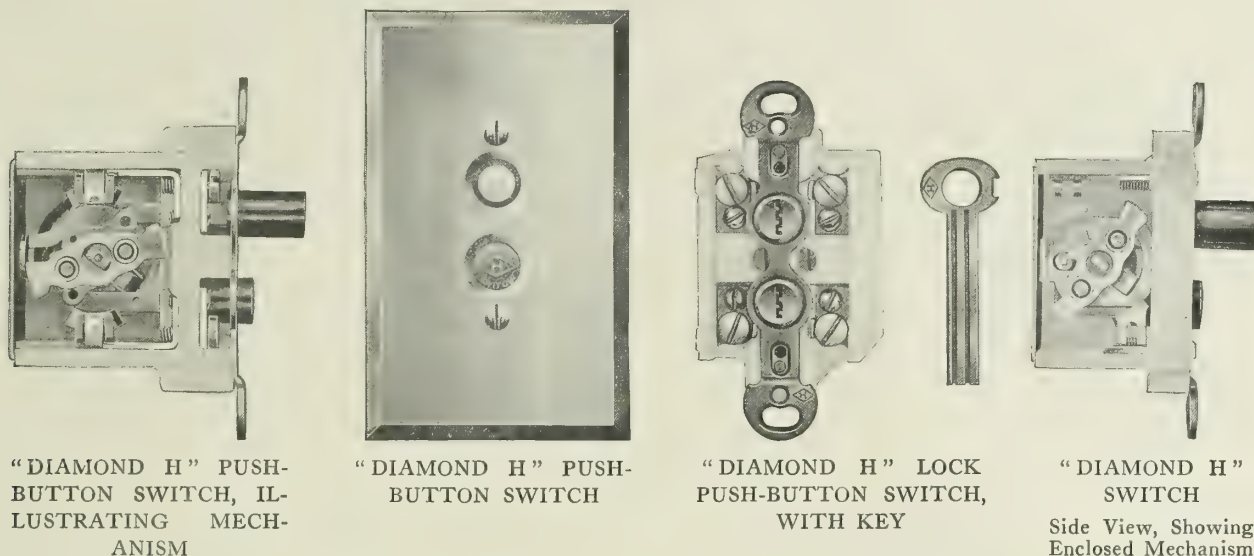
ROTARY FLUSH SWITCHES.

Rotary Flush Switches are made to fit "Diamond H" steel Wall Cases or standard conduit boxes of other makes. They are equipped with solid brass plates of special quality to

take a high finish. Plates are regularly finished in brush brass, polished brass, nickel, bronze and oxidized copper. Any special hardware finish can be duplicated in our own finishing department.

PUSH-BUTTON SWITCHES.

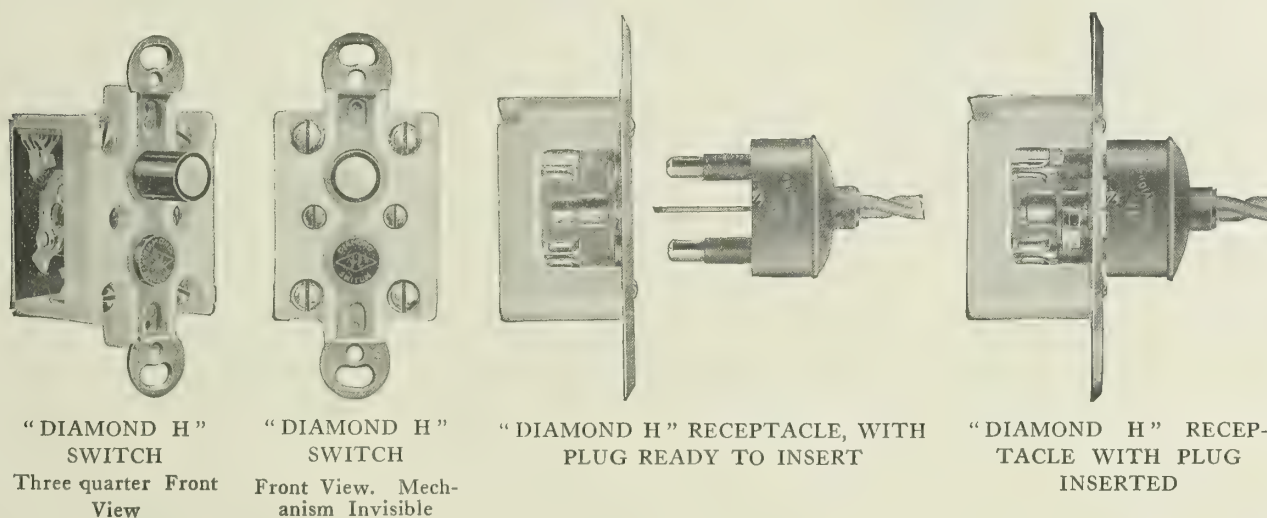
A full line of Push-Button Switches is made in both shallow and deep base types. The shallow base switch is one and one half inches and the deep base switch two and one quarter inches deep.



INSULATION.

All "Diamond H" Push-Button Switches have the current carrying parts insulated from the mechanism by sheet mica. No fiber is used in their construction.

The mechanism is entirely enclosed by the porcelain base, making the switch dust and dirt proof. Lock attachments can be furnished on any push-button switch.



FACE-PLATES.

Plates are made of hard brass one eighth inch thick, and are finished in our own plating department. Any hardware finish can be readily duplicated.

RECEPTACLES.

"Diamond H" Flush Receptacles are of the automatic type, with face-plates opened or closed by the respective insertion or withdrawal of the plug. They are only one and one half inches deep and are thoroughly well made in every particular.

CATALOGUES.

Our complete Catalogue will be sent on request.

THE HART & HEGEMAN MFG. CO.

ORIGINAL MANUFACTURERS OF

Hart "H. & H." Electric Switches and Accessories

342 Capitol Avenue
HARTFORD, CONN.

PRODUCTS.

HART "H. & H." ELECTRIC SWITCHES: PUSH-BUTTON FLUSH, ROTARY FLUSH, ROTARY SURFACE, AUTOMATIC DOOR. FLUSH BASE RECEPTACLES and WALL CASES.

CONSTRUCTION.

For eighteen years the design of the Hart "H. & H." Switch has been constantly improved and perfected and with the aid of special automatic machinery, selected tested materials, and the best class of American labor, the manufacturers have evolved a device of quick snap, great overload capacity, easy movement and long life.

OFFICIAL APPROVAL.

All Hart "H. & H." Switches are inspected and labeled under the direction of the Underwriters' Laboratories, Inc.

FINISHES.

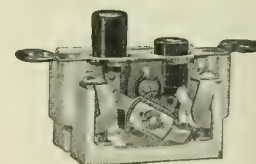
We have our own well-equipped Finishing Department and can finish flush plates to match any hardware.

PUSH-BUTTON FLUSH SWITCHES.

Made in single-pole, double-pole, three-way and four-way types. This Switch is only $1\frac{1}{2}$ inches deep and will fit in thin partitions and by sliding doors.

Three-way Switches are used for controlling a group of lights from either one of two points, one switch being located at each point.

Four-way or Commutation Switches are used in connection with two Three-way Switches for controlling a group of lights from three or more points.



THE "H. & H."
PUSH-BUTTON
FLUSH SWITCH

ROTARY FLUSH SWITCHES.

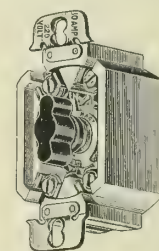
Made in single-pole, double-pole, three-way, four-way and electrolier styles.

Face plates can now be furnished which screw direct to switch body instead of being held in place by adjustable switch handle.

This is the only type of Flush Switch that can be used for electrolier connections. Electrolier Switches are for use with different groups of lamps to be individually controlled.

The first quarter turn of switch handle lights the lamps connected in one group, second quarter turn lights those connected in first and second groups and the third quarter turn lights all the lamps. The fourth quarter turn cuts out all the lamps.

We make other variations of this idea.



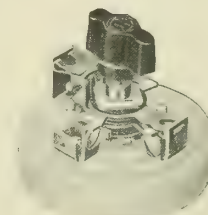
THE "H. & H."
ROTARY FLUSH
SWITCH

ROTARY SURFACE SWITCHES.

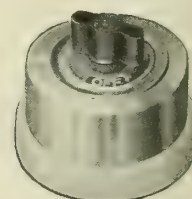
Have same insulation and movement as our Rotary Flush Switches, and are furnished in single-pole, double-pole, three-way and four-way, and electrolier styles for all standard ampere ratings.

Covers can be made in any finish to match hardware, or switch can be furnished with all-porcelain handle and cover to match tilings and marbles.

We can furnish a non-removable handle for this switch.



THE "H. & H."
ROTARY
SURFACE
SWITCH
Cover removed



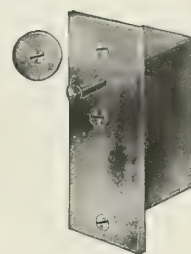
THE "H. & H."
ROTARY
SURFACE
SWITCH

AUTOMATIC
DOOR
SWITCHES.

Hart "H. & H." Door Switches automatically operate a light by the opening and closing of a door.

This switch prevents lights being left burning in closets, pantries, booths and toilets.

The switch case is set flush in the door jamb, and plunger is pressed and released by the strike of the door in movement.

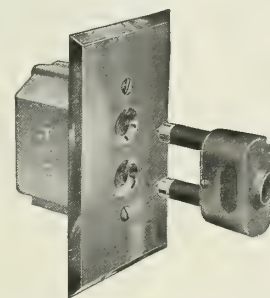
THE "H. & H."
AUTOMATIC
DOOR SWITCHAUTOMATIC
FLUSH BASE-
BOARD
RECEPTACLE.

For installation in baseboards and walls, where detachable, interchangeable connection is needed.

When plug is withdrawn the apertures in face plate are automatically and tightly closed, making the receptacle dust-proof.

It is impossible to short circuit the Receptacle and the plug is non-breakable.

The face-plate harmonizes in finish and dimensions with flush switch plates, and can be furnished in gang combinations with them.

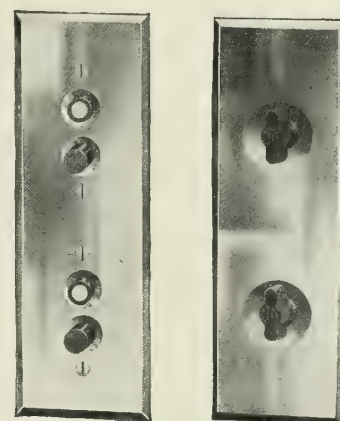
THE "H. & H."
AUTOMATIC FLUSH
BASEBOARD
RECEPTACLEFLUSH
PLATES.

Can be furnished in horizontal or tandem gangs or in combinations of push button and rotary plates and flush receptacle plates.

We now make a light-weight plate with hollowed back to fit over irregularities in the plates or woodwork.

Rotary Flush Plates can be furnished with face screws to hold face-plate secure against switch body.

We can supply plates to match any finish of hardware.



THE "H. & H." FLUSH PLATES

STEEL WALL
CASES.

For installing Hart "H. & H." Push-Button Flush and Rotary Flush Switches and Flush Receptacles; they also fit all standard switches.

Made of cold-rolled steel .081 inches thick, heavily japanned and with four knock-outs in the back and two in each end for connections of wire or loom.

Very carefully assembled and accurately machined so that absolute reliance may be placed on their being flush when installed.

Ears are reversible so that the box may be used for old or for new work.

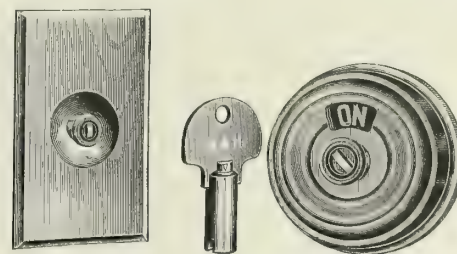
Boxes are furnished in two depths, $2\frac{3}{4}$ inches and $2\frac{1}{16}$ inches, for use in thin partitions and near sliding doors, and can be furnished in horizontal or tandem gangs.

THE "H. & H."
WALL CASELOCK ATTACH-
MENTS.

All Hart "H. & H." Switches can be fitted with Lock Attachments which prevent operation of switch by anyone not having special key for same.

PRICES.

Hart "H. & H." Switches cost no more than other switches; and architects who have previously specified "H. & H." Switches only in buildings where first cost was not a primary factor, can now specify Hart "H. & H." Switches in all grades of work.



THE "H. & H." LOCK ATTACHMENTS

KOHLER BROTHERS

Contracting Electrical Engineers and Manufacturers

277 Dearborn Street
CHICAGO, ILL.

BRANCH OFFICES

NEW YORK

BERLIN

LONDON

OUR WORK IN GENERAL.

Consists of ELECTRICAL CONTRACTING and ENGINEERING in all its phases.

Complete ELECTRIC LIGHTING and POWER PLANTS for Manufacturing and Office Buildings, covering GENERATORS, ENGINES, and the WIRING for buildings of every description. Also, manufacturers of SWITCHBOARDS and PANEL-BOARDS; builders of ELECTRIC RAILWAYS, and owners of the "KOHLER SYSTEM," and of numerous other patents covering time and money saving devices, both mechanical and electrical.

ELECTRIC WIRING.

Architects and builders of experience recognize the fact that the electrical work in a building is of as much importance as any other part of the building, and therefore quality rather than price should be the guiding principle in determining who should be entrusted with the work. The conscientious work done by us has secured contracts from clients who want the best rather than the cheapest construction. We employ none but superior workmen, watch every job carefully, and never allow things to drag. Our work is completed when promised; and we are never called upon to do our work over, because we do it right the first time.

THE FOLLY OF CHEAP WORK.

The fire losses in 1907 caused by defective electrical construction amounted to 3 per cent. In 1908, when the financial panic was at its height and business was being taken by everybody at low prices, the fire losses attributable to defective electrical construction amounted to 4.57 per cent, an increase of over 50 per cent in one year. During this period we refused every contract which was offered us at a price which prohibited conscientious and safe work. The above figures, which have been arrived at after a most careful investigation of the statistics on file with a number of the largest fire insurance companies, prove conclusively that cheap electrical construction is an investment which architects and owners should avoid, and that safe work is in every case the thing to be desired.

SWITCH- BOARDS.

Our manufacturing department for Switchboards, Panel-Boards, etc., is equipped to turn out the best work in the shortest possible time. The designing of our boards is done by skilled and careful engineers, and our work when finished is mechanically and electrically perfect. Apparatus of this nature manufactured by us is in use throughout this country and abroad. It is recognized as the best.

THE "KOHLER SYSTEM."

We are sole owners of patents covering the "Kohler System" (which comprises electrical controlling apparatus for the operation of all types of electrically driven machinery); also, other money and time saving devices.

The "Kohler System" has been installed in most of the large daily newspaper offices throughout the United States, and has been introduced into England, France, Holland, India, Australia, and South America. It is recognized as the only reliable system for the operation of large web presses, flat-bed presses, etc. Over 400 equipments are now in use.

REFERENCES.

Messrs. Pierce, Richardson & Neiler, engineers for the mechanical and electrical equipment of the magnificent new passenger terminal building of the Chicago & Northwestern

Railway, now being erected at Chicago, have awarded us the contract for the electrical wiring and construction.



NEW PASSENGER TERMINAL BUILDING OF THE CHICAGO & NORTHWESTERN RAILWAY
FROST & GRANGER, Architects. PIERCE, RICHARDSON & NEILER, Engineers

During the past twenty years we have executed the electrical work on several thousand buildings of every imaginable type. For the purpose of showing the variety of our undertakings we list below some of the representative buildings:

BUILDING	LOCATION	ARCHITECT
The Chicago & Northwestern Railway Terminal	Chicago, Ill.	Frost & Granger
The Coliseum	Chicago, Ill.	Frost & Granger
Siegel-Cooper & Co.	Chicago, Ill.	Jenney, Mundie & Jensen
Western Glucose Co.	Robey, Ind.	P. J. Weber
Fisher Building	Chicago, Ill.	C. A. Eckstorm
Sprague, Warner & Co.	Chicago, Ill.	Shepley, Rutan & Coolidge
University of Chicago, Tower Group	Chicago, Ill.	Pond & Pond
Long Distance and Toll Building, Chicago Telephone Co.	Chicago, Ill.	Densmore & LeClear, Engineers
Hewitt Mfg. Co.	St. Louis, Mo.	A. E. Baxter, Engineer
Hewitt Mfg. Co.	Chicago, Ill.	A. E. Baxter, Engineer
Coca-Cola Building	Chicago, Ill.	Frank Abott
Traction Building	Cincinnati, Ohio	D. H. Burnham Co.
Mount Carmel Hospital	Columbus, Ohio	Pierce, Richardson & Neiler, Engineers
Ranch of W. H. Bartlett	Vermejo Park, N. Mex.	J. L. Silsbee
Residence of Victor Lawson	Chicago, Ill.	R. Clipston Sturgis
Hibbard, Spencer & Bartlett Co.	Chicago, Ill.	Frost & Granger
Inter-Ocean Building	Chicago, Ill.	W. Carlys Zimmerman
International Harvester Co.	Chicago, Ill.	Pratt & Atkins, Engineers
Vincennes Hotel	Chicago, Ill.	A. W. Buckley
Bryson Apartments	Chicago, Ill.	S. S. Beman
American Can Co.	Hoopeston, Ill.	W. L. Fergus & Co., Engineers
Illinois Eastern Hospital	Kankakee, Ill.	W. L. Fergus & Co., Engineers
Illinois Northern Hospital	Elgin, Ill.	C. H. Wilmerding, Engineer
Shops of Chicago, Burlington & Quincy Railway	Hannibal, Mo.	Arnold Co.
Shops of Chicago & Alton Railway	Bloomington, Ill.	Arnold Co.
Shops of Oregon Short Line	Pocatello, Idaho	S. S. Beman
Shops of Union Pacific Railway	Omaha, Neb.	A. C. Eschweiler, Engineer
Berger Building	Pittsburg, Pa.	Barnett, Haynes & Barnett
Grand Exchange Building	Milwaukee, Wis.	Maural & Co., Engineers
Illinois Athletic Club	Chicago, Ill.	Dodge & Day, Engineers
Link Belt Machinery Co.	Chicago, Ill.	D. H. Burnham & Co.
Commercial Gazette Building	Pittsburg, Pa.	Howard Shaw
Joseph T. Ryerson & Son	Chicago, Ill.	Pierce, Richardson & Neiler, Engineers
Union Depot	Mobile, Ala.	Jenney, Mundie & Jensen
Hirsch Wickwire Building	Chicago, Ill.	W. E. Fergus, Engineer
M. A. Donahue Building	Chicago, Ill.	J. J. Flanders
Featherstone Foundry & Machine Co.	Chicago, Ill.	Arnold Co., Engineers
Illinois Soldiers' & Sailors' Home	Quincy, Ill.	W. L. Fergus & Co., Engineers
Carrie L. Munn Building	Chicago, Ill.	C. A. Eckstorm
Studebaker Building	Chicago, Ill.	Wm. Ernest Walker
Baltimore & Ohio Railway Station	Gary, Ind.	H. A. Long
Printers' Building	Chicago, Ill.	H. B. Wheelock
Old Northwestern Office Building	Chicago, Ill.	H. B. Wheelock
Post Office	Muskegon, Mich.	J. Knox Taylor
Occidental Building	Chicago, Ill.	I. C. Llewellyn
High School	La Crosse, Wis.	I. C. Llewellyn
United States Express Co. Stables	Chicago, Ill.	Wm. C. Barfield
Crilly Building	Chicago, Ill.	H. B. Wheelock
Edgewater Telephone Exchange	Chicago, Ill.	Pond & Pond
Virginia Theater	Chicago, Ill.	H. R. Wilson
High School	Beloit, Wis.	J. C. Llewellyn
Hooker Building	Chicago, Ill.	I. C. Llewellyn
Moos Building	Chicago, Ill.	S. N. Crowen
First National Bank Building	Joliet, Ill.	Jenney, Mundie & Jensen
Richardson Building	Chicago, Ill.	Pond & Pond

THE MOON MANUFACTURING COMPANY

Annunciators and Burglar Alarms

13-23 South Jefferson Street
CHICAGO, ILL.

LONG DISTANCE TELEPHONE, MONROE 275

PRODUCTS.

"KNAPP" ANNUNCIATORS for Banks, Office Buildings, Hotels, Hospitals, Clubs, Stores, Apartment Houses, Elevators, Railway Coaches, Yachts, Steamships, and United States War Department. ANNUNCIATORS used in connection with Fire-Alarm and Burglar-Alarm Apparatus.

We also make high-grade BURGLAR-ALARMS of a variety covering all classes of service, and build them in combination with ANNUNCIATORS, or with CLOCKS for time cut-out.

DESCRIPTION.

Our line embraces a considerable variety of approved styles and sizes of Annunciators and Burglar-Alarms, each of individual merit and appropriateness to a special service. The efficiency of these instruments depends wholly on the mechanism, which is made entirely of metal, and is therefore unaffected by moisture or atmospheric conditions. The drops are easily removed or replaced in case of accident and mark on a minimum amount of current. Some of these instruments have been in service for ten years without requiring repair.

PRICES.

Furnished in our Catalogue with full descriptions, specification forms, wiring diagrams, and general information.

REFERENCES.

In Chicago, Ill., "Knapp" Annunciators are used in the following notable buildings:

Chicago National Bank, New Northern Trust Bank, New Continental National Bank, New First National Bank, New American Trust and Savings Bank, New Corn Exchange National Bank, New Michael Reese Hospital, New Polyclinic Hospital, New Mercy Hospital, Chicago Athletic Club, Calumet Club, New University Club.

We have sold over a quarter of a million "Knapp" drops.

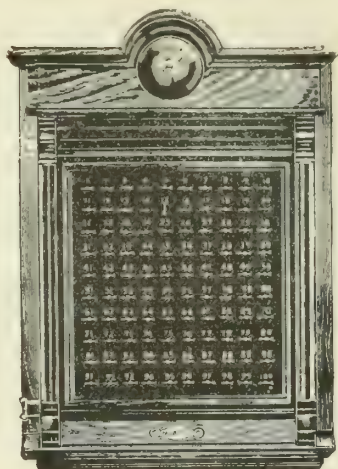


FIG. 1. HOTEL ANNUNCIATOR, "A" STYLE
Without Return Call

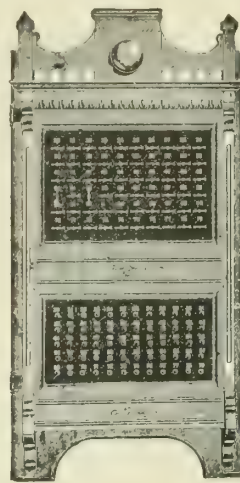


FIG. 2. HOTEL ANNUNCIATOR, "B" STYLE
With Return Call; also Automatic Fire-Alarm

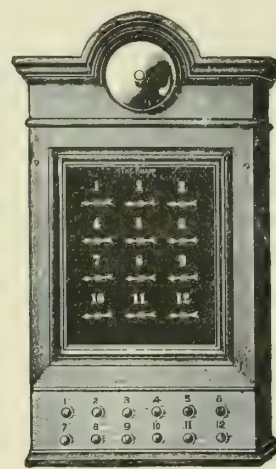


FIG. 3. INDIVIDUAL RESTORING ANNUNCIATOR

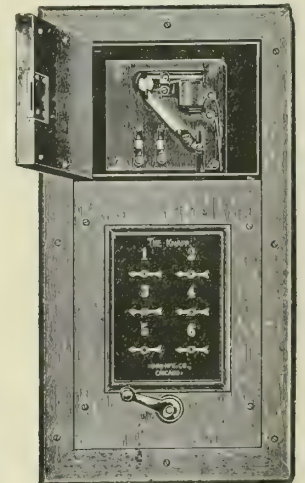


FIG. 4. HOSPITAL ANNUNCIATOR, FLUSH TYPE
With Automatic-Lighting Switch Attachment

ILLUSTRATIONS.

FIG. 1—Moderate priced, complete, massive appearance. Hinged-back, enabling case, containing mechanism, to be swung out without disturbing line wires. Can be had with Return Call; also, our improved Automatic Fire-Alarm, operating over the same lines as the Return Call. Various woods and finishes. Carried in stock in natural oak.

FIG. 2—A combination saving wall space, suited to exclusive appointments of first-class hostelryes. The Guest-Call Panel is enamel finish; the Return-Call Pushes are of polished hard rubber. Fire-Alarm automatically turns in alarm continuously for several minutes. This instrument can be obtained without Return Call and Fire-Alarm. Various woods and finishes.

FIG. 3—Each drop restored electrically and individually by push-button, without disturbing the other indications. A time-saver in business establishments. We also make similar Annunciators, automatic restoring. These instruments can be placed out of danger. We make electrically restored Annunciators, restored by push-button at one or several desks or places. Calls remain shown until answered and are restored at will.

FIG. 4—Has lighting switch in combination with drops. When a patient pushes the button the switch lights an incandescent lamp, which remains lighted until attendant resets indications. Signal lights can be operated at any points in crooked halls, or on different floors where the Annunciator can not be seen. No bell or buzzer; therefore, that silence which is important in a hospital. Approved by Board of Underwriters.

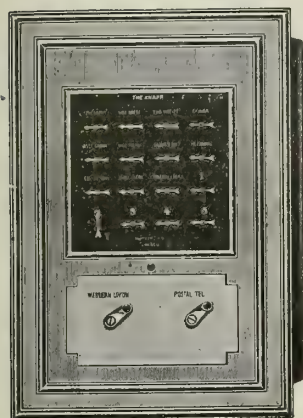


FIG. 5. FLUSH TYPE
METAL-CASE AN-
NUNCIATOR

With Messenger Calls

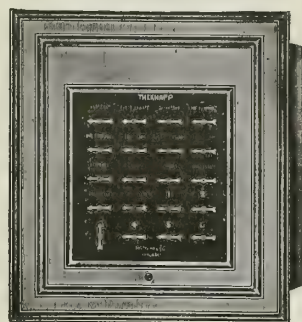


FIG. 6. FLUSH TYPE
METAL OR WOOD-
CASE ANNUNCIATOR



FIG. 7. IMPROVED "KNAPP"
BURGLAR-ALARM

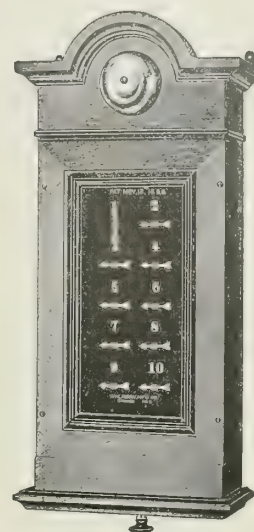


FIG. 8. HOUSE AND
HOTEL ANNUN-
CIATOR

Style No. 2

FIG. 5—Similar to Fig. 6, in combination with Western Union and Postal-Call Boxes, in style uniform with Annunciator. Convenient, and can be operated simultaneously with Annunciator.

FIG. 6—Exceedingly handsome. Made to set in the wall, only face or trim exposed. Economizes space. Designs to conform with architects' plans. For fine surroundings, such as banks, offices, libraries, etc.

FIG. 7—With separate line cut-outs for each indication, a silent and battery test, and a spring switch which can not be left out of place. Dependable. We also make a Flush Type Burglar-Alarm with clock for time cut-out. The line cut-outs provide that any room or station may be put out of service at any time. The clock with alarm signal may be set for any hour or minute. Sets into the wall and is extremely ornamental.

FIG. 8—For pretentious quarters in fine hotels, residences, clubs, banking houses, stores, and offices. Style 3 is more elaborate and higher in price. Furnished with mechanical, automatic and electrical reset.

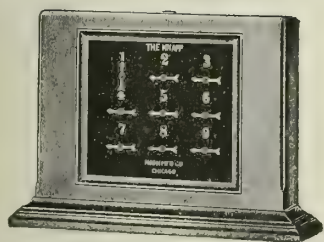


FIG. 9. DESK ANNUN-
CIATOR

Single- and Double-Faced

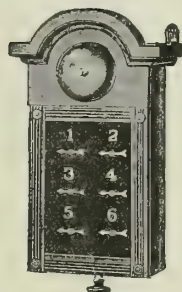


FIG. 10. HOUSE
ANNUNCIATOR
Style No. 1



FIG. 11. ACME
TWO-POINT
ANNUNCIATOR,
METAL CASE



FIG. 12
ELEVATOR
ANNUNCIATOR,
WOODEN CASE

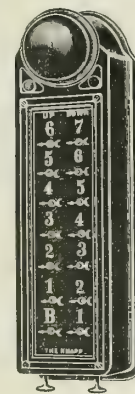


FIG. 13. UP AND
DOWN
ELEVATOR
ANNUNCIATOR
WITH METAL CASE

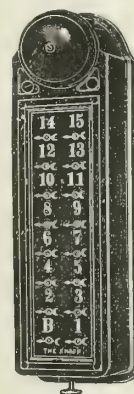


FIG. 14.
ELEVATOR
ANNUNCIATOR,
METAL CASE

FIG. 9—Sets flat on desk or counter. The double-faced style is suitable for a double flat-topped desk, because it can be read by two attendants. It indicates simultaneously on both sides and is reset mechanically or electrically. We also make a Hanging Annunciator, to go under desk or counter, saving space or suiting convenience. All our Annunciators have the same hard-service "Knapp" mechanism.

FIG. 10—A residence, hotel and office instrument with mechanical, automatic or electrical reset. This instrument is an exact duplicate of No. 2 house style, with the exception of the case which is not so elaborate; also, it is lower in price.

FIG. 11—With a bell or buzzer, answers purpose of two bells for front and rear doors. Unlimited number of important services; attractive, automatic in action, practically indestructible. List price: bell or buzzer, \$3.00. In stock for immediate shipment.

FIG. 12.—Certain well-known elevator companies have adopted "Knapp's" to the exclusion of other annunciators, because they stand the hard knocks of elevator service. We make a single call Elevator Annunciator, wherein a call from one station or floor rings the bell and gives indication, at the same time opening line to that particular drop, so that repeated pushing of the button has no effect until Annunciator is restored. This preserves the life of batteries indefinitely. Any finish.

FIG. 13—This instrument has two separate rows of drops and resets, one row used by persons desiring to go up, and the other by those wishing to go down. This arrangement is a great time saver because the operator of the elevator acting on signal calls, will on his up trips stop only for up indications, and on his down trip for down indications. This eliminates stopping at floors where passengers are waiting to go in the opposite direction. Metal or wood cases.

FIG. 14—This style of Annunciator has hinged back. Cable enters from the back and wires are distributed to terminal contacts set on backboard. Attractive and suitable as well for clubs, offices, etc. We also make an Up and Down Elevator Annunciator with double reset, in this style. There are two separate rows of drops, used respectively by persons desiring to go up or down. Saves collisions between passengers. Wood or metal case.



TRADE-MARK

NATIONAL METAL MOLDING CO.

PITTSBURG, PA.

BRANCH OFFICES

SAN FRANCISCO, CAL., 612 Howard Street
 BOSTON, MASS., 44 Federal Street
 NEW YORK, N. Y., 253 Broadway

SALT LAKE CITY, UTAH, Walker's Bank Building

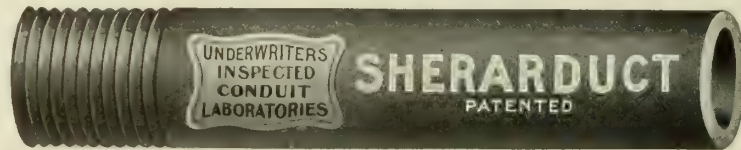
WORKS: ECONOMY, PA.



TRADE-MARK

PRODUCTS.

"FLEXDUCT" FLEXIBLE FIBRE CONDUIT, "ECONOMY" ENAMELED IRON CONDUIT,
 "SHERARDUCT" SHERARDIZED RIGID CONDUIT, and "NATIONAL" METAL MOLDING.



"SHERARDUCT" RIGID CONDUIT

"SHERAR-
 DUCT," THE
 RUST-PROOF
 RIGID
 CONDUIT.

"Sherarduct" Conduit is made from a mild steel pipe, thoroughly cleaned of all scales, oxide and other impurities, and then subjected to the process of Sherardizing, in which zinc dust is driven into the pores of the metal, rendering the pipe rust-proof and immune to corrosion.

"Sherarduct" is alloyed with zinc on the inside and outside surfaces alike.

SHARP,
 CLEAN-CUT
 RUST-PROOF
 THREADS.

Sharp, clean-cut, rust-proof threads enable the rapid and perfect ground connection of each length.

RUST-PROOF
 QUALITIES
 CAN NOT BE
 INJURED.

Because of its zinc amalgamated surface "Sherarduct" can stand rough handling, smashing, bending and twisting without injuring its rust-proof qualities. The sharp tools of the workmen, filing or abrasion do not remove the zinc, and the iron is always non-corrosive.

ADVANTAGES.

"Sherarduct" is annealed, hence it bends easily and readily without cracking, peeling, flaking or scaling; it is unaffected by acids or alkalies; impervious to atmospheric and chemical actions; and uninjured by rust when imbedded in cement, concrete, or cinder concrete.

ACID-PROOF.

"Sherarduct" Conduit is a rust-proof tube without further treatment, but it is desired, however, to eliminate every possible opportunity for corrosion, and a special final treatment is given the conduit which consists of dipping it in an oil which resists the action of such acids as are found in cinder concrete, which would otherwise dissolve the pure zinc coating. Zinc, however applied, is of a porous character except in the alloy found under the outer coating of "Sherarduct," and by impregnating the outer coating of "Sherarduct" the pores of zinc are sealed and an outer coating given which effectively resists acid action.



“ECONOMY” ENAMELED IRON CONDUIT



TRADE-MARK

“ECONOMY”
ENAMELED
IRON
CONDUIT.

“Economy” is an enameled conduit which provides a substantial and efficient raceway for electric wiring. The pipe is of a selected quality of steel, thoroughly cleaned of all silicate, scales and burrs and carefully threaded. The threads of the coupling end are clean, sharp, and true, enabling the joints to be perfectly and rapidly screwed together. “Economy” bends readily and without cracking.

It is regularly inspected and labeled under the supervision of Underwriters’ Laboratories (Inc.).

TABLE OF
STANDARD
DIMENSIONS
AND PRICES
OF “SHERAR-
DUCT” AND
“ECONOMY.”

Standard Size Pipe Inches	Conduit Price per 100 Feet	Elbows Price per 100	Couplings Price per 100	Internal Diameter, Inches	Outside Diameter, Inches	Number of Threads per Inch of Screw	Nominal Weight per Foot Pound
$\frac{1}{2}$	\$12.50	\$22.00	\$8.00	.62	.82	14	.85
$\frac{3}{4}$	16.00	27.00	11.00	.82	1.05	14	1.12
1	21.00	45.00	13.00	1.04	1.31	11 $\frac{1}{2}$	1.67
1 $\frac{1}{2}$	30.00	70.00	17.00	1.38	1.66	11 $\frac{1}{2}$	2.24
1 $\frac{1}{2}$	34.00	115.00	21.00	1.61	1.90	11 $\frac{1}{2}$	2.68
2	47.00	200.00	28.00	2.06	2.37	11 $\frac{1}{2}$	3.61
2 $\frac{1}{2}$	73.00	310.00	40.00	2.46	2.87	8	5.74
3	107.00	900.00	60.00	3.06	3.50	8	7.54
3 $\frac{1}{2}$	141.00	2000.00	100.00	3.64	4.00	8	9.00
4	175.00	2295.00	140.00	4.06	4.61	8	10.66



“NATIONAL” METAL MOLDING

“NATIONAL”
METAL
MOLDING.

The Sherardizing process—that superior method of securing a rust-proof surface—is used in its manufacture.

FIREPROOF,
NAIL-PROOF,
RUST-PROOF.

Simplicity of construction, ease of installation (its great flexibility makes it adaptable to all irregular corners), and the absolute protection it affords against fire wherever properly installed, make the “National” the ideal Metal Molding.

COMPLETE
LINE OF
FITTINGS.

There is a complete line of fittings with the “National” adaptable to all the conditions required in this kind of work.

All are regularly inspected and labeled under the supervision of Underwriters’ Laboratories (Inc.).

ILLUSTRATIONS OF
NATIONAL
METAL
MOLDING
INSTALLED.



OFFICE IN NEAVE BUILDING,
CINCINNATI, OHIO



STORE, McCLINTOCK BUILDING,
PITTSBURGH, PA.

KERITE INSULATED WIRE & CABLE CO.

INCORPORATED BY

W. R. BRIXEY

Manufacturers of Kerite Insulated Wires and Cables

Hudson Terminal, 30 Church Street

TELEPHONE, 238 CORTLAND
CABLE ADDRESS, "KERITE, NEW YORK"

NEW YORK, N. Y.

WESTERN REPRESENTATIVE

WATSON INSULATED WIRE Co., Railway Exchange, Chicago, Ill.

PRODUCTS.

KERITE INSULATED WIRES and CABLES for all purposes of Electric Transmission, Electric Lighting, Power, Telephone, Telegraph, Signals, Feeders, etc.; for building and all other purposes, Aerial, Underground, and Submarine.

KERITE TAPE, a heavily filled and coated fabric tape used as a covering for insulation on wires and cables, and for jointing and splicing purposes. Furnished in all widths, much heavier and of incomparably greater insulating value than ordinary tape, and of practically indefinite life.

PROPERTIES OF KERITE INSULATION.

Kerite insulation is a combination of crude kerite and pure unrecovered up-river fine Para rubber. Crude kerite is not only an active insulator, but a preservative of Para rubber. The chief characteristic of kerite insulation is that in it the gum, instead of being mixed with about three and one quarter times its own weight of inert mineral filler, as in the usual compounds, is compounded with only a small amount of mineral and a large amount of crude kerite.

Another property of kerite insulation is its practical indestructibility under deteriorating influences, either atmospheric or artificial, and the fact that its insulation resistance increases with age. Kerite wires and cables have undergone the rigid test of continuous service of fifty years, cables being in service to-day which are definitely known to have been made in 1874.

Kerite insulation is specially adapted to withstand heat for the reason that it does not dry out and become brittle when subjected to high temperatures. Kerite cables which have been subjected to temperatures of from 200 to 230° Fahr. for twenty-one years are in excellent condition at the present time. This property, and the non-decrease of insulation resistance with age, give Kerite insulated wires and cables a practically constant factor of safety and a specially valuable guarantee of protection in building work.



TRADE-MARK

SIZES.

Kerite products cover all types and sizes of wires and cables.

PRICES AND CO-OPERATIVE SERVICE.

Prices and details will be furnished on application as well as information covering results of tests and results derived from the experience of users. Recommendations as to design and make-up of cables for various uses furnished upon application.

REFERENCES.

Among prominent installations of Kerite wires and cables are the following:

Wires and Cables for Hudson and Manhattan Railroad Co.

Wires and Cables for complete Signal Installation of Pennsylvania Tunnel and Terminal Railroad Co.

Submarine Telegraph Cable for Panama Canal Zone.

United States Government Submarine Cables in Alaska, the Philippines, and New York Harbor.

THE NEW YORK ELECTRIC FOUNTAIN COMPANY, INC.

Portable and Stationary Electric Fountains

45 Liberty Street
NEW YORK, N. Y.

TELEPHONE, 326 JOHN

O. F. BATTALIA, GENERAL MANAGER

FACTORY
20 FULTON STREET

PRODUCTS.

Manufacturers of PORTABLE and STATIONARY ELECTRIC FOUNTAINS for interior or exterior decoration. We also make ARTISTIC and ORNAMENTAL MOSAIC WORK on GLASS; ORNAMENTAL STATUES, MANTELS, MONUMENTS and FIGURES in BRONZE and COPPER.

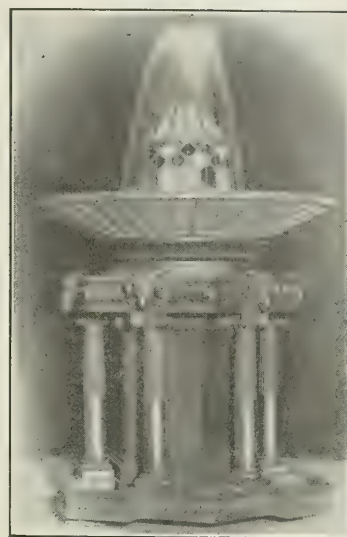
PORTABLE ELECTRIC FOUNTAINS.

The Portable Electric Fountain embodies all the gorgeous effects and artistic beauties that the combination of colored glass, flowing water and electric light can produce, constituting the novelty of the century. It is especially adapted for artistic decorations at dinners and banquets and for hotel and restaurant tables, and is equally appropriate in a reception room, library, hall, conservatory, etc.

The fountain is supplied ready for immediate use by simply adding water and turning on the current. It is operated by the same current that operates a fan or incandescent light. No plumbing connections are required. It is only necessary to replenish the water which evaporates.

Each fountain is supplied with necessary plugs and wire for making connections.

The water used in the fountain may be scented or colored.



PORTABLE FOUNTAIN, TYPE "E"

Patented February, 1905

One of many for Table Use

Dimensions—Height, 26 inches; base, 18 inches diameter

Material—Entire base of wood and compo ornaments

Finish—Base, antique gilding, with three receptacles for plants. Catch basin and dome, leaded or bent glass

MATERIALS.

The large Portable Fountains are made in marble, copper, bronze, iron and cement, only the best material and highest class of workmanship entering into the construction.

FOUNTAINS FOR ALL PURPOSES.

We are builders of fountains for all purposes, as gardens, parks, railroad parks, hotels, theaters and public buildings. Special designs to harmonize with existing conditions will be gladly submitted upon receipt of necessary information.

ESTIMATES, ETC.

We will gladly furnish estimates and sketches on all our work free of charge.

Send for catalogue of our Portable Indoor Fountains which we carry in stock.



ONE TYPE OF OUR LARGE FOUNTAINS,
LASANNO COURT, WEST END AVENUE AND
79TH STREET, NEW YORK, N. Y.

THE OKONITE COMPANY

Insulated Wires and Cables; Insulating Tapes

253 Broadway

NEW YORK, N. Y.

TELEPHONE, 6740 BARCLAY
CABLE ADDRESS, "OKONITE"

AGENCIES

CHICAGO, ILL., CENTRAL ELECTRIC Co.
CINCINNATI, OHIO, F. D. LAWRENCE ELECTRIC Co.
PITTSBURG, PA., ROBBINS ELECTRIC Co.

FACTORY
PASSAIC, N. J.

PHILADELPHIA, PA., NOVELTY ELECTRIC Co.
BOSTON, MASS., PETTINGELL-ANDREWS Co.

PRODUCTS.

"OKONITE" (rubber-covered) INSULATED WIRES and CABLES; NATIONAL ELECTRICAL CODE STANDARD WIRES; LAMP CORDS; FIXTURE WIRES; TELEPHONE WIRES; "OKONITE" RUBBER INSULATING TAPE, "MANSON" FRICTION or RUBBER-FILLED CLOTH TAPE.

DESCRIPTION.

"Okonite" is a highly developed rubber compound, employed by us for insulating electrical conductors.
It contains never less than 30 per cent, by weight, of the best dry, pure, fine para rubber, and is the only grade of insulation we make.



TRADE-MARK
Reg. U. S. Pat. Office

QUALITY.

Making but one grade of insulation, acknowledged to be the best, we are able to maintain for "Okonite" a standard of excellence approached by none; a uniformity of character which has made the word "Okonite" a synonym for all that is desirable in insulated wires and cables. The results of its use have given purchasers the same confidence in "Okonite" that we ourselves enjoy—a confidence enabling us to invite comparative tests on insulated wires purchased in the open market—tests electrical, physical and chemical.

TESTS.

All our testings are conducted upon the *plain insulated wire*; that is, before the application of tapes, braids or other protective coverings and after soaking in water for 36 hours and while still immersed.
We believe in determining the character of the insulation unaided by the reinforcements of materials intended only for mechanical protection. Some manufacturers object to thus testing their insulated wires. The reason is obvious.

TABLE OF RESISTANCES.

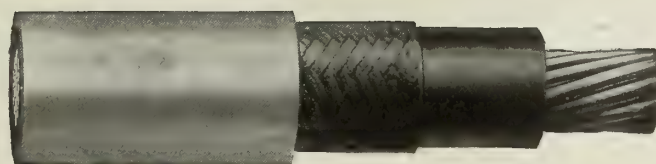
We give below a table for resistance testings on plain "Okonite" Insulated Wires:

Megohms Per Mile, 60° Fahr.—One-Minute Electrification									
Size	Thickness of Insulation in Inches								
B. & S. Gauge	3/64	2/32	5/64	3/32	7/64	4/32	5/32	6/32	7/32
1,000,000 C. M.	....	....	....	....	530	600	730	855	975
900,000 "	....	....	....	....	555	625	760	900	1025
800,000 "	....	....	....	....	585	650	800	950	1075
700,000 "	....	....	....	....	620	700	850	1000	1150
600,000 "	....	....	....	....	675	750	900	1075	1200
500,000 "	....	....	....	625	720	800	975	1150	1300
400,000 "	....	....	....	700	800	900	1100	1250	1400
300,000 "	....	....	....	800	900	1000	1200	1400	1600
250,000 "	....	....	....	850	960	1100	1300	1500	1700
4/0 Strd.	....	....	800	950	1050	1175	1400	1600	1800
3/0 "	....	....	850	1050	1150	1300	1500	1800	2000
2/0 "	....	....	950	1150	1275	1400	1700	1900	2150
1/0 "	....	....	1050	1250	1400	1550	1800	2100	2350
1 Solid	....	....	1300	1500	1700	1900	2200	2500	2800
2 "	....	1200	1400	1600	1850	2050	2400	2700	3000
3 "	....	1300	1500	1800	2000	2200	2600	2950	3250
4 "	....	1400	1700	2000	2200	2400	2800	3150	3450
5 "	....	1550	1850	2150	2400	2600	3000	3400	3700
6 "	....	1700	2000	2300	2600	2800	3250	3600	3975
8 "	1600	2000	2400	2700	3000	3300	3750	4150	4500
9 "	1800	2200	2600	2900	3250	3500	4000	4400	4790
10 "	2000	2400	2800	3150	3500	3750	4250	4700	5050
12 "	2300	2800	3200	3600	3950	4250	4800	5250	5600
14 "	2700	3250	3700	4100	4500	4800	5350	5850	6250

NOTE—The above are conservative figures, and no compound containing 30 per cent of dry, fine para rubber should give lower results.



FACSIMILE OF "OKONITE"
TAPE PACKAGE



200,000 C. M. LOW POT. LEAD COVERED



FACSIMILE OF "MANSON"
TAPE PACKAGE



NO. 14 A. W. G. LOW POT. SINGLE BRAID



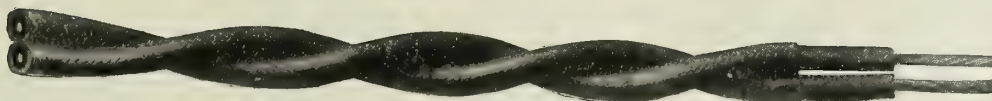
NO. 16 A. W. G. LOW POT. LAMP CORD



PACKING-HOUSE CORD



CANVASITE CORD



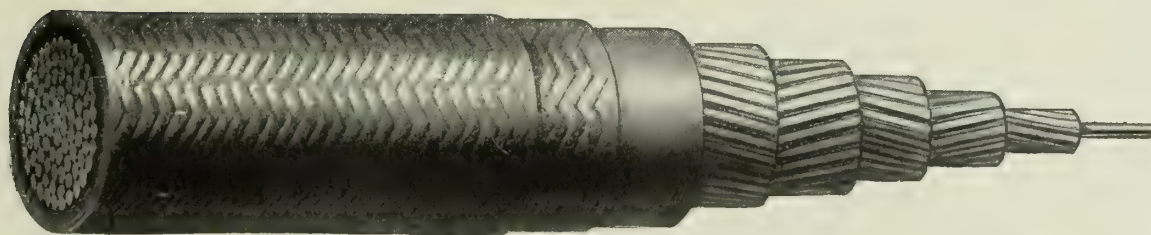
BREWERY LAMP CORD



REINFORCED LAMP CORD



STAGE LIGHTING CABLE



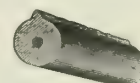
800,000 C. M. LOW POT. DOUBLE BRAID

INSPECTION
STAMP.

We employ the stamp service of the Underwriters' Laboratories, Inc. (supervised by the National Board of Fire Underwriters). All "Okonite" Code Wire, being approved, bears their official "Tested and Inspected" stamp.

SPECIAL
MARK.

The distinguishing mark on all "Okonite" Wires consists of a slight single ridge in the insulation, running its entire length, as shown in the accompanying illustration.



Reg. U. S. Pat. Office

PETTES & RANDALL CO.

Automatic Telephone Systems

150 Nassau Street
NEW YORK, N. Y.

LONG DISTANCE TELEPHONE, 4659 BEEKMAN

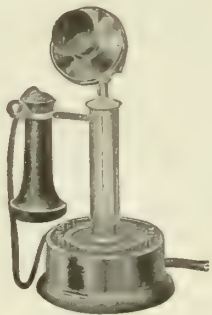
PRODUCTS. AND SERVICES.

HIGH-GRADE "AMERICAN" AUTOMATIC TELEPHONE SYSTEMS of the INTERCOMMUNICATING and SWITCHBOARD TYPES, including RESIDENCE, APARTMENT HOUSE and HOSPITAL TELEPHONES; "CLEVELAND" MAGNETO AMERICAN WATCHMAN'S TIME DETECTOR; ELECTRIC TIME SYSTEMS; FIRE-ALARM SYSTEMS; EMPLOYEES' TIME RECORDERS; GENERAL ELECTRIC CONSTRUCTION.

All our Systems are installed by experienced electricians in our employ, enabling us to sell them under our long-term guarantee of satisfactory service.

AUTOMATIC TELEPHONE SYSTEMS.

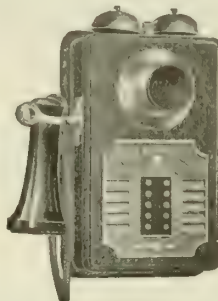
The accompanying illustrations suggest a few types of instruments suitable for a few classes of service. Prospective customers are invited to make known their requirements, and we will recommend and estimate on a system to cover their needs, by personal visit or by mail. Where desired we will quote on instruments only. Catalogue and prices will be furnished upon request. Our telephone apparatus is widely known as "high-grade goods sold at a proper price," and in case any imperfection is disclosed in any of our goods we shall deem it a favor to have such defect made known to us.



No. S 137. Desk



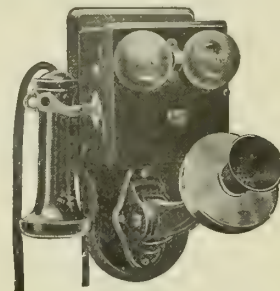
No. S 136. Desk



No. S 139. Regulator
Wall



No. S 110. Surface
3 1/2 x 8 1/2 inches



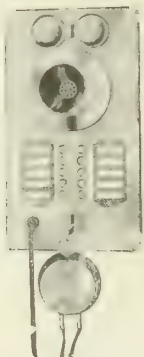
No. S 119. Surface
5 x 9 1/2 inches



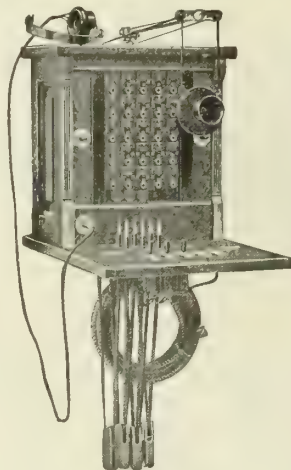
No. S 162. Hand
Micro

INTERCOMMUNICATING TELEPHONES

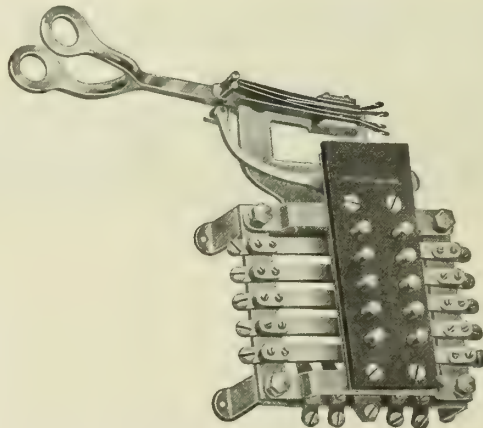
SINGLE-POINT TELEPHONES



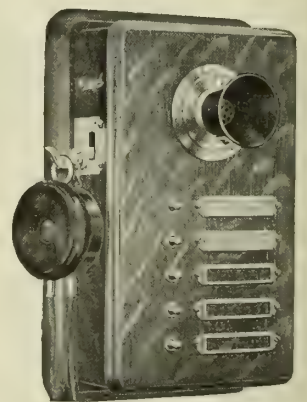
NO. S 145. FLUSH
RESIDENCE



NO. S 16. SWITCH-
BOARD, WITH OR
WITHOUT DESK



P. & R. AUTOMATIC SWITCH



NO. S 187. TRADESMAN
OR DUMB-WAITER
PHONE

PETTES &
RANDALL CO.'S
ELECTRIC
TIME SYSTEMS

In the PETTES & RANDALL CO.'s Electric Time System the Master Regulator and Programme Clock controls Secondary Clocks and Bells where desired, throughout the buildings. The secondary clocks, or minute jumpers, insure uniform and correct time in all departments.



No. S 1. Patented. Antique Oak
Cherry, or Walnut. Dial, 6, 8, 10,
12, 14, and 18 inches



No. S 2. Patented. Antique Oak,
Cherry or Walnut. Dial, 6, 8,
10, 12, 14, 18, and 24 inches

SECONDARY CLOCKS, OR MINUTE JUMPERS

PETTES &
RANDALL CO.'S
"CLEVELAND"
MAGNETO
AMERICAN
WATCHMAN'S
TIME
DETECTOR.

In this system the Watchman's Clock is placed in the office and locked with Yale security lock. Wires are run from the clock to such points on the premises as the watchman is to visit. At each point or station we place one of the magneto generators. The watchman inserts a small crank at each magneto and one turn makes a record on the paper dial in the clock at the office, showing the exact time he visited each station.

SALIENT
FEATURES.

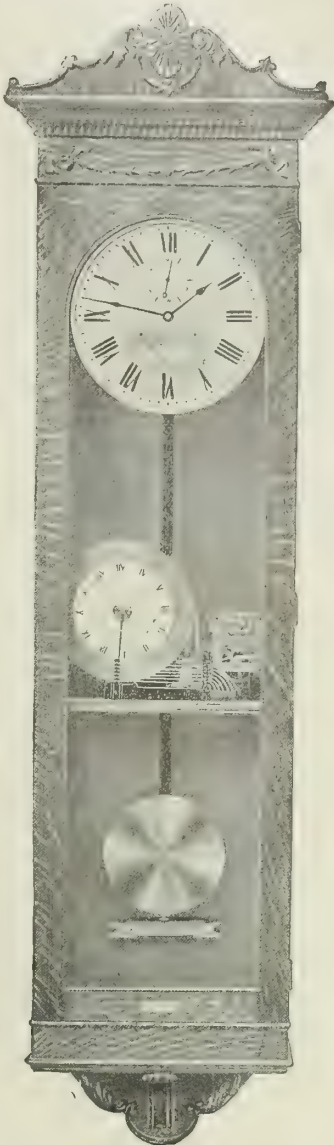
A large, clear record is given that can be read at a glance. The magneto gives the armature and needle a long vibrating motion as long as the crank is turned so that the needle can not catch the dial and tear it. The needle is drawn back by a positive motion and does not depend on gravity. The record can only be made by visiting the stations. The dial is turned by a high-grade Seth Thomas eight-day movement, which insures accuracy. The door detector records the time the door of clock is opened or closed. All parts of the Watchman's Clock are perfect and fully guaranteed for ten years. All insurance companies fully endorse our Watchman's Clock and in all instances allow a special rebate for its use.

SIZES.

The Watchman's Clock is made in the follownig sizes: For 3, 10, 19, 29, 35, or 54 stations, and combinations of these sizes, in one case.

SPECIFICA-
TION.

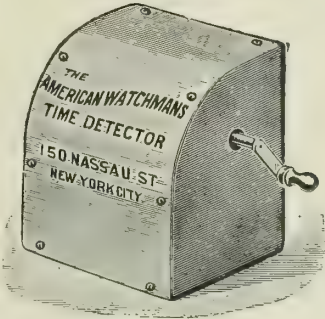
Avoid substitution of cheap apparatus by always mentioning the name of PETTES & RANDALL CO. in connection with the article wanted. Upon request we will furnish sample specifications or make complete specifications for any building.



P. & R. SELF-WINDING
MASTER REGULATOR
AND PROGRAMME
CLOCK



10-STATION WATCH-
MAN'S CLOCK,
COMBINED WITH
NO. 20 REGULATOR
CASE, 44 x 20 INCHES



MAGNETO STATION IN
DAMP-PROOF CASE

Also furnished with flush zinc
boxes and flush plates to
match hardware

STANDARD UNDERGROUND CABLE CO.

MANUFACTURERS OF

Bare and Insulated Wires and Cables for all Classes of Electric Service

Westinghouse Building
PITTSBURGH, PA.

BRANCH SALES-OFFICES

BOSTON, MASS., Delta Building
PHILADELPHIA, PA., North American Building
ST. LOUIS, MO., Security BuildingNEW YORK, N. Y., 50 Church Street
CHICAGO, ILL., The Rookery
SAN FRANCISCO, CAL., Shreve Building

AGENCIES

LONDON, ENG., EDWARD LE BAS & Co.
IQUIQUE, CHILE, J. K. ROBINSON

FACTORIES

OAKLAND, CAL.
PITTSBURGH, PA.
PERTH AMBOY, N. J.

PRODUCTS.

COPPER RODS
BARE COPPER WIRE
TROLLEY WIRE
WEATHER-PROOF WIRE
SLOW-BURNING WIRE
MAGNET WIRE
ANNUNCIATOR WIRE
OFFICE WIRE
AUTOMOBILE WIRE
BREWER CORD
BRIDLE WIRE
CANVASITE CORD
CAR WIRE
DECK CABLE
DREDGER CABLEDROP WIRE
ELEVATOR CABLE
FIXTURE WIRE
LAMP CORD
MINING-MACHINE CABLE
MOTOR-BOAT WIRE
N. E. C. HOUSE WIRE
PACKING-HOUSE CORD
POT-HEAD WIRE
SIGNAL WIRE
SWITCHBOARD CABLE
THEATER CABLE
LIGHTING CABLE
POWER CABLE
TELEPHONE CABLETELEGRAPH CABLE
SUBMARINE CABLECABLE HANGERS
CABLE SUPPORTS
CAMBRIC (VARNISHED CLOTH)
INSULATING COMPOUNDS
INSULATING VARNISHES
INSULATING TAPES
JUNCTION BOXES
MANHOLE FRAMES
MESSENGER STRAND
OZITE
TERMINALS
VARNISHED CLOTH (CAMBRIC)

We make a specialty of WIRE used in Building Work; brands, "TIP TOP" and "STERLING."

NATIONAL
ELECTRIC
CODE
HOUSE WIRE.

Our N. E. C. House Wires may be identified by a *single green thread* woven into the braid, though no such wire should be accepted as our product unless either purchased direct from us or unless each coil or reel bears our original identification mark or tag.

Every foot of Code Wire sent out by us since the inauguration of the service of the Wire Inspection Bureau is tested under its supervision and bears its stamp, thus giving an added assurance of the perfection and uniformity of this product. All of our wires are listed and approved for use under National Electric Code rules.

"STERLING"
WIRE.

"Sterling" is our Standard National Code Wire. We offer it with the utmost confidence that it will be found both under test and in use to compare favorably in serviceable qualities with any N. E. C. Wire whatsoever. We do not seek to commend it by extravagant or high-sounding claims, but invite you, in your own time and way, to investigate, or to permit us to demonstrate to you, the claim that among Code Wires there is not one that surpasses it in honesty, skill and uniformity of manufacture, or in careful and exacting inspection and test, both during and upon completion of manufacture. We do not and can not afford to offer it in general competition as to price with

UNITED STATES CUSTOMS HOUSE,
NEW YORK, N. Y.

"Sterling" Wire used throughout

wires that are variable as to quality, or that merely meet N. E. C. requirements. We believe, however, that its uniform character and finish and superior service qualities, combined with its moderate cost, are advantages which have both naturally and fairly made it (as we believe it to be) the prime favorite for high-class building construction throughout the United States.

**"TIP TOP"
WIRE.**

There are installations where even the best commercial wire, no matter what its merit and life, is considered inadequate, and it is for these we offer our "Tip Top" wire in full competition with any recognized brand. All that is said concerning "Sterling" in its class may be fairly said of "Tip Top" without regard to class, and with the added and important feature that it can be furnished at a considerable saving in price compared with any wire which includes in its price and requires the purchaser to bear the cost of excessive or expensive advertising, or of general expenses which, on account of relatively small output, become a relatively large tax on the selling price. Compare "Tip Top" under fair competitive test with the wire you have heretofore thought was best and we shall be satisfied with your decision as to listing it for your most exacting construction.

"Tip Top" wire is of a very much higher grade than the rules and tests of the National Electric Code are adequate to determine and it must not therefore be confused with the numerous cheaper wires offered to meet those specifications.

**"30 PER CENT
PARA" WIRE.**

When there is need of a wire of the highest service quality practicable with the use of rubber, our "30 per cent Para" Wire will commend itself. It meets the requirements of any Standard "30 per cent Para" Specification, and the United States Government and other very exacting purchasers have been buying it in large quantities.

On request we will be glad to furnish complete data regarding the quality of our wires as well as a list of the more important installations throughout the United States.

**BASIS OF
MERIT FOR
PRODUCTS
AND
CONTRACTS.**

In authorizing the use of or specifying our Rubber-Covered Wire you have the assurance of merit comprehended in our—

Extended experience.

Ample financial resources.

Uniformly sustained grade of output.

Unique and complete laboratory and testing equipment.

Large stock under our own direct control at widely distributed points, insuring prompt deliveries.

One of the largest separate and self-contained rubber-wire factories, not an adjunct to some other line or product.

**HANDBOOK
OF
INFORMA-
TION.**

Our handbook of useful technical information regarding manufacture, installation and testing of wires and cables, now in its seventeenth edition and greatly revised and enlarged, will be sent free upon application to any member of the American Institute of Architects.



NEW SINGER
BUILDING,
NEW YORK, N. Y.

"Tip-Top" Wire used
throughout



NEW PUBLIC LIBRARY, NEW YORK, N. Y.
Our "30 per cent Para" Wire used throughout

STEEL CITY ELECTRIC COMPANY

1207-1219 Washington Avenue, North Side
PITTSBURG, PA.

AGENCIES

NEW YORK, CAMPBELL-STAGG Co., 220 Broadway
BOSTON, T. C. Sias, 44 Federal Street
CHICAGO, I. A. BENNETT Co., 565-567 Van Buren Street
TORONTO, CAN., C. H. L. KEELER Co., 511 Continental Life Building

CLEVELAND, AMBOS-McNAIR Co., 1522-26 Prospect Avenue
SAN FRANCISCO, TELEPHONE ELECTRICAL EQUIPMENT Co., 612 Howard Street
BUFFALO, G. E. BENNETT Co., 237 Vermont Street

PRODUCTS.

FULLMAN "STAR" CONDUIT BUSHINGS
FULLMAN CONDUIT LOCK-NUTS
STAMPED STEEL OUTLET BOXES
FULLMAN WATER-TIGHT FLOOR OUTLETS
UNIVERSAL INSULATOR SUPPORTS
FLEXBOX OUTLETS for flexible CONDUIT and STEEL ARMORED CABLE

"STAR" FIXTURE STEMS
SUPERIOR FISH WIRE
BEAM STRAPS
THOMPSON REAMING DEVICES
CAMPBELL PLUGS and RECEPTACLES

DISTRIBUTION.

Large stocks of all our goods at Pittsburg and Agencies.

FULLMAN "STAR" BUSHINGS.

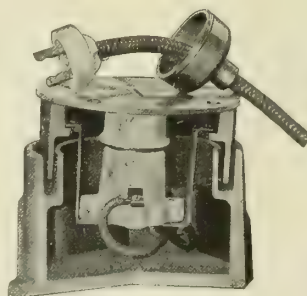
Fullman "Star" Bushings are made of the finest grade of malleable iron and are furnished either "sherardized" or tinned, as preferred. The threads are sharp and clean cut. "Star" Bushings will not break when tightly crewed. The ductile quality of the metal used is shown by the illustration of a mutilated bushing. The ribs on the outside make it easy to turn them in crowded places with the fingers or a blunt tool.

FULLMAN CONDUIT LOCK-NUTS.

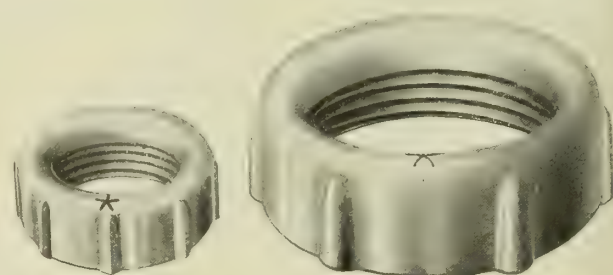
Fullman Lock-nuts ($\frac{3}{8}$ to 1 inch sizes) are made of special composition steel to insure strength and good clean threads. The $1\frac{1}{4}$ to 6 inch sizes are made of malleable iron and have all the qualities of "Star" Bushings. Fullman Bushings and Lock-nuts are included in the National Code List of Approved Fittings. All sizes are "sherardized."

FULLMAN WATER-TIGHT FLOOR OUTLETS.

Fullman Adjustable Floor Outlets are absolutely the only ones which take care of any and all perplexities of installation where floor-level alterations make hard problems to solve. The Adjustable "ring in the groove" feature is exclusive with our product and permits all kinds of adjustment both for leveling and height. No matter how much the box body may be out of level, the cover plate can always be perfectly aligned with the finished floor.

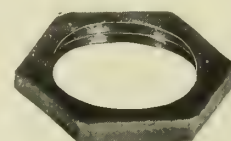


ADJUSTABLE
 $4\frac{3}{4}$ inch Fullman Floor
Outlet

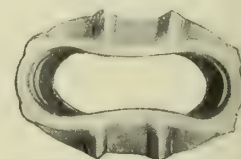


"STAR" BUSHING
 $\frac{3}{8}$ to 1 inch form

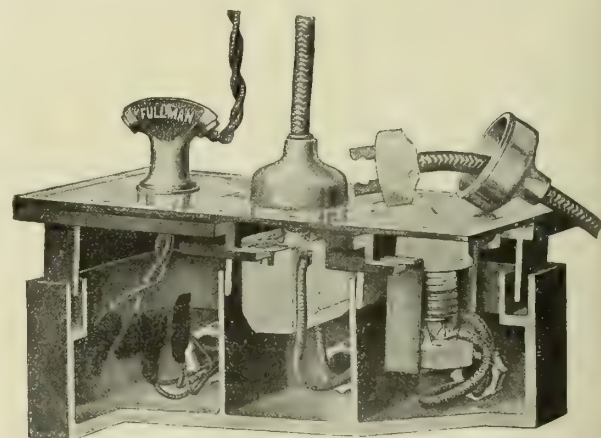
"STAR" BUSHING
 $1\frac{1}{4}$ to 6 inch form



FULLMAN
LOCK-NUT
 $\frac{3}{8}$ to 1 inch form



EXAMPLE OF A
MUTILATED
BUSHING



ADJUSTABLE FULLMAN GANG FLOOR OUTLET

Fullman Adjustable Floor Outlets are made in a variety of other styles, one of the most popular of which is the Gang Outlet. It is used for supplying a variety of services from one point, and makes a decided improvement over the appearance of several single boxes grouped near a desk or table.

The Fullman $3\frac{1}{2}$ -inch Non-Adjustable Floor Outlet is the result of an increasing demand for a small outlet for office and residence requirements. The construction is ideal—few parts, none of which can get out of order. They are smaller than any other floor box and yet roomier inside for wiring. Fitted complete with porcelain plug and receptable. Installation is very rapid and extremely simple. All iron parts are "sherardized."

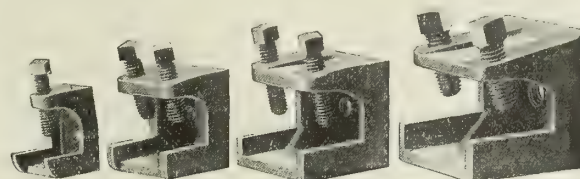
Adjustable and Non-Adjustable Fullman Floor Outlets are included in National Code Standard List of Approved Fittings.



NON-ADJUSTABLE
 $3\frac{1}{2}$ -INCH ROUND
FULLMAN FLOOR
OUTLET

UNIVERSAL INSULATOR SUPPORTS.

Universal Insulator Supports are malleable iron clamps for securing insulators to exposed steel frame work in wiring mills, foundries, shops, bridges, etc. They are made in four sizes which carry all sizes of porcelain or glass insulators. They can be fastened in any position on the flanges of all standard structural shapes, such as beams, angles, channels, bars, etc.; also, on edges of tanks, gas and water pipes, plates, etc. They reduce labor costs to a minimum by saving all preliminary work. No holes need be drilled in steel work, reducing the strength of the structure.



1 inch $1\frac{1}{2}$ inch 2 inch $2\frac{1}{2}$ inch
UNIVERSAL INSULATOR SUPPORTS

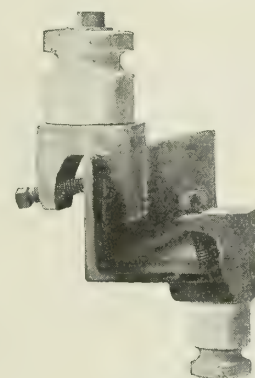
They are easily and quickly attached, the only tool necessary being a small wrench for tightening the set screws. The most severe vibration will not loosen them, as hardened set screws hold them secure. A large number of combinations for using Universal Insulator Supports will suggest themselves to the user. They are the standard of construction adopted by many of the largest concerns. Universal Insulator Supports are "sherardized" to prevent rust; they never wear out and are always good stock. Total cost of material is less and the total cost of labor is less than with other ways of installation. Included in National Code List of Approved Fittings.

"STAR" FIXTURE STEMS.

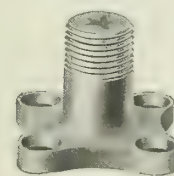
"Star" Fixture Stems are made of best grade malleable iron, insuring strength. The threads are clean, full and sharp. The $\frac{3}{8}$ -inch size is made in two lengths, long and short, adapting them to all conditions. The arms or prongs are countersunk on both sides so that they can be used on the outside or inside of outlet boxes. Machine screws and nuts are furnished. All parts "sherardized."



$2\frac{1}{2}$ -INCH INSULA-
TOR SUPPORT
WITH GLASS
INSULATOR



$1\frac{1}{2}$ - AND 2-INCH
SUPPORT
Applied to Angle Iron



"STAR" FIXTURE
STEM

WESTERN ELECTRIC COMPANY

BRANCH HOUSES

EASTERN

NEW YORK, N. Y., 463 West Street
 PHILADELPHIA, PA., Eleventh and York Streets
 BOSTON, MASS., 115 Purchase Street
 PITTSBURG, PA., Post Office Box 1591
 ATLANTA, GA., 230 Lee Street

CENTRAL

CHICAGO, ILL., 500 South Clinton Street
 INDIANAPOLIS, IND., 135 South Pennsylvania Street
 MINNEAPOLIS, MINN., 114-120 Third Street, North
 CINCINNATI, OHIO, 301 Walnut Street

WESTERN

ST. LOUIS, MO., 814-816 Spruce Street
 KANSAS CITY, MO., 611 Wyandotte Street
 DENVER, COLO., 1516 Curtis Street
 DALLAS, TEX., Pacific and Ervay Streets
 OMAHA, NEB., 802 Farnam Street

PACIFIC

SAN FRANCISCO, CAL., 680 Folsom Street
 LOS ANGELES, CAL., 117 East Seventh Street
 SEATTLE, WASH., 1518 First Avenue, South
 SALT LAKE CITY, UTAH, 445 South Third West Street

FOREIGN HOUSES AND AGENCIES

MONTREAL, WINNIPEG, and VANCOUVER, NORTHERN ELECTRIC & MANUFACTURING Co., LTD.
 ANTWERP, BELGIUM, BELL TELEPHONE MANUFACTURING Co.
 BERLIN, GERMANY, TELEPHON APPARAT FABRIK, E. ZWEITUSCH & Co.
 PARIS, FRANCE, SOCIETE DE MATERIEL TELEPHONIQUE

PRODUCTS.

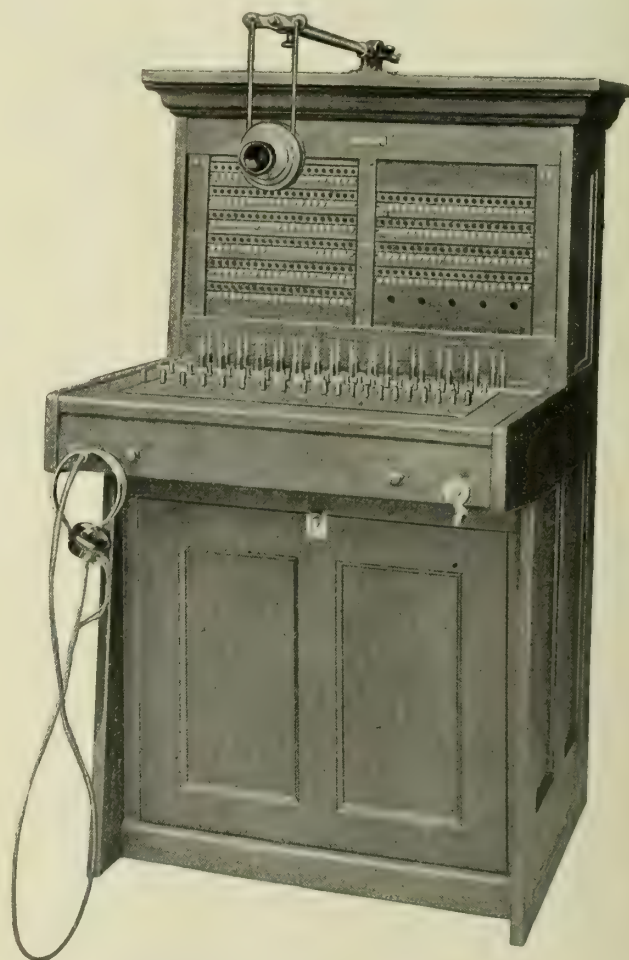
TELEPHONE SWITCHBOARDS and ACCESSORIES for Public and Private Exchanges; INTERCOMMUNICATING TELEPHONE SETS; CENTRAL BATTERY and MAGNETO TELEPHONES; TRANSMITTERS; RECEIVERS; TELEPHONE SUPPLIES; MOTORS; ELECTRIC HOISTS; ELECTRIC CEILING, DESK and EXHAUST FANS; ARC LAMPS; SUNBEAM INCANDESCENT LAMPS, three styles, "TUNGSTEN," "TANTALUM," and "GEM"; MOTOR-GENERATOR SETS; POWER and LIGHTING APPARATUS; SWITCHBOARDS; CABLE; WIRING APPLIANCES for all classes of TELEPHONE, POWER, and LIGHTING CONSTRUCTION.

PRIVATE BRANCH SWITCH- BOARDS.

For use in offices, factories, schools, hotels, etc., our Central Battery Lamp Signal Branch Exchange Switchboards are recommended. As shown opposite they are compact, attractive, and of symmetrical form.

These boards are furnished with line circuits, equipped either with or without relays; the former will operate on any line on which central battery service is practicable, the latter is satisfactory for lines which will not exceed 100 ohms resistance, including the resistance of the subscriber's telephone set.

The cord circuits have double supervision. The trunk circuits are adapted for connection either with a magneto exchange or a central battery exchange. Either a suspended or chest-type transmitter can be supplied. A night-alarm circuit common to all the lines is provided as a means of calling the operator when engaged on other duties.



PRIVATE BRANCH SWITCHBOARD NO. 1262



NO. 1324-A. NON-FLUSH WALL
METAL SET, KEY TYPE



NO. 2016-A. DESK METAL SET,
KEY TYPE



NO. 1325-A. FLUSH WALL
METAL SET, KEY TYPE

INTERCOM-
MUNICATING
TELEPHONE
SETS.
DESCRIPTION.

These sets are specially designed for talking between different rooms or departments in the same building or adjacent buildings without the aid of an operator.

METAL SETS, KEY TYPE—1324-A—Non-flush wall all metal set equipped with keys for making connections. Capacity up to and including 12 stations.

1324-E—Non-flush wall all-metal set equipped with keys for making connections. Capacity up to and including 24 stations.

1325-A—Flush wall all-metal set equipped with keys for making connections. Capacity up to and including 12 stations.

1325-E—Flush wall all-metal set equipped with keys for making connections. Capacity up to and including 24 stations.

2016-A—Desk metal set equipped with keys for making connections. Capacity up to and including 12 stations.

2016-B—Desk metal set equipped with keys for making connections. Capacity up to and including 24 stations.

WOODEN SETS, KEY TYPE—1321-A—Wall wooden set equipped with keys for making connections. Capacity up to and including 11 stations.

1321-E—Wall wooden set equipped with keys for making connections. Capacity up to and including 21 stations.

1321-F—Wall wooden set equipped with keys for making connections. Capacity up to and including 31 stations.

WOODEN SETS, JACK TYPE—1322-A—Wall wooden set equipped with jacks for making connections. Capacity up to and including 24 stations.

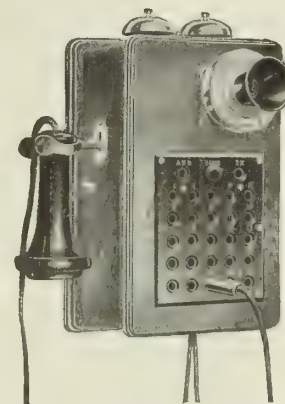
2008-A—Desk wooden set equipped with jacks for making connections. Capacity up to and including 24 stations.



NO. 1321-A. WALL WOODEN
SET, KEY TYPE



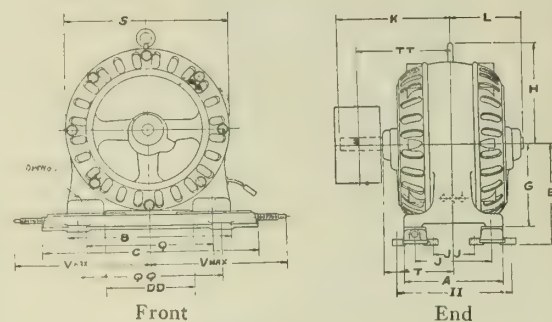
NO. 2008-A. DESK WOODEN SET,
JACK TYPE



NO. 1322-A. WALL
WOODEN SET, JACK
TYPE

MOTORS.

The data tables cover our standard line of small- and medium-size belted alternating and direct current motors only. We build motors in all sizes and for every kind and condition of service. All motors listed can be furnished for direct connection. The construction of all types is such as permits of their being mounted on either floor, wall or ceiling. The small D. C. motors are furnished open or enclosed; the large D. C. motors open, enclosed, or semi-enclosed. All types are supplied for constant and intermittent service, constant and variable speed.



DIMENSION DIAGRAMS

HAWTHORN D. C. MOTORS, SMALL

MOTORS				APPROXIMATE DIMENSIONS IN INCHES																		Pulley		Keyway		
H. P.	R. P. M.		A	B	C	E	G	H	II	J	JJ	K	L	Q	QQ	S	T	TT	V max.	Drilled	Shaft Diam.	Diam.	Face	Length	Width, Depth	
	110 V	500 V.																				220 V.				
1	1/2	2200	6 1/16	6 3/4	....	....	3 1/4	3 1/4	....	5 1/8	....	5 1/8	5 3/32	5 3/32	....	6 3/8	3 3/32	4 3/4	....	3/8	1 1/16	2	1 1/4	1	Flat	
	1/4	1900	6 3/8	7 3/4	....	....	4	4 1/4	....	5 1/8	....	7	6 1/2	6 3/8	....	8	5	6	....	1/2	1 1/16	3	1 3/4	1 1/4	Flat	
	1/2	1700	8 1/8	9 1/4	....	....	4 3/4	5 1/2	....	6 3/4	....	8	7 3/4	7 1/2	....	9 1/2	5 3/4	6 7/8	....	1 1/2	1 1/16	3 1/2	2 1/4	1 1/2	Flat	
		1400	1500	10	11 1/2	....	....	5 7/8	6 1/8	11 1/8	8 1/2	5 7/8	9 3/4	9 1/2	9 1/2	11 1/4	11 1/2	7 1/4	8 1/2	12 1/8	1 1/2	1 1/16	4	2 3/4	2	Flat
		1200	1400	12 1/4	14	18 1/4	8 1/16	7 1/4	8 1/8	13 1/2	10 1/4	7	11 3/8	11 3/2	12	12 1/4	14 3/8	8 1/2	9 7/8	14	1 1/2	1 1/16	5	3 1/4	2 1/2	1 1/4 x 3/8
2	3	*1800	2100	12 1/4	14	18 1/4	8 1/16	7 1/4	8 1/8	13 1/2	10 1/4	7	11 3/8	11 3/2	12	12 1/4	14 3/8	8 1/2	9 7/8	14	1 1/2	1 1/16	5	3 1/4	2 1/2	1 1/4 x 3/8
	3	†1650	....	12 1/4	14	18 1/4	8 1/16	7 1/4	8 1/8	13 1/2	10 1/4	7	11 3/8	11 3/2	12	12 1/4	14 3/8	8 1/2	9 7/8	14	1 1/2	1 1/16	5	3 1/4	2 1/2	1 1/4 x 3/8
3	3	1100	1250	14 1/2	16 1/2	23 1/8	10 1/4	8 1/2	9 1/8	15 3/4	12	8 1/4	12 7/8	13 3/8	14	16 7/8	16 3/4	9 3/8	11 1/8	17 3/4	1 1/4	1 1/16	6	3 3/4	3	1 1/4 x 1/2
	5	*1650	1900	14 1/2	16 1/2	23 1/8	10 1/4	8 1/2	9 1/8	15 3/4	12	8 1/4	12 7/8	13 3/8	14	16 7/8	16 3/4	9 3/8	11 1/8	17 3/4	1 1/4	1 1/16	6	3 3/4	3	1 1/4 x 1/2
	5	†1650	....	14 1/2	16 1/2	23 1/8	10 1/4	8 1/2	9 1/8	15 3/4	12	8 1/4	12 7/8	13 3/8	14	16 7/8	16 3/4	9 3/8	11 1/8	17 3/4	1 1/4	1 1/16	6	3 3/4	3	1 1/4 x 1/2

*220 volt motors. †110 volt motors

HAWTHORN D. C. MOTORS, MEDIUM AND LARGE

SLOW SPEED				MODERATE SPEED				APPROXIMATE DIMENSIONS IN INCHES																									
110 & 220 V.		500 V.		110 & 220 V.		500 V.		A	B	C	E	G	H	I	J	JJ	K	L				Q	QQ	S	T	TT	V max	Drilled	Shaft Diam.	Pulley		Keyway	
H. P.	R.P.M.	H. P.	R.P.M.	H. P.	R.P.M.	H. P.	R.P.M.											110 V.	220 V.	500 V.								Diam.	Face	Length	Width, Depth		
4	1000	4	1175	6	1600	6	2000	11 1/2	16	23 1/2	10 1/2	8 1/2	10	13 1/2	10	6 1/2	13 1/2	13 1/2	13 1/2	13 1/2	14	16 1/2	16 1/2	10 3/8	12 1/4	17 3/4	1 1/2	6	3	3 1/2	1/4 x 1/4		
5	1100	5	1375	7 1/2	1475	7 1/2	1700	11 1/2	16	23 1/2	10 1/2	8 1/2	10	13 1/2	10	6 1/2	14 1/2	16	16	16	14	16 1/2	17 1/2	10 3/8	13 1/2	17 3/4	1 1/2	6	3	3 1/2	1/4 x 1/4		
7 1/2	960	7 1/2	1075	10	1250	10	1340	13 1/2	19 1/2	27 1/2	12 1/2	10 1/2	12 1/2	15 1/2	11	6 1/2	14 1/2	13 3/8	13 3/8	13 3/8	17 1/2	18 1/2	20 1/2	11 1/2	13	21	1 1/2	9	5 3/4	1/4 x 3/8			
10	960	...	...	12 1/2	1240	...	...	13 1/2	19 1/2	27 1/2	12 1/2	10 1/2	12 1/2	15 1/2	11	6 1/2	14 1/2	13 3/8	13 3/8	13 3/8	17 1/2	18 1/2	20 1/2	11 1/2	13	21	1 1/2	9	5 3/4	1/4 x 3/8			
12 1/2	920	10	1100	15	1140	12 1/2	1140	13 1/2	19 1/2	27 1/2	12 1/2	10 1/2	13 1/2	15 1/2	11	6 1/2	15 1/2	17 1/2	17 1/2	17 1/2	17 1/2	18 1/2	21 1/2	11 1/2	15 1/2	21	1 1/2	9	5 3/4	1/4 x 3/8			
15	825	12 1/2	925	20	1000	20	1050	17	25 3/4	34 1/2	15 1/2	13 1/2	14 1/2	19 1/2	14	8 1/2	18 1/2	21 1/2	21 1/2	21 1/2	26 1/2	26 1/2	26 1/2	13 3/8	16-17 1/2	25 3/4	2	12	7 5/8	3/8 x 1/2			
20	800	20	950	25	1000	22 1/2	1150	17	25 3/4	34 1/2	15 1/2	13 1/2	14 1/2	19 1/2	14	8 1/2	18 1/2	21 1/2	21 1/2	21 1/2	26 1/2	26 1/2	26 1/2	13 3/8	16-17 1/2	25 3/4	2	13-12	7 5/8	3/8 x 1/2			
25	775	22 1/2	925	35	1025	25	1175	17	25 3/4	34 1/2	15 1/2	13 1/2	14 1/2	19 1/2	14	8 1/2	18 1/2	21 1/2	21 1/2	21 1/2	26 1/2	26 1/2	26 1/2	13 3/8	16-17 1/2	25 3/4	2	12	7 5/8	3/8 x 1/2			
30	615	25	665	40	990	40	1060	20 1/2	31 1/2	41 1/2	19 1/2	16 1/2	16 7/8	21 1/2	16	10 1/4	22 1/2	22 1/2	22 1/2	22 1/2	26 1/2	26 1/2	30 1/2	17 1/4	20 3/4	29 1/2	1 1/2	14	8 6/8	1/2 x 5/8			
40	620	35	700	50	950	50	1025	24 1/2	38	48	23 1/2	20	19 7/8	26 1/2	20 3/8	14 1/2	26 1/2	23 1/2	23 1/2	23 1/2	32	32	37 1/2	18 1/4	22 1/2	33 1/2	1 1/2	3	15	9 8	1/2 x 3/4		
45	575	40	625	60	850	60	950	24 1/2	38	48	23 1/2	20	20 3/8	26 1/2	20 1/4	14 1/2	28 1/2	b24	24	24	32	32	37 1/2	18 3/4	23 1/2	33 1/2	1 1/2	3	16	10 9 1/2	1/2 x 3/4		
55	*575	50	645	75	775	70	810	24 1/2	38	48	23 1/2	20	18 7/2	26 1/2	20 1/4	14 1/2	28 1/2	25 1/2	25 1/2	32	32	37	20 1/4	24 3/8	33 1/2	1 1/2	3	18	12 9 1/2	1/2 x 3/4			

*220 volt speed = 600 R. P. M.

(a) On 25 H. P. 220 volt Motor "L" = 21 1/2".

(b) On 60 H. P. 110 volt Motor "L" = 27 1/2".

HAWTHORN INDUCTION MOTORS, SQUIRREL-CAGE AND PHASE-WOUND TYPES

HORSE POWER					APPROXIMATE DIMENSIONS IN INCHES																		PULLEY			KEY		
1800 R.P.M.	1200 R.P.M.	900 R.P.M.	720 R.P.M.	60 R.P.M.	A	B	C	DD	E	G	H	II	J	JJ	K	Squirrel- Cage	L Phase- Wound	Q	QQ	S	T	TT	V max.	Shaft Diam.	Diam.	Face	Length	Width, Depth
1	3 1/2	...	...	...	7	10 1/2	14 3/4	6	6 1/8	5 1/4	5 1/8	8 1/4	5 1/2	3	7 1/2	5 5/8	*	8 1/4	11 1/4	10 1/8	5 7/8	6 1/2	11 3/8	1 1/2	5	2 1/2	2	1 1/4 x 1/4
2	1 1/2	...	...	...	7	12 1/2	20	7 1/2	7 1/8	6 1/4	8 1/8	8 1/4	5 1/2	2 1/2	9 1/2	6 1/2	*	10	16 1/2	12 1/4	6 1/2	8	14	1 1/2	5	2 1/2	2 1/2	1 1/4 x 1/4
3	2	...	...	...	8	14	20	9 1/4	8 1/4	7 3/8	9 1/2	8 1/4	6 1/4	3 3/4	9 1/2	6 1/2	*	12	16 1/2	14 3/4	6 5/8	7 7/8	14	1 3/8	8	3	3	1 1/4 x 1/4
5-7 1/2-10	3 1/2-5-7 1/2	3-4-6	...	3-4	10	18	23 1/2	10 1/2	10 7/8	9 1/2	11 1/2	11 3/8	8	4 1/2	12 1/4	8	13 5/16	14 1/2	16 7/8	17 7/8	7 1/2	10 1/2	15 1/2	1 1/2	8	5	4 1/2	1 1/4 x 1/4
15	10	7 1/2	6	5	13	21 1/2	27 1/2	11 1/2	13 1/4	11	13 3/8	14 1/2	10	5 3/8	14 1/2	9 1/4	15 1/2	16 1/2	18 1/2	21 1/4	9	12 1/2	17 1/4	1 1/2	10	6	5 3/8 x 1/4	
20	15	12	10	8	16 1/2	21 1/2	27 1/2	11 1/2	13 1/4	11	13 3/8	18 1/2	13 3/8	8 1/2	16 1/4	11	17 1/2	16 1/2	18 5/8	21 1/4	10 3/4	14 1/4	17 1/4	1 1/2	12	7	5 3/8 x 3/8	
30	20	16	15	12	17	28 3/4	34 1/2	15 1/2	17 1/8	14 1/2	17 1/2	19	13 3/8	8	17 1/2	11 1/2	22	22 1/4	28 1/2	11 1/2	14 1/2	22 1/2	1 7/8	12	7	5 1/2 x 3/8		
40	30	25	...	...	19 1/2	28 3/4	34 1/2	15 1/2	17 1/8	14 1/2	17 1/2	19	13 3/8	8	17 1/2	11 1/2	22	22 1/4	28 1/2	12 1/2	15 3/4	22 1/2	1 7/8	12	7	5 1/2 x 3/8		
60	45	...	...	...	22	28 3/4	34 1/2	15 1/2	17 1/8	14 1/2	17 1/2	24	18 1/2	13	21 1/2	15 1/4	18 3/4	22	22 1/4	28 1/2	14 7/8	18 3/8	22 1/2	1 7/8	14	8	6	3 3/4 x 1/2
...	60	...	...	...	31	33	41	19 1/2	18 7/8	16 1/8	19 3/8	33 3/8	27 1/2	21 1/2	27 3/8	21 1/8	...	26	26 1/4	31 1/2	20 3/4	24 1/2	27 1/4	2 3/8	...	...	6	3 3/4 x 1/2
...	...	35	20, 30	18, 25	19	35 1/2	41 1/2	19	20 7/8	18 1/2	21 1/2	20 3/8	15	9 1/2	19 3/8	13 1/2	17 1/2	27 1/2	26 1/4	35 1/2	12 1/2	17 1/2	27 1/4	2 3/8	14	8	6	3 3/4 x 1/2
...	...	50-75	45, 65	40, 55	24	35 1/2	41 1/2	19 1/2	21 1/8	18 1/8	21 1/8	25 1/2	20	14 1/2	25 1/4	16 1/2	22	27 1/2	26 1/4	35 3/8	16 1/4	22 1/4	27 1/4	2 7/8	16	11	8 7/8	1 x 5/8
...	...	75	...	...	26 1/2	41	54	23	26	21	20 1/2	29 1/2	23	12	29 1/4	21	21	32	43 7/8	41	19	25 1/4	58	3 3/4	24	10	8	1 x 5/8
...	...	...	...	75	29	41	54	23	26	21	20 1/2	32	25 3/8	14 1/2	30 1/2	22 1/4	22 1/4	32	43 7/8	41	20 1/4	26 1/2	58	3 3/4	28	10	8	1 x 5/8

*Motors smaller than 5 horse-power at 1200 R. P. M. can not be furnished with slip rings.

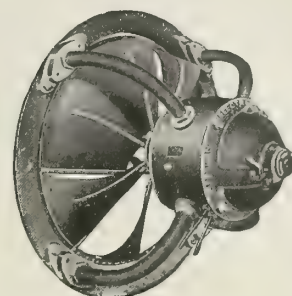
NOTE—These machines are wound for 60 cycle, 2 or 3 phase, 110-220-440-550 volts. Dimensions of high voltage machines differ slightly from figures given.

SWITCH-
BOARDS.

We have the best of facilities for the manufacture of large and small switchboards, panel boards, etc. Estimates made promptly. Send for bulletin No. 5400, which illustrates some representative installations.

EXHAUST
FANS.

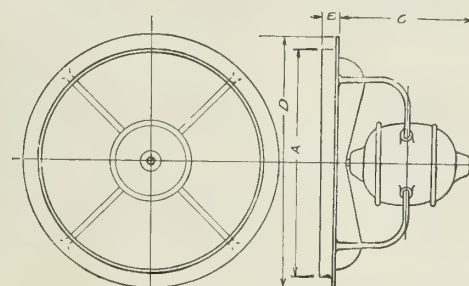
Direct current outfits furnished for use on 110, 220, or 550 circuits. Alternating current outfits furnished for 110, 220, 440, or 550 volt circuits, 2 or 3 phase, 25, 40, or 60 cycles. A. C. motors are not supplied on fans under 24-inch size. All A. C. motors will come within the "C" dimension.



EXHAUST FAN

PRINCIPAL DIMENSIONS OF HAWTHORN EXHAUST FANS

Size of Fan	Approximate cu. ft. of air per minute	Approximate Dimensions in Inches				Approximate Net Weight in lbs.
		A	B	C	D	
12 inches	900	12 $\frac{7}{8}$	$\frac{9}{16}$	6 $\frac{3}{4}$	14 $\frac{1}{2}$	17
16 inches	1900	16 $\frac{7}{8}$	$\frac{3}{4}$	6 $\frac{3}{4}$	18 $\frac{3}{4}$	21
18 inches	4000	19 $\frac{3}{8}$	1	13 $\frac{3}{4}$	21	90
24 inches	7120	25 $\frac{1}{2}$	1 $\frac{1}{2}$	17	28	160
30 inches	12800	31 $\frac{1}{2}$	2	22	37	330
36 inches	17300	37 $\frac{1}{2}$	2	22	43	380
42 inches	23120	45	2 $\frac{1}{2}$	28	51 $\frac{1}{2}$	610
48 inches	31270	51 $\frac{3}{4}$	2 $\frac{1}{2}$	30	58 $\frac{1}{4}$	830
54 inches	39790	57 $\frac{3}{4}$	2 $\frac{1}{2}$	32	64 $\frac{1}{4}$	1280
60 inches	48093	63 $\frac{3}{4}$	2 $\frac{1}{2}$	33	70 $\frac{1}{4}$	1400
72 inches	67154	76 $\frac{1}{2}$	3	40	83 $\frac{1}{2}$	2200



DIMENSION DIAGRAM

DESK AND
CEILING
FANS.

We manufacture and carry at all our branch houses a complete line of Desk, Bracket, Oscillating, Telephone Booth and Ceiling Fans.

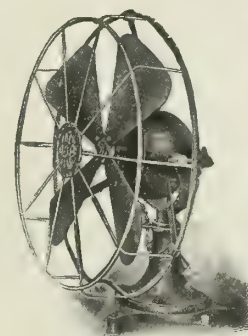
SIZES.

Desk and Bracket, 8, 12, and 16 inch; Oscillating, 12 and 16 inch; Telephone Booth, 8 inch; Ceiling, 54 and 60 inch. Plain or ornamental finishes. All types are supplied for use on all commercial A. C. and D. C. circuits.

LAMPS—ARC
AND INCAN-
DESCENT.

Our line of direct and alternating current multiple and multiple series carbon enclosed Arc Lamps includes types for every class of service. A large number of parts in these lamps are interchangeable and all use the same glass ware. When so ordered, lamps will be furnished with indestructible windings.

The "Hawthorn" Flaming Arc is a gravity feed lamp. Supplied for both single and series operation, and for A. C. and D. C. circuits.



DESK FAN

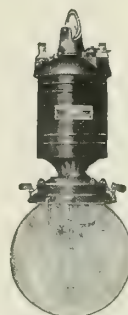
SIZES.

The "Sunbeam" Incandescent Lamps are supplied in the following sizes:

"Sunbeam Tungsten" 25, 40, 60, 100, 150, 250 watts; 100-130 volts.

"Sunbeam Tantalum" 25, 40, 80 watts; 100-130 volts.

"Sunbeam Gem" (metallized filament) 40, 50, 80, 100, 125, 187, 250 watts; 100-130 volts.



ARC LAMP

PRICES.

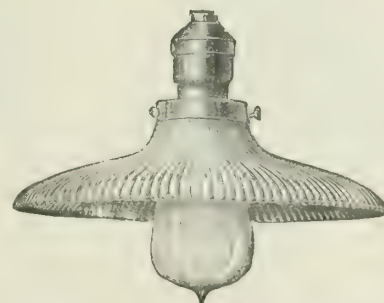
Prices and estimates on standard or special apparatus furnished promptly.

CO-OPERATIVE
SERVICE.

Our engineering departments are at the command of architects and will cheerfully co-operate with them at any time.

CATALOGUES
AND
BULLETINS.

Catalogues and bulletins of telephone apparatus, power apparatus, and general electrical supplies sent upon request. Write our nearest house for publications.

"SUNBEAM" TANTALUM WITH
HOLOPHANE STYLE "D" SHADE

SUNDH ELECTRIC COMPANY

MANUFACTURERS AND DESIGNERS OF

Automatic Controllers for Direct and Alternating Current Devices

151 Cedar Street
NEW YORK, N. Y.

PRODUCTS.

We design and manufacture ELECTRICAL DEVICES for the CONTROL of MOTOR-DRIVEN APPARATUS, LIGHTING CIRCUITS, etc.

We have a standard line of AUTOMATIC STARTERS for both Direct and Alternating Current Motors; also, TANK SWITCHES, TIMING DEVICES, and other apparatus of similar character. We constantly carry in stock all of our standard manufactures.

ADAPTABILITY.

Many conditions in the application and control of electrical power which apparently require special devices are met successfully by combinations of our Standard Apparatus.

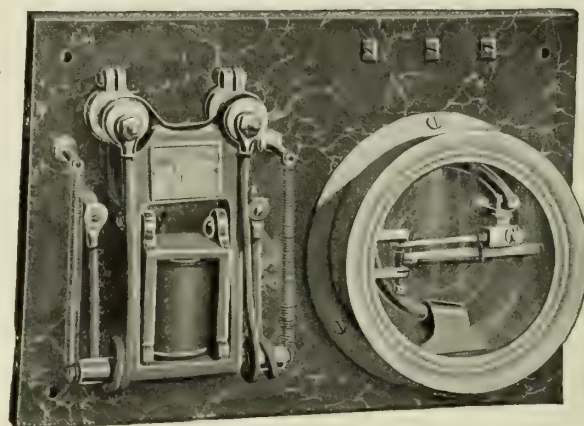
SPECIAL DESIGNS.

For cases which present unusual problems we are prepared to design special Controlling Apparatus and to submit lowest estimates for such, on request.

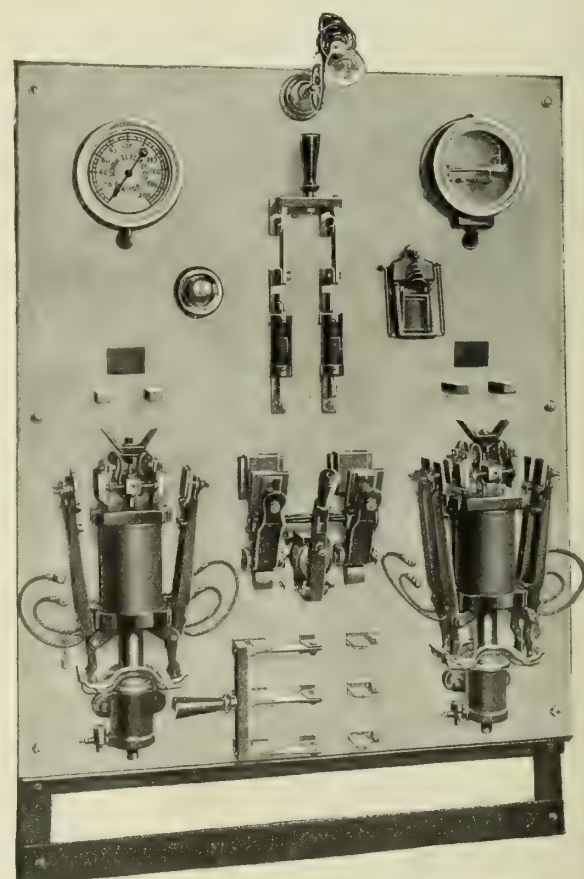
We illustrate herewith a few of our Standard Appliances and also show a Special Panel made up of several of our regular articles.

CO-OPERATIVE SERVICE AND PRICES.

We invite correspondence and will do our best to answer questions. Descriptive catalogues, with prices of our regular line of goods, sent promptly on request.



SUNDH GAUGE TYPE PRESSURE REGULATOR



SUNDH SPECIAL CONTROLLING PANEL

No sliding contacts. Contains two 25 horse-power 220 Volt automatic starters. Main line switch and fuses, three-pole double-throw switch so that either starter may be used. Pressure regulator, pressure gauge, potential switch and bell. Bell to ring when potential switch opens due to excessive drop in voltage. One bracket and lamp for light



SUNDH IMPROVED TANK AND SUMP SWITCH

KELLER MANUFACTURING CO.

"Santo" Vacuum Cleaners, Dish Washers, Clothes Washers

PHILADELPHIA, PA.

CHICAGO, ILL.

EASTERN GENERAL AGENT

W. P. PRESSINGER & CO., 1 West 34th Street, New York, N. Y.

PRODUCTS.

We manufacture a large and complete line of CLEANING DEVICES, including "SANTO" VACUUM CLEANERS to suit every requirement; "SANTO" DISH WASHERS for Hotels, Clubs, Restaurants, and Boarding-Houses; "SANTO" CLOTHES WASHERS, Electric-Power and Hand-Power and a Small WASHER for the Nursery.

Santo
Perfection
TRADE-MARK

ADAPT- ABILITY.

The "Santo" Vacuum Cleaners are made in sizes suitable for any building, the smaller ones with cord and plug to attach to the ordinary lamp socket. The "Santo" Portable Machines, for railroad yards and buildings not provided with piping, may be attached to a switchbox with stage cable. In some railroad yards wires are terminated at a number of convenient points so that the machine may readily be connected where required for use, thus materially reducing the hose required, and economizing power.

Type B-S is made in a number of sizes and is intended for permanent installation in new or old buildings. By its use the matter of cleaning is materially simplified, all the dust and litter being deposited in tanks in the basement, where convenient means are provided for their removal.

SHAMPOOING AND SCRUBBING.

We are prepared to furnish, in connection with our Type B Plant, additional parts, so that they will not only do dry sweeping, but shampooing and scrubbing as well. Thus rugs, upholstery, carpets, and furniture may be thoroughly renovated without removal and with very little effort. The cleaning compound is applied by pneumatic pressure. It is of the requisite consistency to clean the nap thoroughly without saturating the body of the fabric. After the nap is thoroughly shampooed, vacuum tools are applied, thus effectively removing the cleaning compound and nearly all accompanying moisture. So thoroughly is this work accomplished that articles are usually dry fifteen or twenty minutes after the cleaning compound has been applied.

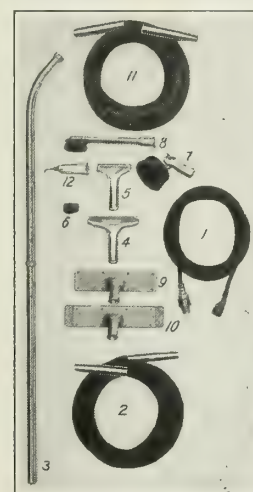
FACILITIES.

The KELLER MANUFACTURING CO. have probably the largest factories in the world devoted entirely to the manufacture of cleaning devices, and as the line built is not limited to any particular sizes and types of machine, we are in position to recommend and furnish the most suitable article for any particular condition. We do not advise the use of a large machine where a small machine will do the work, nor a small one where a large one is required, as is usually the case where a manufacturer confines himself to one or two sizes. From a modest beginning fifteen years ago, this Company has grown to its present proportions largely through the engineering ability and business sagacity of our president, Mr. Julius Keller, who still gives his personal supervision to the cleaner manufacturing business.

TYPE R-S "SANTO."

This cleaner is equipped with an improved diaphragm pump driven by a high-grade motor of 1-8 horse-power. The motor is furnished for direct current or alternating current in any voltage or frequency desired.

In a test for durability the pattern machines have been operated continuously for over one hundred million strokes without a break. This is more than the average family will use a cleaner in ten to fifteen years.



STANDARD EQUIPMENT
FOR TYPE R-S
"SANTO" CLEANER



TYPE R-S "SANTO"
CLEANER

The metal parts of the pump are of brass and aluminum. The top and back of the machine is of hand-polished and lacquered aluminum.

This machine is twenty-four inches high, twelve inches in diameter. The case is covered with the best quality Chase grain leather. It is mounted on ball-bearing casters and weighs about fifty pounds.

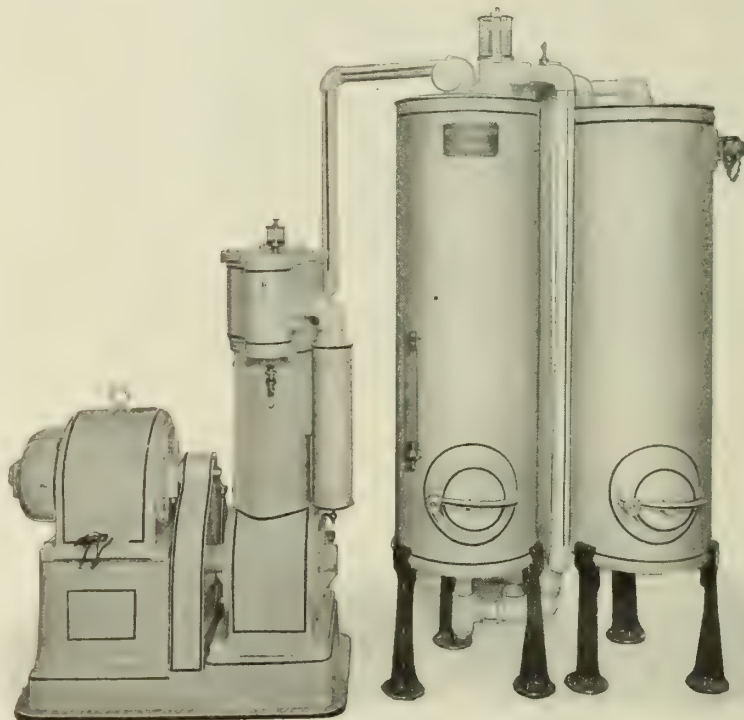
We guarantee a vacuum of seven to eight inches, mercury basis, and a displacement of twenty-five to thirty cubic feet of free air per minute. The motor will not stall or over-heat under a load and will not blow out ordinary fuses.

This cleaner meets the full approval of both the central power stations and the Insurance Underwriters. Some institutions prefer a battery of five or more of these cleaners to a large plant.

The price of this machine, complete with full equipment of tools as shown, is \$125.00.

TYPE B-S.

The dust tanks shown in the illustration may be located at any desired distance from the pump. The mixture of air, dust, dirt, etc., enters near the top of the dry tank on a tangent, thus giving it a whirling motion. Usually ninety per cent or more of the dirt remains in the dry tank. The lighter particles are drawn from the center of the top of this tank and carried to the bottom of the U-tube where a stream of water is injected into the dust-laden air. The air, dust and water are then thoroughly mixed in the mixing-head, as will be seen through the glass. The air is exhausted and the water goes to the wet tank ready to be used again. The water requires renewing periodically. A hinged door in each tank facilitates cleaning. The tanks are built of steel, thoroughly galvanized after making, and tested at many times their working pressure. Each tank is supported on three iron legs.



TYPE B-S KELLER CLEANER

PUMP—We use a specially designed double-acting vertical pump with interchangeable valves automatically operated. The cylinders are of best close-grained cast-iron. The main bearings are fitted with adjustable cast-iron boxes lined with genuine babbitt hammered in, bored and scraped to fit the shaft. The cross-head is of cast-iron with adjustable shoe on each side. The crank shaft, connecting rod and cross-head pin are of finest steel, specially hardened and finished. A muffler for the exhaust insures quiet operation. All moving parts of the pump are enclosed and full equipment of oilers is furnished, these being assisted by splash lubrication from the crank case. Our pump is a result of many years' experience and nothing better for this purpose has yet been produced.

MOTOR—The motor furnished with this outfit is semienclosed but may be fully enclosed by the addition of hinged doors where steam or moisture is prevalent. Automatic lubrication is secured by ring oilers. A raw-hide pinion transmits the power to the pump. We furnish this motor for any standard current and voltage. It is of ample power to prevent overloading. For direct current a starting-box is furnished and for either current a fused main-line switch is provided.

SUB-BASE—A substantial sub-base supports both motor and pump, thus insuring perfect alignment and rigidity. Attached to this base is a suitable gear guard.

FINISH—The standard finish of this machine is cream color with black stripes, over which coach varnish is applied, permitting any dirt to be easily washed off.

FITTINGS—To each outfit the following fittings are attached: Vacuum gauge, equalizing valve, water gauge with drain cocks, vacuum breaker (adjustable), quick-opening valve (for removal of water).

EQUIPMENT—With this machine the following equipment is furnished: Two 25-foot lengths of 1-inch special vacuum hose, with slip couplings at each end, one observation glass, one 12-inch carpet renovator, one 14-inch felt-faced bare floor renovator, one 6-inch furniture renovator, one 4-inch furniture renovator, one 5¼-inch wall brush, one renovator handle, one detachable renovator handle grip, six slip-joint couplings, one oil can and one set of wrenches.

Other size Type "B" machines are furnished with equipment in proportion to capacity.

SPECIFICATIONS.

Architects who specify "Santo" Cleaners will not be disappointed in the results obtained. We solicit inquiries and give you every assistance possible, furnishing plans, sketches of piping, samples of tools, and connections if desired. We are also prepared to furnish complete specifications for vacuum installations.

GUARANTEE.

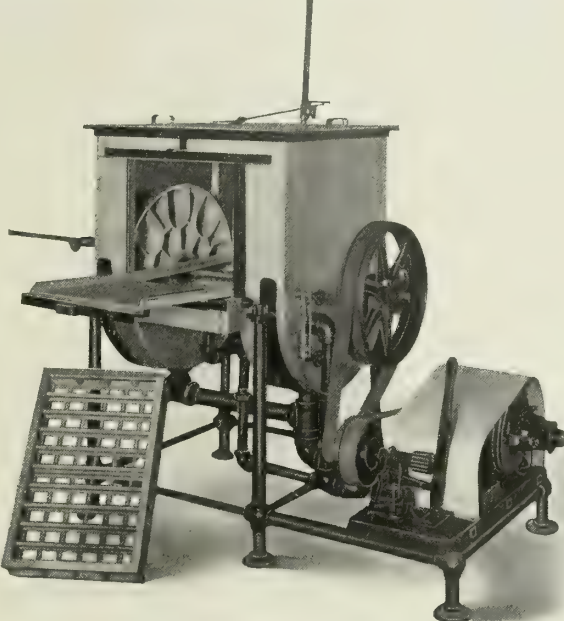
All of our Cleaners are guaranteed against imperfections of material and workmanship for a period of one year from date of shipment, and we will replace or repair, free of charge, f. o. b. cars at our factory, any part or parts proving defective within this period. This is the standard machinery guarantee. If no defects develop in one year it is evident there are none.

**"SANTO"
DISH
WASHERS.**

This machine embodies a washing principle different from all others. It is made in five sizes, from \$150 to \$500 and may be furnished with or without motor as desired.

**GENERAL
DESCRIPTION.**

The washing in the "Santo" is accomplished by means of two wheels of ingenious construction which lift and throw the water into the dishes from a drum at each end of the machine. The trays containing the dishes are placed on a platform above the water line. The water is therefore thrown into the dishes with such force that every piece is perfectly cleansed yet there is absolutely no breakage because the dishes remain stationary. After the dishes are thoroughly washed the power is shut off and the rinsing is accomplished with clear boiling water from a spray above the dishes under the cover of the washer. The average time required to wash each batch is about twenty seconds and for rinsing, three seconds. This is the only dish washer in which each batch of dishes is rinsed with clean boiling water. The dishes come out very hot, and dry instantly upon exposure to the air. The result is they dry with a high gloss, clean and perfectly sterile.



"SANTO" DISH WASHER

ADVANTAGES.

One of the greatest advantages of the "Santo" Dish Washer is the small amount of space it occupies. Our larger size machine, with capacity for 10,000 pieces per hour, is only 52 inches long, 36 inches wide and 48 inches high.

The motor for this machine, which is of 1½ horse-power is connected direct to the washer. No extra jack shafts or pulleys are needed.

Another decided advantage is that the entire work of washing, rinsing and sterilizing is accomplished under cover; the machine is easy on the operator. The operator is enabled to do double the amount of work, as he can stack a tray of dishes while the machine is washing. Our largest size machine requires only one operator and six assistants to handle from 8,000 to 10,000 pieces per hour.

CONSTRUCTION.

This machine is made of the best quality galvanized steel, 16- and 18-gauge. All joints are riveted and soldered and the machine is strongly reinforced throughout. The rinse coil is operated by a quick-opening valve from a lever on the cover of the machine. The standard is made of 1½-inch iron tubing. The waste pipe and overflows are amply large to prevent clogging. Wire-mesh scrap baskets are provided to place underneath the dish trays to prevent large scraps and refuse from contaminating the washing water. These machines are provided with full equipment of trays for dishes of different sizes and shapes and each machine is shipped set up and ready for installation.

THE INSINGER COMPANY

MANUFACTURERS OF

The "Insinger" Dish-Washing Machine

PHILADELPHIA, PA.

PRODUCT.

"INSINGER" DISH-WASHING MACHINES.

CONSTRUCTION.

The same general principles are applied to all the various sizes of this machine. The tanks are solid castings, having no seams or joints to cause leaks by expansion and contraction. Separate water and drain valves and overflows are provided with each compartment, and where steam is used coils are furnished to keep the water at an even temperature. A high-grade electric motor is furnished attached direct to each machine, making one complete unit, with no outside belts or pulleys. The automatic power basket hoist does away with all heavy lifting, enabling a woman to run the machine, if desired. Cleanliness is secured in a most simple way. Just lift out the interior parts (no tools required) and scrub them as an open sink.

METHOD OF WASHING.

Two propellers in the tanks turn very rapidly, forcing the water across the dishes, removing the dirt. The rinsing water, which is very hot, is now used, and because of the heat it evaporates almost immediately upon the removal of the dishes from the machine. No towels are used and the dishes are clean and sterilized.

ADVANTAGES.

Washing dishes by machinery is now acknowledged to be the most sanitary, economical and quickest method.

The "Insinger" is made in several sizes, to meet the various conditions, and is so constructed that it is very rapid, easy of operation and of great durability.

TESTIMONIAL.

An "Insinger" was installed in the Pennsylvania School for Feeble Minded Children, at Elwyn, Pa. At the expiration of one year the steward's department made, in part, this report:

"A year ago we installed a dish-washing machine, the "Insinger," at a



3-B "INSINGER" DISH-WASHING MACHINE



LARGE "INSINGER" DISH-WASHING MACHINE

cost of \$600, with the hopes of saving in the breakage of dishes, which had grown to be a very important item. We are pleased to report that having paid for the crockery \$1156 the past year, being \$634 less than we paid for the same the previous year, it shows a gain of more than the cost of the machine in only one year."

REFERENCES.

The following is a list of representative installations of the "Insinger" Dish-Washing Machine:

BUILDING	LOCATION
Waldorf-Astoria Hotel	New York, N. Y.
Hotel Astor	New York, N. Y.
Hotel Belmont	New York, N. Y.
The Plaza Hotel	New York, N. Y.
Smith & McNell's Hotel	New York, N. Y.
Arkwright Club	New York, N. Y.
Bellevue-Stratford Hotel	Philadelphia, Pa.
Green's Hotel	Philadelphia, Pa.
Royal Poinciana Hotel	Palm Beach, Fla.
Royal Palm Hotel	Miami, Fla.
Hotel del Coronado	Coronado Beach, Cal.
Chicago Athletic Club	Chicago, Ill.
Sears, Roebuck & Co.	Chicago, Ill.
The New Willard Hotel	Washington, D. C.
Simpson Crawford Co.	New York, N. Y.
Siegel Cooper Co.	New York, N. Y.
Fourteenth Street Store	New York, N. Y.
Adams Store	New York, N. Y.
University Club	New York, N. Y.
New York Athletic Club	New York, N. Y.
John Wanamaker	Philadelphia, Pa.
Snellenburg's	Philadelphia, Pa.
McDonald's Restaurant	Boston, Mass.
Hotel Essex	Boston, Mass.
The Breakers Hotel	Palm Beach, Fla.
The Ormond Hotel	Ormond, Fla.
Hotel del Monte	Monterey, Cal.
City Hospital	Blackwell's Island, N. Y.
Metropolitan Hospital	Blackwell's Island, N. Y.
Municipal Hospital	Philadelphia, Pa.
Medico-Chirurgical Hospital	Philadelphia, Pa.
State Asylum for Chronic Insane	Wernersville, Pa.
State Hospital	Allentown, Pa.
Dr. Walter's Sanitarium	Walters Park, Pa.
State Hospital	Trenton, N. J.
Thaddeus Stevens Institute	Lancaster, Pa.
Lehigh University	South Bethlehem, Pa.
Harvard University	Cambridge, Mass.
West Point Military Academy	West Point, N. Y.
United States Naval Academy	Annapolis, Md.
Georgetown University	Washington, D. C.
Marlborough-Blenheim Hotel	Atlantic City, N. J.
Traymore Hotel	Atlantic City, N. J.
Galen Hall	Atlantic City, N. J.
Haddon Hall	Atlantic City, N. J.
St. Charles Hotel	Atlantic City, N. J.
Strand Hotel	Atlantic City, N. J.
Chalfonte Hotel	Atlantic City, N. J.

The entire fleet of the North German Lloyd Steamship Company

Steamships Harvard and Yale, Metropolitan Line

C. W. Morse and Adirondack, People's Line

The United States Government uses the "Insinger" exclusively on the vessels of its navy

IMPERIAL KITCHEN ELEVATOR CO.

CANTON, PENNA.

PRODUCTS.

We manufacture the "IMPERIAL" KITCHEN ELEVATOR which is a combined Refrigerator and Cupboard, arranged to act as a Dumb-Waiter, between kitchen and cellar.

COMBINED USES AND ADVANTAGES.

The "Imperial" Kitchen Elevator unites the refrigerator, kitchen cabinet, cellar cupboard, and dumb-waiter into one practical and convenient form to accommodate everything that the housewife needs many times each day. It keeps such articles in the cool of the cellar, where they are out of the way when not needed yet immediately accessible when required, thus bringing all the contents of the cupboard to and from the cellar without physical exertion.

CONSTRUC- TION.

The elevator is built of poplar lumber. The outside frame is painted with waterproof paint. The cupboard and the oak top are varnished and rubbed.

A tin bread box, $9\frac{1}{2}$ x 14 x 21 inches, and a 4-inch shelf occupy the first section of the cupboard, directly under the floor, where the air is dry and cool. Three shelves spaced 5, 7, and 9 inches and covered with a rustproof wire-screen door occupy the second (and middle) section.

A refrigerator, 14 x 14 x 21 inches occupies the lower section close to the cellar floor, where the atmosphere is cooler, which effects a saving in ice. Below the refrigerator a galvanized tank receives the drip and maintains the uniform weight until new ice is placed into the refrigerator, when the water is drawn out of the tank.

Two self-lubricating wheels carry the wire cables and guide the cupboard at the top, and two smaller wheels guide the cupboard at the lower end. All of the pulleys and bearings are machine turned to make them run perfectly true.

A push-button located in the rear of the right side, facing the elevator, can be adjusted to any thickness of floor. The weight boxes filled with stone or old iron act as counterbalances.

Two springs under the cupboard give it the initial start when catch is released and the counterbalances carry it to the room above. The two bumper springs are compressed and stop the cupboard in the ascent. These also give the cupboard its initial start on its return after the catch is again released.

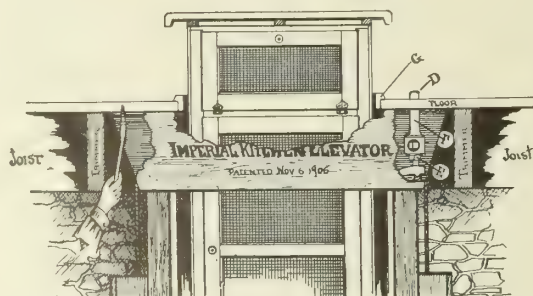


FIG. 1. "IMPERIAL" KITCHEN ELEVATOR
Showing same installed. Top shown a few inches
above kitchen floor level

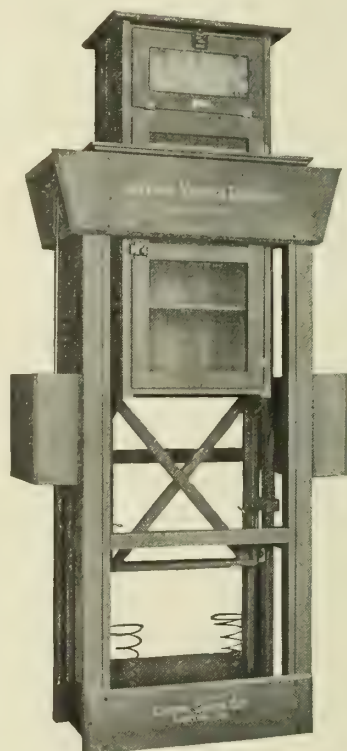


FIG. 2. NO. 5

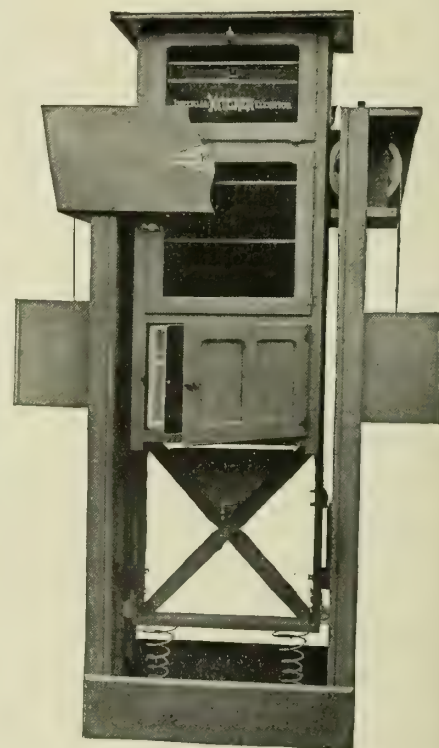


FIG. 3. NO. 10

"IMPERIAL" KITCHEN ELEVATORS

PROPER
CELLAR
DIVISION.

Fig. 5 shows an inexpensive, cool cellar, which can be made just large enough to accommodate the elevator or larger if desired, for the storage of vegetables and bulk goods. With this special construction very little ice is required even during the hottest months. The elevator is set back into the cellar wall, which brings the opening through the floor close to the wall in the room above. The inside dimensions of this cool cellar can be as small as 36 x 54 inches, but the most economical size is 4 x 5 feet, inside dimension. A cool cellar built too large makes it more difficult to retain a low temperature.

DIMENSIONS,
CAPACITY
AND
WEIGHT.

DIMENSIONS OF OUTSIDE FRAME WITHOUT LEGS			DIMENSIONS OF CUPBOARD		
	No. 5	No. 10		No. 5	No. 10
Height of frame,	75"	81"	Width,	21"	24"
Across the front at top,	40"	48"	Depth,	14"	16"
Across the ends at top,	20"	21"	Height,	50"	56"
OPENING THROUGH FLOOR			CARRYING CAPACITY		
No. 5,	17 $\frac{3}{4}$ " x 24 $\frac{1}{2}$ "	No. 5,	75 lbs.	SHIPPING WEIGHTS	
No. 10,	19 $\frac{3}{4}$ " x 27 $\frac{1}{2}$ "	No. 10,	100 lbs.	No. 5,	210 lbs.
				No. 10,	275 lbs.

HOW
SHIPPED.

Elevators are shipped from the factory set up complete and in good working order. They are shipped in a strong crate.

INSTALLA-
TION.

Any carpenter can install the elevator, the simple cutting of the opening through which the elevator passes from cellar to kitchen, being the greatest feature. Instructions accompany each elevator.

PRICE.

Price to contractors and carpenters, f. o. b. Canton, Pa., as follows: No. 5, \$35.00; No. 10, \$45.00. Subject to discount. Write for further information.

CO-OPERATIVE
SERVICE.

We are equipped to build the "Imperial" Kitchen Elevator according to special designs and shall be glad to make up special elevators to accommodate plans submitted by architects.

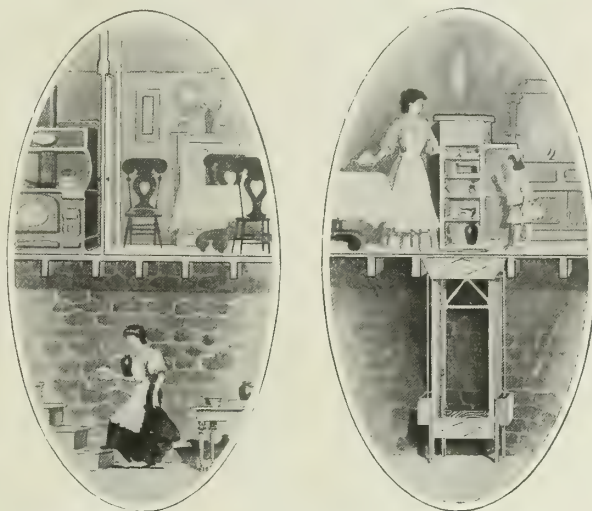


FIG. 4. CELLAR AND FIRST FLOOR OF HOUSE BEFORE AND AFTER INSTALLATION OF "IMPERIAL" KITCHEN ELEVATOR

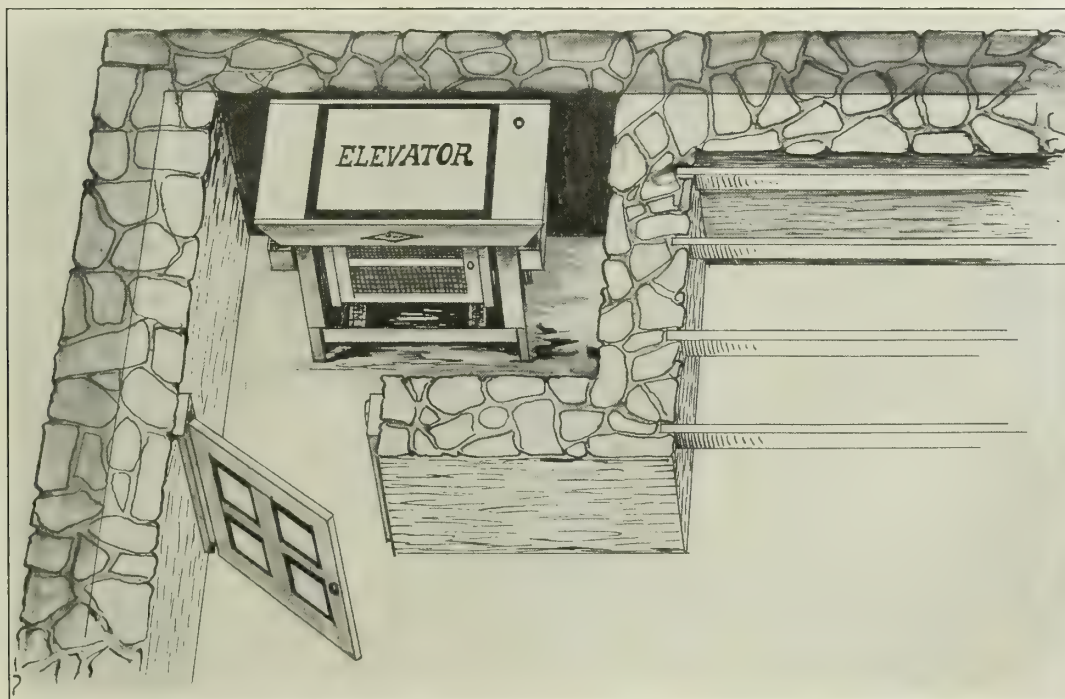


FIG. 5. PERSPECTIVE OF "IMPERIAL" KITCHEN ELEVATOR INSTALLED Showing inexpensive, cool cellar

GAS APPLIANCE DISPLAY ROOMS

Gas Appliances for Lighting, Heating and Cooking

29 East Twenty-First Street
NEW YORK, N. Y.

BRANCHES IN NEW YORK CITY

112 WEST 42ND STREET
157 HESTER STREET
4 IRVING PLACE
22 EAST 22ND STREET
2084 THIRD AVENUE

1328 BROADWAY
281 LENOX AVENUE
2592 THIRD AVENUE
36 UNION SQUARE
1911 AMSTERDAM AVENUE

32-38 WEST 125TH STREET
139 WEST 125TH STREET
350 ALEXANDER AVENUE
1815 WEBSTER AVENUE

PRODUCTS.

We are distributors of and sell LIGHTING, HEATING and COOKING GAS APPLIANCES of every description for domestic and industrial purposes, including BAKERS' OVENS, BAND SHRINKING FURNACES, STERILIZERS, BARREL HEATERS, BATH HEATERS, BRAZING FURNACES, BROILERS, CAN-SOLDERING MACHINES, CARVING TABLES, CHINA KILNS, CHOCOLATE MELTERS, CLOTHES BOILERS, DRYERS and SPONGERS, COFFEE ROASTERS, CONFECTIONERS' STOVES, CREMATORIES, DISH WASHERS, ENAMELING OVENS, GAS ENGINES, HATTERS' GAS-STOVES, INCUBATORS, JEWELERS' REFINING FURNACES, LAUNDRY DRYERS, IRONS and STOVES, LINOTYPE FURNACES and POTS, PLATE WARMERS, GAS RANGES, RIVET HEATERS, STEAM GENERATORS, HOSPITAL OUTFIT STERILIZERS, TAILORS' STOVES, TOOL FORGES, and GAS WATER-HEATERS.

DISPLAY ROOMS.

Our Building, at 29 East Twenty-First Street, New York City, is an educational institution where we teach economy and efficiency in the use of gas, the ideal fuel. We are prepared to give practical demonstrations of the great variety of uses for gas, from braising meat to brazing metal.

The newest and best cooking, lighting and industrial gas appliances are exhibited and experts are constantly in attendance to advise as to the selection and operation of devices for special purposes.

Architects and others interested are invited to visit this exhibition.

GAS RANGES.

We sell and rent Gas Ranges in great variety, and furnish ranges when desired, complete with hoods, broilers, elevated ovens, etc.

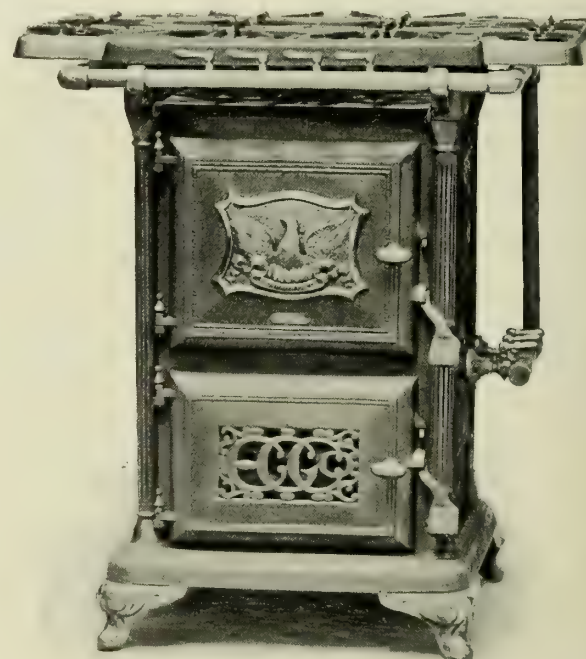
PHOENIX GAS RANGE

Description	No. 16	No. 18
Height	35 inches	36 inches
Width with shelves	34 "	37 "
Width without shelves	25 "	26½ "
Depth	26 "	30 "
Baking oven	11 x 15½ x 16	12 x 18 x 18
Broiler	10¾ x 16 x 16	11 x 18 x 18

Four Top Burners, 3 medium and 1 large



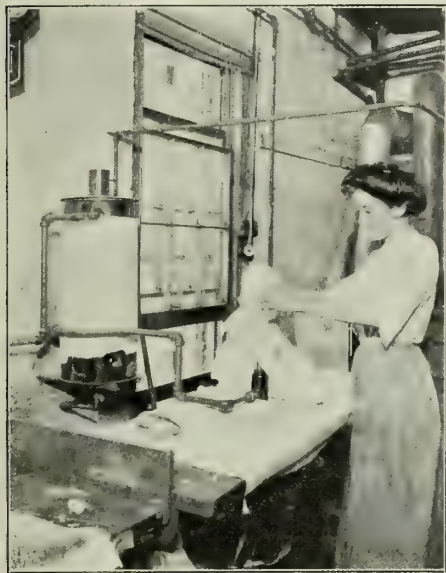
GAS APPLIANCE
DISPLAY ROOMS



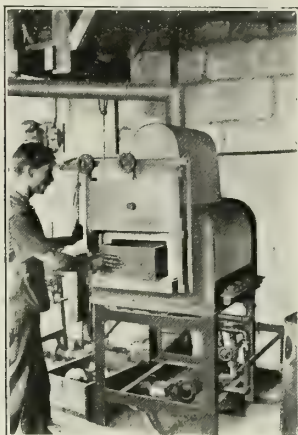
STANDARD TYPE OF PHOENIX GAS RANGE
FOR RENTAL

ILLUSTRATIONS.

The following illustrations show a few of our Gas Appliances adapted for domestic and industrial purposes.



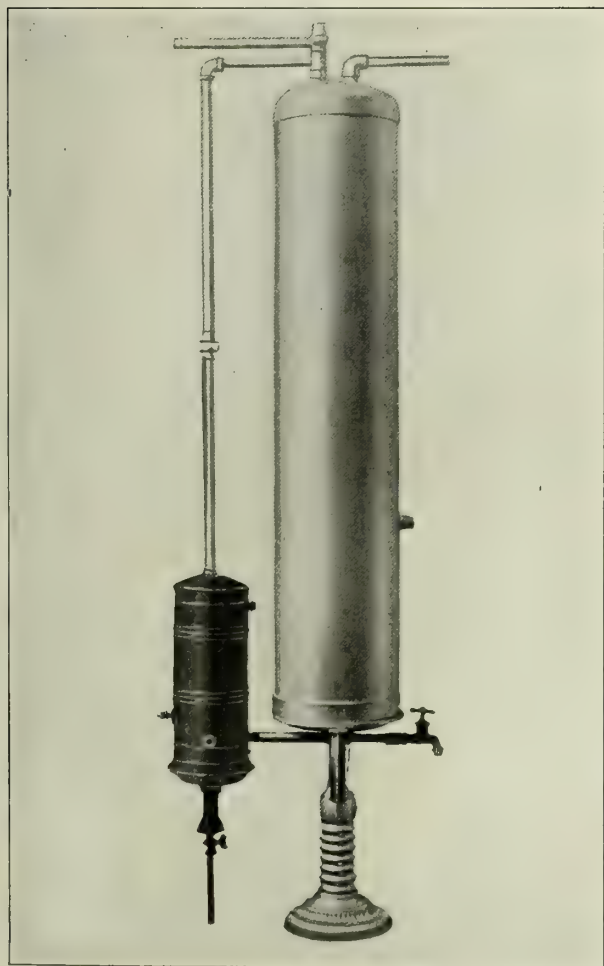
GAS STEAM SUPERHEATER FOR LAUNDRY WORK



GAS ANNEALING OVEN



GAS SMELTING FURNACE



INDEPENDENT GAS WATER-HEATER

Heater carrying brass or copper coils is entirely independent of the coal or gas range, and will provide hot water in a short time, to be drawn from any faucet in the house



KITCHEN EQUIPMENT

Type of installation found in many New York City Hotels. Estimates furnished for complete installations for all gas fuel purposes

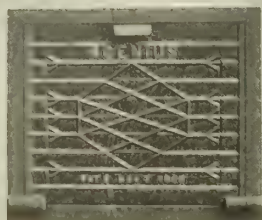
GRAND RAPIDS FOUNDRY CO.

MANUFACTURERS OF

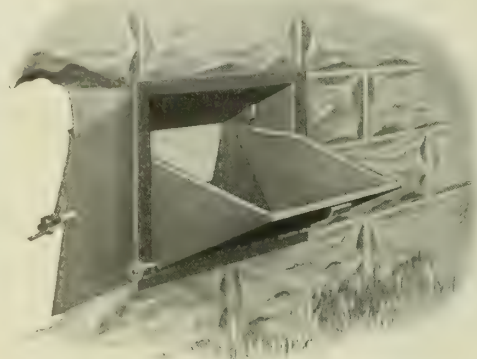
"Roenius" Wood, Coal and Vegetable Chutes
GRAND RAPIDS, WIS.

PRODUCTS.

"ROENIUS" WOOD, COAL, and VEGETABLE CHUTES.



"ROENIUS" SQUARE CHUTE,
HOPPER CLOSED



"ROENIUS" SQUARE CHUTE, HOPPER
OPEN

DESCRIPTION.

The "Roenius" Square Chute is made of heavy cast-iron throughout, reinforced by extra heavy rib design around chute. This chute is so constructed that it will stand the abuse and do the work that a coal chute is subjected to.

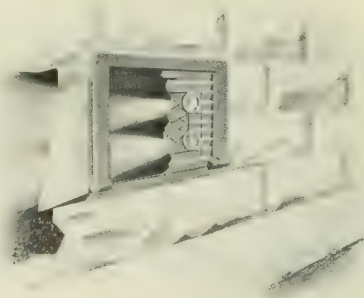
The frame has a 14-inch bearing on bottom, and an 11-inch top, giving the very best kind of anchorage in wall.

The hopper, when open, projects 16 inches out, affording not only a large opening through chute, but also a large convenient receiver for material being thrown into chute.

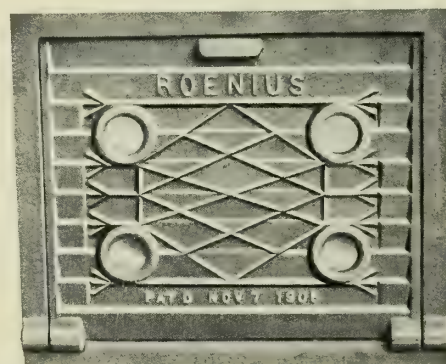
The chute has no adjustable parts, being made of two parts, frame and cover.

It is easily and securely locked by steel clips on the inside.

Where the only available light to the coal bin must pass through coal chute, we furnish this chute with four heavy bull's-eye disks in cover. These disks being countersunk back from the inner face of chute hopper, they are protected against all wear and breakage and at the same time throw ample light for coal bin.



"ROENIUS" SQUARE CHUTE, HOPPER
CLOSED. PART CUT AWAY, SHOW-
ING LIGHT PASSING THROUGH
BULL'S-EYE



"ROENIUS" SQUARE CHUTE, HOPPER
CLOSED. SHOWING BULL'S-EYES
FOR ADMITTING LIGHT

ADVANTAGES.

The "Roenius" Square Chute is burglar-proof because it has a good, safe locking device and the hopper sets flush inside of frame, so that a bar can not be entered between frame and cover with which to pry chute open. It is the neatest looking chute on the market.

SIZES.

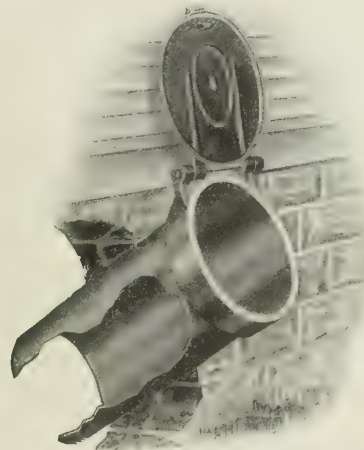
This chute is made in two sizes, 16 inches high by 20 inches wide, and 16 inches high by 24 inches wide. It is easily installed in any kind of wall.

"ROENIUS"
ROUND STEEL-
BODY CHUTE.

These chutes are made of heavy sheet steel, with cast-iron cover at each end.



"ROENIUS" ROUND CHUTE, SHOW-
ING HOPPER CLOSED.



"ROENIUS" ROUND CHUTE, SHOW-
ING HOPPER OPEN.

ADVANTAGES.

The advantages of this chute are: Its cylindrical shape gives it great strength; materials of all kinds pass through this smooth tube very easily; its projection out of wall forms its own immediate hopper. Having a cover at each end forms a dead-air space, making chute absolutely frost-proof. A convenient, secure locking device makes chute burglar-proof.

USES.

For factory boiler-houses, large schoolhouses, etc., where a large quantity of fuel is thrown through chute, none will answer the purpose as the "Roenius" Round Steel-Body Chute, size 26 inches diameter by 36 inches long.

For residence purpose where foundation wall is 12 inches or less, use chute of 18 inches diameter by 26 inches long, and where wall is more than 12 inches, use chute 18 inches diameter by 36 inches long.



"ROENIUS" ROUND CHUTE, SHOW-
ING METHOD OF CHARGING



"ROENIUS" ROUND CHUTE, SHOWING
METHOD OF CHARGING

MAJESTIC FURNACE & FOUNDRY CO.

HUNTINGTON, IND.

PRODUCTS.

Manufacturers of COAL and WOOD CHUTES, WARM-AIR FURNACES, GRAY IRON CASTINGS, and SHEET-METAL WORK.

THE "MAJESTIC" CHUTE.

The "Majestic" Coal, Wood or Vegetable Chute is made of heavy steel and cast-iron, and will withstand the severe usage given chutes by the most careless coal deliverers. The door is supplied with a self-locking device, so that the coal man may close and lock the door before leaving the house. The door can be easily unlocked from the inside, but can not possibly be opened from the outside. When the chute is open, ready to receive the fuel, the door swings upward and is automatically locked, thereby protecting the siding above the opening, where protection is most needed. The "Majestic" Coal Chute also affords ample protection to the foundation and walls. No splintered sash, broken glass, or marred siding when the "Majestic" Coal or Wood Chute is used. The adjustable hopper is so arranged that it will receive all the fuel either from a basket or shovel, and scattering of coal will thus be avoided; hopper can be removed to put in coarse wood or coal.

SIZES AND PRICES.

No.	SIZE OF OPENING IN WALL	PRICE
1	16 in. high, 22 in. wide	\$ 8.00
2	16 in. high, 27 in. wide	10.00
3	22 in. high, 33 in. wide	15.00

THE "MODEL" COAL AND WOOD CHUTE.

The "Model" Coal or Wood Chute not only furnishes protection to the building, but acts as a window also. The hopper is the same as that shown in the "Majestic." The body is made of heavy steel, the door and frame of heavy cast-iron.

Rubber glass is used for light, but, if desired, the glass can be removed and wire screen used in its place. Size of wall opening, 27 inches long, 16 inches high, 13 inches deep. Price, \$11.00.



CHUTE OPEN AND HOPPER IN POSITION



"MAJESTIC" CHUTE OPEN READY TO RECEIVE FUEL

Door automatically locked open, to protect siding

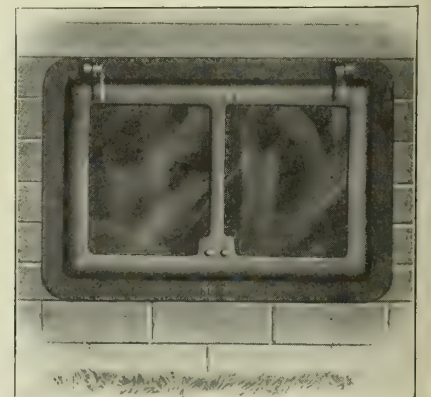


"MODEL" CHUTE, OPEN



"MAJESTIC" DOOR CLOSED FLUSH WITH THE WALL

Automatically locked on the inside



"MODEL" CHUTE, WITH GLASS WINDOWS

THE GENERAL FIREPROOFING CO.

All-Steel Furniture Lockers
YOUNGSTOWN, OHIO

BRANCH OFFICES

NEW YORK, N. Y., 10 East 33rd Street
BOSTON, MASS., 161 Devonshire Street
PHILADELPHIA, PA., 1341 Arch Street

WASHINGTON, D. C., 725 14th Street, N. W.
CHICAGO, ILL., 115 Adams Street
PITTSBURG, PA., 1215 Fulton Building

AGENCIES IN ALL PRINCIPAL CITIES

PRODUCTS.

METAL FURNITURE and FILING EQUIPMENT for Banks, Public Buildings and Commercial Institutions, including COUNTERS, DESKS, TABLES, PARTITIONS, GRILLES, DOORS and CASINGS, VAULT CASES, OMNIBUSES, LIBRARY SHELVING, and FURNISHINGS; also WARDROBES and LOCKERS.

DESCRIPTION.

Our Metal Furniture is made of steel and bronze, built to order from architects' specifications.

Horizontal and Vertical Sectional Filing Units built of steel are carried in stock for immediate delivery. These will take all standard forms used by Commercial and Public Institutions. Write for Booklet F-76.

Wardrobes and Lockers of various standard designs and built of steel or expanded metal for Armories, Association Buildings, Country Clubs and Factories, are carried in stock; these are also made from architects' specifications. Write for Booklet F-58.



CO-OPERATIVE SERVICE.

Our organization of experienced draughtsmen and engineers permits us to work out mechanical details to meet the exact requirements of the architect, or to assist him in laying out and designing equipments for the operations in hand. We are always desirous of demonstrating to architects the superiority of our construction in strength, easy and simple operation, and final finish of the work; and respectfully solicit opportunities to furnish estimates on steel equipment of every character.

EXAMPLES.

The very latest in design is exemplified in 1909 construction used in these references:
Complete Court House Filing and Counter Equipment, Westchester County Court House, White Plains, N. Y., Lord & Hewlett, Architects.

Complete Court House Filing and Counter Equipment, Luzerne County Court House, Wilkesbarre, Pa., McCormick & French, Architects.

Complete Filing and Recording Equipment, Kentucky State Capitol, Frankfort, Ky., Frank M. Andrews & Company, Architects.

Office and Vault Equipment, Studebaker Administration Building, South Bend, Ind., S. S. Beeman, Architect.

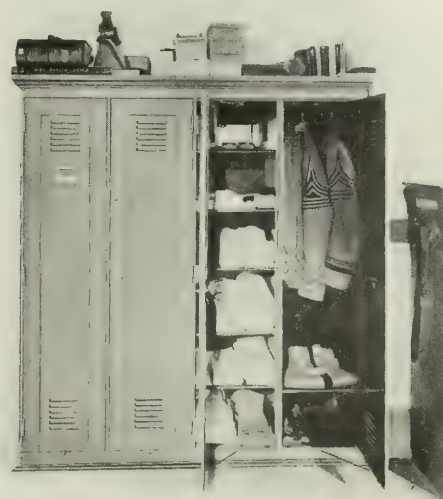
Desk and Filing Equipment, Ocean Accident & Guarantee Corporation, New York, N. Y., Hoggson Brothers, Designing Architects.

Banking and Accounting Room Equipment, First National Bank, Youngstown, Ohio, Albert Kahn, Architect.

Wardrobe Equipment, New York Public Schools, representing \$200,000 worth of All-Steel Wardrobes.



TYPICAL BANKING OUTFIT—BOOKKEEPING DEPARTMENT



LOCKERS IN CADETS' ROOM, WEST POINT, N. Y.
Part of United States equipment of 20,000 lockers furnished by THE GENERAL FIREPROOFING CO.

EDWARD DARBY & SONS COMPANY, Inc.

"Pen-Dar" Metal Lockers, Window Guards, Iron Railings, etc.

233-235 Arch Street
PHILADELPHIA, PA.

PRODUCTS.

Manufacturers of "PEN-DAR" METAL LOCKERS, METAL FURNITURE, SHELVING, TOOL RACKS, etc.; WIRE and IRON WINDOW GUARDS, RADIATOR GUARDS, SPARK GUARDS; WROUGHT-IRON RAILINGS; BRASS and IRON GRILLE WORK; AREA GRATINGS; ELEVATOR ENCLOSURES; ELEVATOR CARS; WROUGHT-IRON and WIRE OFFICE ENCLOSURES; BRASS, COPPER, STEEL, and GALVANIZED WIRE-CLOTH; STABLE FIXTURES; COAL and SAND SCREENS—everything in WIRE and IRON.

ADVANTAGES
OF "PEN-
DAR" METAL
FURNITURE
AND
LOCKERS.

The superiority of metal over wood for office furniture and fixtures, such as lockers, filing cabinets, cases, tables, etc., is obvious.

The use of metal lockers means great convenience and economy. It enforces more system and saves employees' time. It encourages neatness and cleanliness, prevents waste, and gives increased protection against fire.

The value of the metal lockers as clothes receptacles is generally recognized, especially for manufactories. When made entirely of open mesh they allow a free circulation of air, in consequence of which they are well ventilated and sanitary. Moreover, the contents of each individual locker can be thoroughly inspected at any time. They can be easily fumigated without the articles in the lockers being removed. They are germ-proof, fireproof, and time-savers.

Because of our long experience and up-to-date locker department, we are enabled to produce metal lockers that for style, workmanship, and durability, can not be excelled. We solicit your careful inspection.

CONSTRUC-
TION.

A heavy wrought-steel angle-frame construction is used throughout, and the open mesh filling is securely held in place by a $\frac{1}{2}$ -inch No. 14 steel band, well riveted to the angle frame. This band is not a series of small pieces, but is one continuous strip, and entirely covers all edges of the filling. This construction does not apply to lockers made entirely of sheet steel.

EQUIPMENT.

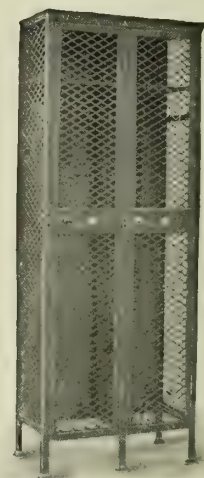
Each locker, whether of open mesh or sheet steel, is equipped with one shelf (except two-tier lockers, which have no shelves unless specified), three nickel or brass plated coat-hooks, individual brass number-plates, and our special three-point locking device, which securely fastens the door at the top, center and bottom

DESIGN NO.
805DESIGN NO.
800

DESIGN NO. 810



DESIGN NO. 402



DESIGN NO. 230

with a single turn of the handle. This is operated in connection with either our combination keyless dead-spring bolt-rim lock or brass padlock.

LOCKS.

While we advocate the use of our dead-spring bolt-rim lock, which requires a key only to open it, we can furnish keyless combination locks or padlocks according to requirements. All key locks are fitted with two flat non-changeable keys and master-keyed.

FINISH.

The "Pen-Dar" Lockers are finished in Tuscan Red, Olive Green, or Black Enamel, baked in a temperature of 250 degrees for three and one half hours. At a slight advance, however, we can finish them in any style of finish desired.

SIZES.

While we have adopted three sizes for single-tier lockers, 12 x 12 x 60 inches high, 12 x 12 x 72 inches high, and 12 x 18 x 72 inches high, and three sizes for double-tier lockers, 12 x 12 x 36 inches high, 12 x 12 x 42 inches high, and 12 x 12 x 48 inches high, as standard, we nevertheless make our lockers any shape or size according to special plans and specifications. They are installed either double row back to back or single row against the wall, and as many tiers high as may be needed. The sizes given are the sizes of the lockers; legs are extra 6 inches or more.

NEW
"PEN-DAR"
EXPANDED
METAL
LOCKER.

The new "Pen-Dar" Expanded Metal Locker, No. 230, shown herewith, is especially worthy of attention. It is undoubtedly the best locker of its kind on the market, and embraces every desirable feature. The expanded metal used in its construction is made by an entirely new process, patented under date of April 25, 1905. This metal is made from a sheet of planished steel plate, cut, expanded, and then rolled in such a manner that it presents a smooth even surface entirely free from rough edges or corners. It lies perfectly flat, gives better results, and has a neater appearance than the ordinary expanded metal sheet.

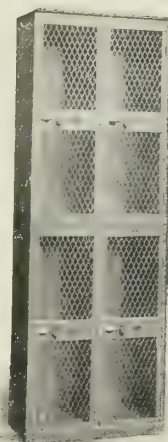
STEEL
EQUIPMENT.

We have made a specialty of designing and manufacturing interior steel equipment, consisting of Book-Racks, Shelving, Tables, Partitions, Filing Cabinets, etc. These are made in such a variety of designs that it is impossible to adopt any one style as standard, consequently we manufacture this style of equipment according to plans and specifications, or special requirements.

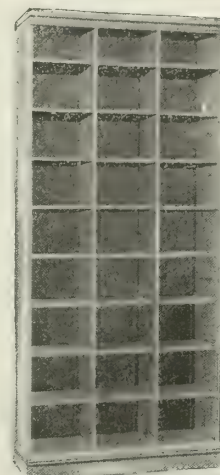
We shall be pleased to furnish estimates or special designs for our customers upon request.



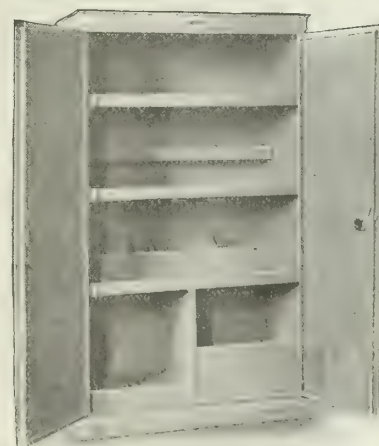
DESIGN NO. 525



DESIGN NO. 725



DESIGN NO. 700



DESIGN NO. 295

THE HART & COOLEY COMPANY

Manufacturers of Wrought-Steel Lockers

NEW BRITAIN, CONN.

NEW YORK, N. Y., 79 Chambers Street

BRANCH OFFICES

CHICAGO, ILL., 15 Lake Street

PRODUCTS.

WROUGHT-STEEL LOCKERS; also, a complete line of WROUGHT-STEEL REGISTERS for Floors, Walls and Ceilings; SPECIAL ONE-PIECE SCREENS finished to match any hardware, as described elsewhere in this Catalogue, for which see our name in General Index.

CONSTRUCTION.

FRAME—The carrying angles are $1'' \times 1'' \times \frac{1}{8}''$, extending from the top to about six inches below the bottom and forming an open space between the bottom of locker and the floor. This dimension is variable. Cross angles are attached to the carrying angles at top and bottom, with inwardly projecting legs to which the top and bottom of locker are attached.

SIDES—The sides of locker are wrapped around the carrying angles forming round edges.

TOP—The top is formed down in front, back and end, and is held in position by tie-rods.

BOTTOM—The bottom is made of No. 16 gauge and depressed on the sides so that the metal passes over and under the projecting legs of the cross angles.

TIE-RODS—The tie-rods, $1'' \times \frac{1}{8}''$, are accurately spaced to locate the carrying angles and are placed at top and bottom, both front and back, extending the entire length of a section.

HOOKS—Wrought-steel hooks formed with rounded edges and having three prongs on one base are provided. One hook is placed on each side, thus forming six hanging spaces.

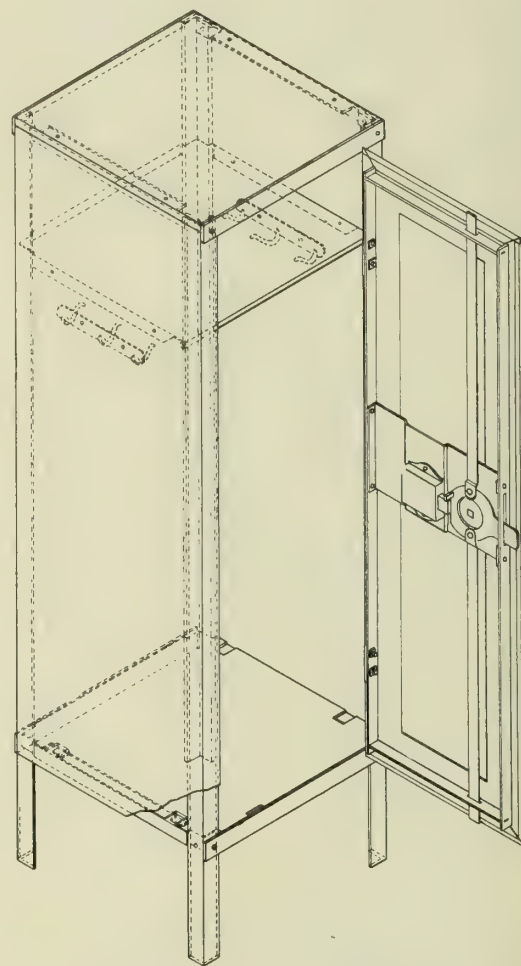
SHELVES—All shelves are made of heavy gauge steel, with sides and back formed down at right angles and the front rolled.

DOORS—The doors have a $\frac{3}{4}'' \times \frac{3}{4}'' \times \frac{1}{8}''$ angle frame with ends and sides securely riveted, over which is wrapped No. 20 gauge sheets, having round edges. The top and bottom are offset to lap over the tie-rods, and the sides overlap the carrying angles.

The face of the door is paneled. A reinforcing plate extends the entire width of the door and is securely riveted to the angle frame. To this plate is attached the lock.

The cam is made of heavy wrought-steel to which is attached, by means of steel rivets, cam rods, which, as cam is operated by a malleable iron handle, lock at top and bottom.

The cam, having an extended lip which passes through slot in the angle frame, engages the back of the carrying angle when in locked position.



WROUGHT-STEEL LOCKER

FINISH.

Lockers are finished in black, green, maroon enamel, baked on at a high temperature.

SPECIAL STYLES.

In addition to our regular construction we also make several styles of doors to meet conditions requiring ventilation. These doors are fully described in our booklet which is furnished free on request.

HESS WARMING & VENTILATING CO.

"Hess" Sanitary Steel Lockers

906B Tacoma Building

CHICAGO, ILL.

PRODUCTS.

Manufacturers of "HESS" STEEL CLOTHING LOCKERS of all sizes and styles, in sheet steel, steel and expanded metal or all expanded metal; also, ENAMELED STEEL BATHROOM and TOILET LOCKERS; GRAIN DRYERS and HOT-AIR FURNACES.

STEEL LOCKERS.

Our Lockers are made of the best quality annealed, cold-rolled locker steel of any gauge required. The parts are trimmed, punched and formed by automatic machinery of the best grade, and guaranteed to be absolutely interchangeable.

STYLE A LOCKER.

Style A embodies the best features possible in locker construction. The corners are formed as a part of the side sheets and are exceedingly rigid and firm. No framework is required. The top is pitched so that dust will not lodge upon it, preventing an accumulation of odds and ends.

Style A Locker has full cabinet base which is far preferable to legs, for nothing can get under it, and the troublesome sweeping around legs and under lockers is avoided.

The louver system of ventilation permits free circulation of air, yet excludes dust perfectly, renders all contents invisible to peeping eyes and prevents entrance of sparks in case of fire.

The door has four depressed panels, with stiles $\frac{1}{2}$ " in thickness. Brass knobs and any style of lock may be used. Enamelled in any color.

We can modify the locker to suit any requirements, and still retain its valuable features—frameless construction, cabinet base, louver ventilation, and pitched top.



STYLE B LOCKER

STYLE D2
LOCKER

STYLE C2
LOCKER

STYLE A LOCKER

Adopted by United States Government, to which we sold fifty carloads in 1909 alone, amounting to upward of \$100,000.00

OTHER
STYLES.

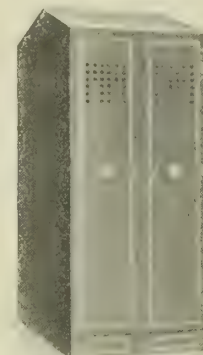
Style B. Medium Louver ventilation, cabinet base, flat or pitched top.
 Style C. Square or round hole ventilation, cabinet base, flat or pitched top.
 Style C2. Same as C, double tier.
 Style CP. Same as C, double row, pitched top. All other styles are made double row, when desired.
 Style D. Expanded metal, on angle frame, with legs.
 Style D2. Same as D, double tier.

FINISH.

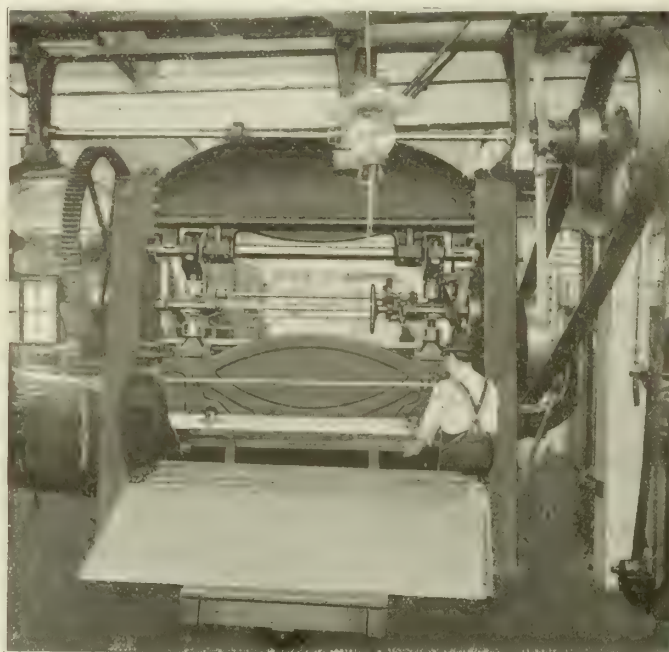
Our lockers are all finished in hard-baked enamel of the best grade, which will never flake or peel. Stock colors are olive green and black, but other colors will be supplied on request.

LOCKS.

We supply one-, two- or three-point locks, controlled by flat-key, spring or dead-bolt locks, padlock, visible, click or star combination. Master keys supplied when required.



STYLE C P LOCKER
Double row



ONE OF OUR LOCKER MACHINES

Weighs 24,000 lbs. Stamps or forms an 8-foot Locker Door or Side at one stroke



STYLE D LOCKER



STYLE C
LOCKER

SIZES.

SINGLE TIER ON 4-INCH CABINET BASE
Inside Measurements

64 inches high	76 inches high
12" x 12" x 60"	12" x 12" x 72"
12" x 15" x 60"	12" x 15" x 72"
15" x 15" x 60"	15" x 15" x 72"
15" x 18" x 60"	15" x 18" x 72"
18" x 18" x 60"	18" x 18" x 72"

DOUBLE TIER ON 4-INCH CABINET BASE
Inside Measurements

76 inches high	88 inches high
12" x 12" x 36"	12" x 12" x 42"
12" x 15" x 36"	12" x 15" x 42"
15" x 15" x 36"	15" x 15" x 42"
15" x 18" x 36"	15" x 18" x 42"
18" x 18" x 36"	18" x 18" x 42"

For angle iron framed lockers on 6" legs, add 2" to heights given.

Lockers of other dimensions are not kept in stock but will be supplied on a few days' notice.

OUR
FACILITIES.

We have a modern, up-to-date factory, with all machines driven by electricity, and every appliance for economical and accurate manufacture. This plant was examined by inspectors from the War Department before its work was intrusted to us, and their report was highly favorable.

OTHER
LOCKERS.

We can supply lockers of all styles, shapes and sizes. Let us have your specifications, and we will send our prices. Advise us of the quantity, style, sizes, whether single or in sets, kind of locks desired, destination, etc., and we will respond promptly. Ask for our free booklet.

GRAIN
DRYERS, ETC.

Other free booklets for Grain Dryers, and Steel Hot-Air Furnaces, on request.

THE " HESS " STEEL BATHROOM LOCKER.

This locker is destined to supersede wooden medicine cabinets, and is especially desirable for apartment buildings, hotels, institutions and residences. It is far more cleanly than wood and is not affected by heat, cold or moisture. It may be washed with soap and water and is germ and dust proof. In style and finish it is suitable for the finest and most expensive bathrooms.

The recessed locker (styles A and B) is suitable for partitions on 4-inch studs. It is recessed 4 inches and projects 1½ inches. Deeper lockers, for partitions on wider studs, will be supplied if desired. The framing should be accurately made, square and straight, and the lath and plaster outside of it, as shown in cut.

TOILET LOCKER FOR LAVATORIES.

This locker, for lavatories, is supplied in the same sizes and at the same prices as the bathroom lockers and is the finest thing yet offered for offices, clubs, gymnasiums, etc. The insides of the toilet lockers are fitted up in slightly different forms, with compartments for clean and soiled towels, soap, bottles, etc. To be recessed, same as styles A and B.

We carry all regular sizes constantly in stock and will be pleased to quote special prices on any special sizes or style desired.

MATERIAL.

Material is smooth locker steel throughout. Front and door show no seams or rivets. First quality beveled plate mirror. Steel or plate glass shelves adjustable to any height of bottles. Nickel-plated hinges and door handle and invisible spring door-catch.

FINISH.

Finish is everlasting baked enamel (3 coats) inside and outside, snow white.



LOCKER IN POSITION

PRICES AND SIZES STYLE A. PRICES AND SIZES STYLE B.

	Inside of Door	Size of Mirror	Open Shelf	Make Framed Openings for Recess	Price	Without Mirror deduct	With Polished Plate Glass Shelves add
No. 1	19½" x 23½"	16" x 20"	5½" x 23½"	19½" x 31½"	\$8.00	\$1.50	\$3.00
No. 2	21½" x 25½"	18" x 22"	5½" x 25½"	21½" x 33½"	10.00	2.00	3.50
No. 3	23½" x 27½"	20" x 24"	5½" x 27½"	23½" x 35½"	12.00	2.50	4.00
(Style B is the same as A, with open shelf omitted)							
No. 4	19½" x 23½"	16" x 20"	No open shelf	19½" x 23½"	\$7.00	\$1.50	\$3.00
No. 5	21½" x 25½"	18" x 22"		21½" x 25½"	9.00	2.00	3.50
No. 6	23½" x 27½"	22" x 24"		23½" x 27½"	11.00	2.50	4.00

These lockers are also made with all sides finished (style C and D), not to be recessed, and may be suspended on the face of any wall.



STYLE A LOCKER

Style B Locker has the Lower Open Shelf omitted



FRAMED OPENING FOR STYLE A LOCKER

S. KEIGHLEY METAL CEILING AND MFG. COMPANY

MANUFACTURERS OF

"Phoenix" Metal Lockers, "Phoenix" Fireproof Window Frames
and Sash, and Metal Ceilings

PITTSBURG, PA.

FACTORY
FOLLANSBEE, W. VA

BALTIMORE, MD., Ripple Building
NEW YORK, N. Y., 10 West 104th Street

BRANCH OFFICES

WASHINGTON, D. C., 1335 F Street, N. W.
BOSTON, MASS., 514-516 Atlantic Avenue

PRODUCTS.

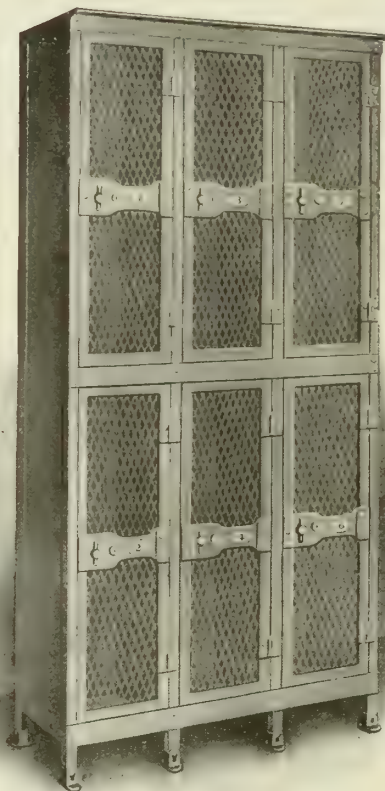
"PHOENIX" METAL LOCKERS, made on the unit system, combining strength and simplicity with moderate cost.

DESCRIPTION.

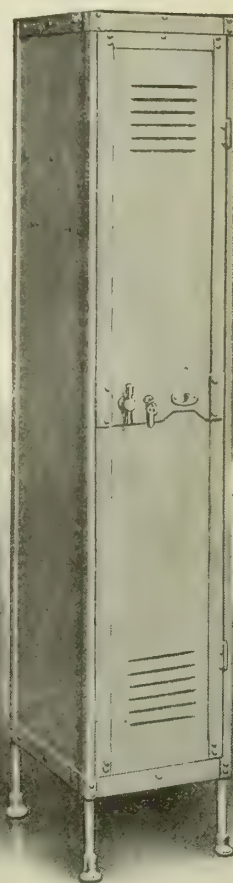
Made throughout of heavy cold-rolled sheet steel, having either solid louvre ventilated doors or open-mesh doors.

EQUIPMENT.

Lockers are equipped with three-way locking device, securing the door at top, bottom, and center; and have rim key lock, two keys to each lock and master keyed, three clothes hooks, number plates, and in single tier, hat shelf. We also furnish lockers with time-lock, or arrange for padlocks, as required.



"PHOENIX" DOUBLE-TIER LOCKER



"PHOENIX" SINGLE-TIER LOCKER



"PHOENIX" DOUBLE-TIER LOCKER

FINISH.

All our Lockers are finished with a high-grade enamel, baked to a durable hardness. We enamel in any color desired, our standard being olive green.

SHIPMENTS.

Lockers are shipped knocked-down on account of freight rate; all parts fit accurately, hence anyone can erect them.

DIMENSIONS.

The following are standard sizes, single and double tier:

SINGLE TIER		
Width Inches	Depth Inches	Height Inches
12 x 12	x 60	or 72
18 x 12	x 60	or 72
16 x 15	x 60	or 72
20 x 15	x 60	or 72

DOUBLE TIER		
Width Inches	Depth Inches	Height Inches
12 x 12	x 36	or 42 or 48
18 x 12	x 36	or 42 or 48
16 x 15	x 36	or 42 or 48
20 x 15	x 36	or 42 or 48

LYON METALLIC MANUFACTURING COMPANY

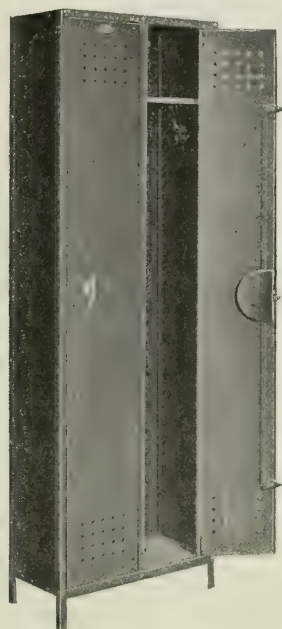
Steel Clothes Lockers and Blue-Print Cabinets

GENERAL OFFICES AND FACTORY

AURORA, ILL.

PRODUCTS.

STEEL CLOTHES LOCKERS and BLUE-PRINT CABINETS.



SINGLE-TIER LOCKER
Twenty-four Standard Sizes



DOUBLE-TIER LOCKER
Twenty-seven Standard Sizes

STYLES.

Two styles of Lockers are manufactured: Style B, all sheet steel, including doors; Style B-E, all sheet steel except doors, the doors being expanded metal.

SIZES.

The Lockers are made in twenty-four standard sizes in Single-Tier and in twenty-seven standard sizes in Double-Tier.

CONSTRUCTION.

"Lyon" Lockers are built for practical service, and as regards strength are in a class by themselves.

MATERIALS.

The best grade of furniture stock is used.

FINISH.

Standard Finish is green baked enamel.

PRICES, SPECIFICATIONS, ETC.

On receipt of advice, giving requirements, we furnish prices, specifications and blue-prints, showing arrangement and layout. See Bulletin 203-A, sent on request.



BLUE-PRINT CABINET

BLUE-PRINT CABINETS.

Blue-Print Cabinets are built on the Unit System, with five drawers to the section; the drawer sizes to suit requirements. See Bulletin 204-A.

TERRELL'S EQUIPMENT CO.

MANUFACTURERS OF

Metal Lockers and Steel Equipment

GRAND RAPIDS, MICH.

PRODUCTS.

We are manufacturers of METAL LOCKERS of all description, and of STEEL SHELVING for all purposes.

STEEL LOCKERS.

The types of Lockers as shown on this page represent but a few of the styles we manufacture. For further information we refer to our catalogue, which will be mailed promptly upon request.

MATERIAL SPECIFICATIONS.

Frames of the bodies and doors are made of 1-in. x 1-in x 1/8-in. special rolled-steel angle, with a smooth surface.

Bodies are of 22-gauge steel.

Doors are of 16-gauge steel, or 1/2-in. and 3/4-in. diamond mesh expanded metal.

Locking Device—A three-way locking device. The rotary center latch is of malleable iron, and the lock bars which secure the door at the top and bottom are 1/4-in. basic wire (superior to steel). The malleable "T" knob which operates the device is riveted to the center latch.

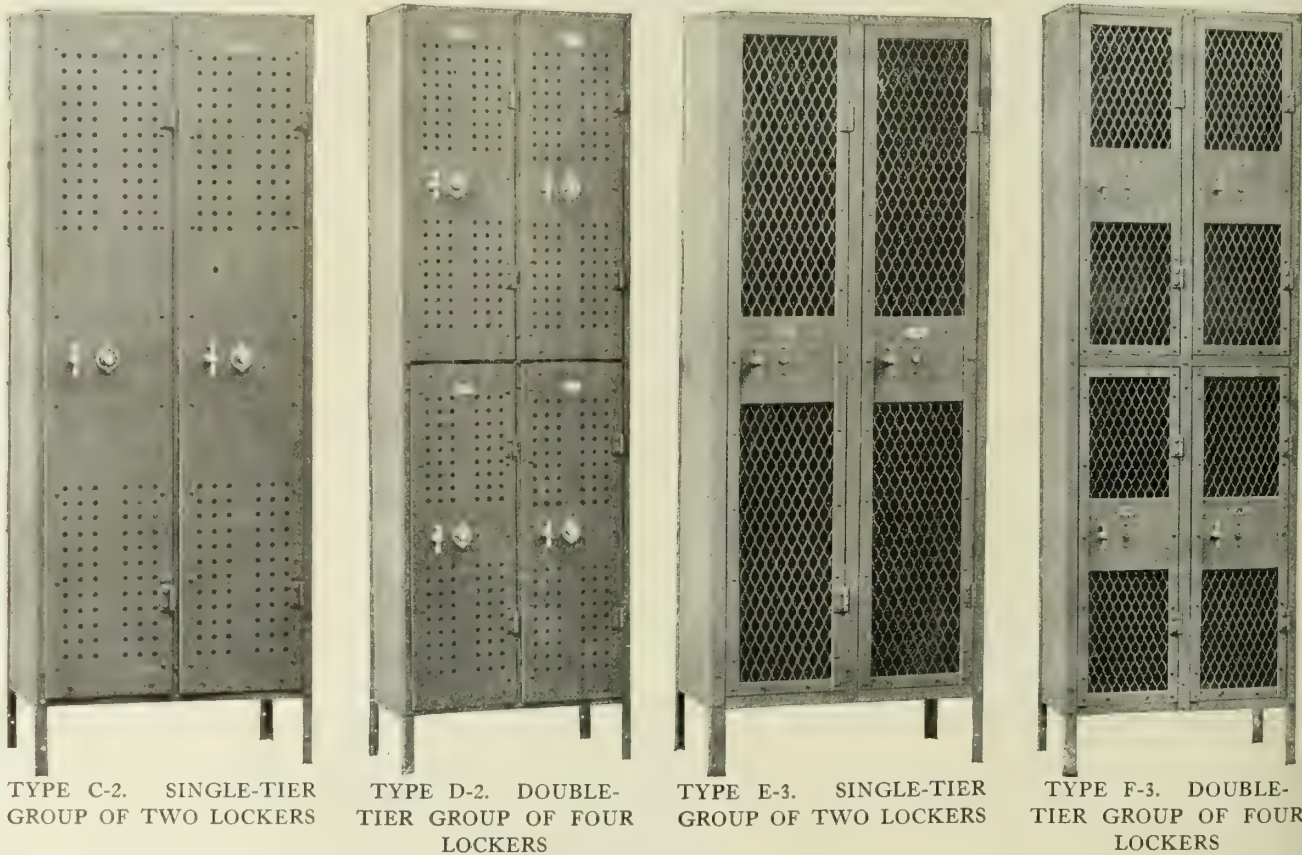
Locks—We furnish masterkeyed flat key locks or combination keyless locks, also padlock attachments; and can supply padlocks, when desired.

Hinges—We use tight pin wrought-steel hinges, 2-in. x 2 1/16-in., with pin 3/16-in. in diameter.

Hooks—Two-prong steel hooks, and enameled to match the color of the locker. Special hooks furnished when desired.

Number Plates are nickel-plated brass, with black figures.

Finish—Baked enamel of standard colors in black, olive green or maroon.



STANDARD SIZES.

SINGLE-TIER LOCKERS			DOUBLE-TIER LOCKERS		
Width	Depth	Height	Width	Depth	Height
12 in.	12 in.	60 in. or 72 in.	12 in.	12 in.	36 in. or 42 in. or 48 in.
12 in.	15 in.	60 in. or 72 in.	12 in.	15 in.	36 in. or 42 in. or 48 in.
12 in.	18 in.	60 in. or 72 in.	12 in.	18 in.	36 in. or 42 in. or 48 in.
15 in.	15 in.	60 in. or 72 in.	15 in.	15 in.	36 in. or 42 in. or 48 in.
15 in.	18 in.	60 in. or 72 in.	15 in.	18 in.	36 in. or 42 in. or 48 in.
18 in.	18 in.	60 in. or 72 in.	18 in.	18 in.	36 in. or 42 in. or 48 in.

Each compartment is always figured as one locker. Special sizes when desired.

The height is always figured exclusive of legs. Standard legs are 6 in.

STEEL SHELVING.

It is fireproof, sanitary and extremely strong; of a practical design, and a very economical installation.

UTILITY.

Made with interchangeable parts for quick shelf adjustment. Additions to previous installations are easily made, and extra shelves can be inserted whenever needed. Just order enough for immediate requirements, and add to it whenever necessary.

Shipped knocked down. Easily erected by any workman with a hammer, wrench and screw-driver.

MATERIAL SPECIFICATION.

Uprights are of sheet steel, reinforced with special steel angles. Shelf adjustment on standard sizes $3\frac{1}{2}$ in. from center to center.

Sizes from 12 in. to 30 in. wide, height as desired.

Shelves are of sheet steel with folded edges, reinforced in front and back. Carrying capacity according to requirements.

Sizes from 12 in. to 30 in. wide, and from 24 in. to 40 in. long. Special sizes when required.

Backs are of sheet steel. They are easily adjusted, and are provided with a special device to insure an automatic attachment to the back of the shelves.

Bin Strips—These strips can be instantly adjusted to any of the shelves.



"TERRELL'S" STEEL SHELVING, AS INSTALLED

ADAPTABILITY.

This type of shelving is suitable for stores, vaults, offices, stock rooms, and warehouses. The cost varies in proportion to the grade of finish required.

STANDARD FINISH.

Baked enamel, in either black, olive green or maroon color.

ESTIMATES.

Let us figure with you, and we will show you the right goods and prices that would interest you.

MERRITT & COMPANY

Manufacturers of Metal Factory and Office Equipment

Corner Front and Arch Streets (near Market Street Ferry, Philadelphia)
CAMDEN, N. J.

BRANCH OFFICES

ATLANTA, GA., S. R. HEWITT, 603 English-American Building
BALTIMORE, MD., J. H. HERRICK, 328 Law Building
CHICAGO, ILL., H. F. BOARDMAN, 40 Dearborn Street
CINCINNATI, OHIO
CLEVELAND, OHIO, R. F. CARPENTER, 508 Superior Building
DETROIT, MICH., S. MURRAY, 74 Alexandrine Avenue, East
DULUTH, MINN., ROBINSON, CARY & SANDS Co., 316 W. First Street
KANSAS CITY, MO., J. E. LOEWER, 914 Campbell Building
LOS ANGELES, CAL., WATERHOUSE & PRICE Co., 218 Mercantile Building
LOUISVILLE, KY., OWEN TYLER, Tyler Building

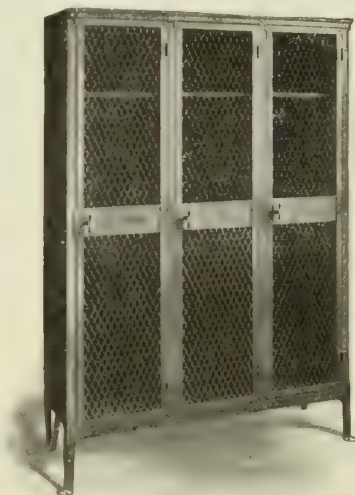
NEW YORK, N. Y., 120 Liberty Street
PITTSBURG, PA., N. MCCLINTOCK, 537 Liberty Avenue
PORTLAND, ORE., F. T. CROWE & Co., 1 Front Street
SAN FRANCISCO, CAL., WATERHOUSE & PRICE Co., 59 Third St.
SEATTLE, WASH., F. T. CROWE & Co., 415 Globe Building
SPOKANE, WASH., F. T. CROWE & Co., 121 Monroe Street
ST. LOUIS, MO., ALEXANDER GALT, 1224 Chemical Building
ST. PAUL, MINN., ROBINSON, CARY & SANDS Co., Fourth and Wacouta Streets
TACOMA, WASH., F. T. CROWE & Co., 1105 A Street
WILKES-BARRE, PA., COWARD & LONG, Peoples Bank Building

PRODUCTS.

Manufacturers of METAL LOCKERS of all sizes and types; UNIVERSAL STEEL SHELVING; METAL CABINET WORK and WIRE ENCLOSURES; STAMPED-STEEL SPIRAL STAIRS; SHEET-STEEL SPECIALTIES, including OFFICE or VAULT OMNIBUSES, VAULT FIXTURES, and CABINETS of all kinds; also, FIRE-ESCAPES, SEWAGE EJECTORS, and DISPOSAL APPARATUS.

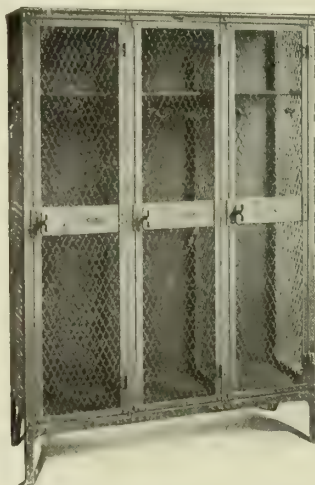
SINGLE TIER STANDARD SIZES

Width inches	Depth inches	Heights inches
12 x	12 x	60 or 72
12 x	15 x	60 or 72
12 x	18 x	60 or 72
15 x	12 x	60 or 72
15 x	15 x	60 or 72
15 x	18 x	60 or 72
18 x	12 x	60 or 72
18 x	15 x	60 or 72
18 x	18 x	60 or 72
18 x	24 x	60 or 72
24 x	18 x	60 or 72
24 x	24 x	60 or 72



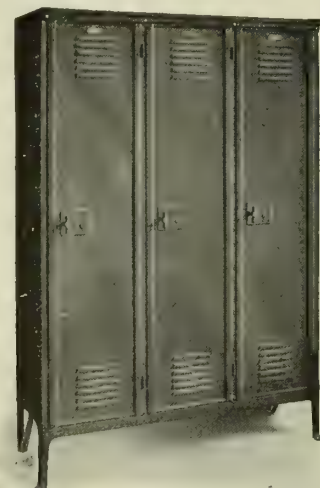
TYPE 18. I. O. P.
SINGLE-TIER LOCKER

With sheet-steel sides and expanded-metal door



TYPE 18. H. O. P.
SINGLE-TIER LOCKER

With expanded-metal sides and door

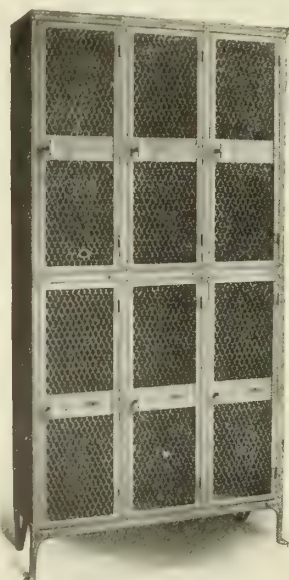


TYPE 18. I. O. U.²
SINGLE-TIER LOCKER

Sheet steel throughout

DOUBLE TIER STANDARD SIZES

Width inches	Depth inches	Heights inches
12 x 12 x 36	or 42	
12 x 15 x 36	or 42	
12 x 18 x 36	or 42	
15 x 12 x 36	or 42	
15 x 15 x 36	or 42	
15 x 18 x 36	or 42	
18 x 12 x 36	or 42	
18 x 15 x 36	or 42	
18 x 18 x 36	or 42	



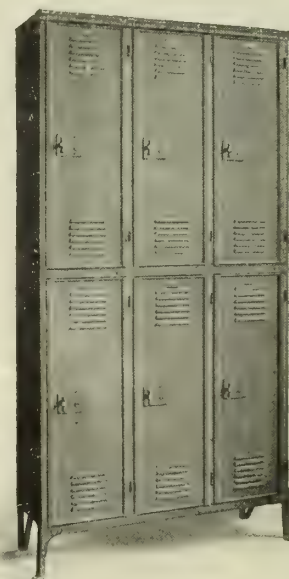
TYPE 19. I. O. P.
DOUBLE-TIER LOCKER

With sheet-steel sides and expanded-metal door



TYPE 19. H. O. P.
DOUBLE-TIER LOCKER

With expanded-metal sides and door



TYPE 19. I. O. U.²
DOUBLE-TIER LOCKER

Sheet steel throughout

THE BANKERS CONSTRUCTION COMPANY

Bank, Office and Public Building Equipments Complete
CINCINNATI, OHIO

PRODUCTS.

COMPLETE EQUIPMENT for Banks, Public Buildings, Libraries and Commercial Offices, including:
BURGLAR-PROOF and FIRE-PROOF VAULTS, SAFE-DEPOSIT BOXES, STEEL FILING DEVICES, STEEL CLOTHES LOCKERS, BANK COUNTERS, COUNTER GRILLES, ART GLASS, RUBBER FLOOR TILE, FURNITURE, and LIGHTING FIXTURES.

Also, EQUIPMENTS in STEEL for Factories and Warehouses, including:

ADJUSTABLE SECTIONAL SHELVING, DIE RACKS, TOTE BOXES, TRAYS, LATHE PANS, DRAWERS, BENCHES, CUPBOARDS, TRUCKS, WASH TANKS, CANS, BARRELS, and FACTORY LOCKERS.

INCREASE
OUTPUT AND
PROFITS.

The products of our business applied to your business will materially increase your output and your profits.

Our business is with architects, contractors, bankers, public officials, librarians and manufacturers who require complete equipments for transacting their business with economy and profit.

TO ARCHI-
TECTS.

We furnish to architects and contractors estimates and drawings for anything needed in our line. Your location makes no difference. Write to us.

TO BANKERS.

We furnish and install everything required in a bank's quarters. We design to your satisfaction everything required, and superintend its erection and installation. The banker is relieved of all responsibility.

Give us the wall measurements—we do the rest.

TO PUBLIC
OFFICIALS
AND LIBRA-
RIANS.

We give the results of our years of experience in arranging to the best advantage filing systems and furniture that are of the latest design and with the latest improvements.

It may be worth money to you sometime to know, it would be of interest to you now to see, our latest designs in filing devices.

Write for anything you want or may need.

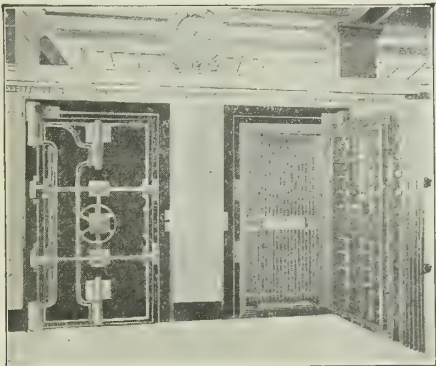
TO MANU-
FACTURERS.

We furnish everything in the line of shop equipments. See partial list in "Products" paragraph. Any one of these articles may earn its entire cost during the first day's use.

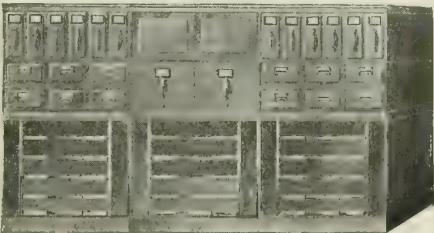
Our business is a specialty; and we give you the specialist's ideas, experience and prices.



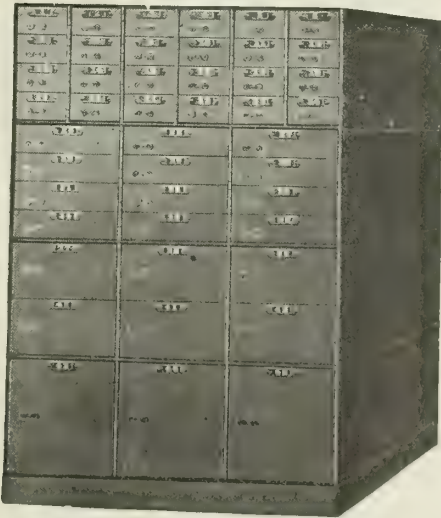
BANKING EQUIPMENT, TERRE
HAUTE (IND.) TRUST CO.



BURGLAR-PROOF VAULTS, COMMERCIAL BANK AND TRUST CO.,
LOUISVILLE, KY.



BANKERS STEEL FILING UNITS



BANKERS SAFE DEPOSIT UNITS

ART METAL CONSTRUCTION CO.

Steel and Bronze Furniture and Fixtures
JAMESTOWN, N. Y.

SALES OFFICES AND SHOWROOMS

NEW YORK, N. Y., 349 Broadway
PHILADELPHIA, PA., 1027 Witherspoon Building
CHICAGO, ILL., Merchants Loan & Trust Building
BOSTON, MASS., 225 to 229 Tremont Building
ST. LOUIS, MO., Laclede and Vandeventer Avenues

DENVER, COL., 33 Jacobson Building

WASHINGTON, D. C., 1403 H Street, N. W.
BALTIMORE, MD., 844 Equitable Building
CINCINNATI, OHIO, 601 Union Trust Building
SAN FRANCISCO, CAL., Flood Building
ATLANTA, GA., 903 Candler Building

PRODUCTS.

We are original designers and manufacturers of FURNITURE and FIXTURES of every type, in STEEL and BRONZE, for the complete equipment of Government, State, County, and Municipal Buildings, Vaults, Banking-Rooms, Insurance and Commercial Offices and Libraries. We produce BRONZE, BRASS, and ALUMINUM CASTINGS in our own foundry, and contract for complete equipment in MARBLE.

BANKING-ROOM INTERIORS include every detail in STEEL CABINET WORK and BRONZE FIXTURES, such as COUNTER SCREENS, GRILLES, PLATE and WIRE PARTITIONS, WIRE CAGES, CURRENCY GUARDS and CAGES, CASH DRAWERS, CUSTOMERS' BOXES, CHECK FILES, RACKS, SORTERS and DESKS, DEPOSIT TICKET FILES and SAFETY-DEPOSIT BOXES.

LIBRARY EQUIPMENTS including STEEL "STANDARD" and "BRACKET" BOOK STACKS, and everything necessary for stack, reading, catalogue, and librarians' rooms, such as PERIODICAL CASES and RACKS, NEWSPAPER RACKS, REVOLVING BOOKCASES, LIBRARY TRUCKS, DELIVERY COUNTERS, DISPLAY RACKS, FOLIO CASES, BULLETIN-BOARDS, GALLERY RAILING, BOOK-LIFTS and DUST CLOSETS.

Our STEEL FIXTURES and FURNITURE consist of DOCUMENT FILES, ROLLER SHELVES, CARD-INDEX DRAWERS and TRAYS, BOX and BLANK DRAWERS, BOND BOXES, ROLL-TOP, FLAT-TOP, TYPEWRITER, STANDING, and MEMBERS' DESKS, CASES for DESK TOPS, OFFICE STOOLS, TABLES, WARDROBES, LOCKERS, TELEPHONE BOOTHS, UMBRELLA RACKS, BOOKCASES and STALLS, COMBINATION CASES, CUPBOARDS, STEEL CURTAINS, DRAWING-TABLES, CABINETS for PLATS, BLUE-PRINTS and BOUND MAPS, FLAT-MAP DRAWERS for ENGINEERS, ARCHITECTS, and CONTRACTORS, MAP TUBES, DRAWERS, BINS, and SHELVES for ROLLED PLANS, ENGINEERS' VERTICAL FILES, WALL-MAP CASES, FLAT REPORT FILES, FLAT and VERTICAL LETTER FILES, TRANSFER BOXES and STORAGE RACKS, VOUCHER FILES, COUNTERS, BRONZE, BRASS, and STEEL TRIM, PARTITIONS, METAL DOORS and WINDOW FRAMES, GALLERIES, STAIRS, LADDERS, RAILINGS, GATES, OMNIBUSES, PIGEON HOLES, SCOOP FILES, SLIDING SHELVES, STORAGE BOOK DRAWERS, COURT-ROOM FURNITURE, JUDGES' BENCHES, JURY BOXES and WITNESS STANDS.

We also manufacture STEEL BUNKS and other EQUIPMENT for Battle-ships, viz.: STEEL BUFFETS, CHIFFONIERS, DRESSERS, EXTENSION TABLES, etc.

MATERIAL.

The material used in our products is specially cold-rolled, fine steel plates without scale or buckle, double-annealed and pickled. The construction of steel furniture involves scientific manipulation with improved machinery, and accurate assembling, fitting and hand finishing by skilled mechanics. The mouldings and trim are principally of bronze or brass, manufactured exclusively by us. The finishes on steel are fine baked enamels in various colors, or accurate imitations of woods. Electroplate or other special effects when required.

ADVANTAGES OF METAL FURNITURE.

The first and great point is, that steel cases, being non-combustible, will protect their contents from fire. This advantage has gained the unanimous approval of all Fire Insurance Underwriters, with consequent lower rates. The large areas covered by the Baltimore

and San Francisco fires were due chiefly to the vast mass of wooden furniture, doors, window-frames, trim, etc., which fed and spread the flames. Compared with wood, metal cabinet work is superior in *durability*; in *sanitary quality*—impervious to microbes, vermin and rodents, and more readily kept clean; in *convenience*—no shrinking, swelling or getting out of order; in *attractiveness*—more substantial in appearance, with surfaces not subject to deterioration; in *economy* of space and, ultimately, of cost. It is clean-cut in appearance. Our designs are chaste and in harmony with architectural surroundings.

FACILITIES.

Our plant, with more than six acres of floor space (the largest of its kind in the world), is fully equipped with specially designed machinery, and has a capacity equal to the heavy demands made upon it.

CO-OPERATIVE SERVICE.

A large staff of designers and draughtsmen is always ready to prepare designs and plans in accordance with architects' suggestions and to give every possible assistance. Correspondence solicited, and catalogues sent upon application.

REFERENCES.

A few of the more important installations selected from the thousands of orders filled by us are as follows:

U. S. Government, Washington, D. C. More than one million Document Files, Library Shelving, etc., in several departments of the service.

Panama Canal Commission. Steel Filing Cases, Buffets, Chiffoniers, Dressers, etc.

City Hall of Philadelphia, Pa. An equipment valued at \$500,000.

City Hall of San Francisco, Cal., since the fire.

State Houses of New York, Massachusetts, Connecticut, South Carolina, Kansas, Washington, and Montana.

Court House Record Rooms and Vaults: Suffolk County Court House, Boston, Mass.; San Francisco Court House, San Francisco, Cal., since the fire; Jefferson County Court House, Louisville, Ky., and hundreds of others in all parts of the country.

Libraries: Public Libraries of Chicago, Ill., Cleveland, Ohio, San Francisco, Cal., Providence, R. I., Indianapolis, Ind., Minneapolis, Minn., Kansas City, Mo., Newark, N. J., Columbus, Ohio; Carnegie Library, Pittsburg, Pa.; Library of Bar Association, New York, N. Y.; Harvard, Yale, Columbia, and Leland Stanford University Libraries; Edinburgh, St. Andrews and Aberdeen University Libraries (Scotland); Libraries of University of Chicago and of Kansas. Also hundreds of Carnegie and other public libraries.

Banks: National Park Bank and Hanover National Bank of New York, N. Y.; Corn Exchange Bank of Chicago, Ill.; The Cleveland Trust Co., the Guardian Savings and Trust Co. and the First National Bank of Cleveland, Ohio; Farmers' Deposit National Bank of Pittsburg, Pa.; Girard Trust Co. and Hamilton Trust Co. of Philadelphia, Pa.; Western National Bank, First National Bank and others of San Francisco, Cal.; National Bank of Commerce of Seattle, Wash. See our complete reference list of banks.

Insurance Companies: New York Life Insurance Co., Metropolitan Life Insurance Co., Travelers' Insurance Co. of Hartford, Conn., Chicago office of the Hartford Fire Insurance Co., and many others.



LATEST TYPE "ART-METAL" EQUIPMENT, ESSEX COUNTY COURT HOUSE, SALEM, MASS.

C. H. BLACKALL, Architect

M. H. E. BECKLEY

Artificial and Natural Slate Blackboards

80-82 Wabash Avenue

CHICAGO, ILL.

PRODUCTS.

Manufacturer of BECKLEY'S IMPROVED ARTIFICIAL-SLATE BLACKBOARDS, NATURAL SLATE, HYLOPLATE, LIQUID SLATING, and all other BLACKBOARD MATERIALS.

Also SCHOOL, CHURCH and OFFICE FURNITURE, VENETIAN BLINDS, WIRE WINDOW-GUARDS, SCHOOL and CHURCH BELLS, OPERA CHAIRS, HALL SEATS, etc.

ARTIFICIAL-SLATE BLACKBOARD.

Beckley's Improved Artificial Slate, the Sanitary Seamless Stone Blackboard (Fig. 1), is the best for modern schools. It is made of fine particles of steel and ground slate mixed with other ingredients and set with a fine stone-making cement. This material is applied with a trowel on a base-coat of hard plaster, making a solid, concrete slate surface without seam or joint which lasts as long as the building. It is not injured by washing, is fireproof and thoroughly sanitary.

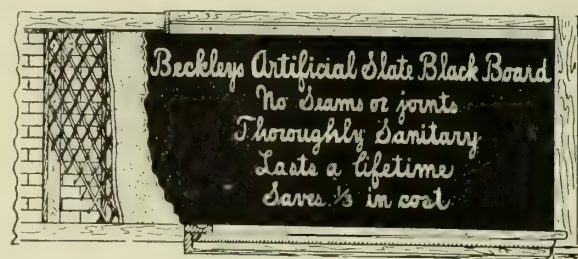


FIG. 1. BECKLEY'S IMPROVED ARTIFICIAL-SLATE BLACKBOARD

SPECIFICATIONS.

"Blackboards to be Beckley's Improved Artificial Slate, four feet wide, placed around three sides of each class-room, and to be put on by a thoroughly experienced blackboard mechanic.

GENERAL CONTRACTOR TO PREPARE BLACKBOARD SPACES AS FOLLOWS:

Brick Walls to have $\frac{5}{8}$ -inch grounds placed along the upper and lower line of all blackboard spaces, which are to be brown-coated with Acme adamant or other approved patent plaster. (Use no Portland cement.) Said brown coat to be brought out flush with the face of the grounds and rodged off true and straight, care being taken to leave no holes or hollows.

Furred Walls should have furring strips 1 x 2 inches placed 8 inches on centers and to be lathed with metal or good wood lath and plastered the same as brick walls. (Outside walls and walls that are not seasoned and dry should be furred to prevent any chance of alkali spots.)

Wood Partition Walls to have studding placed 8 inches on centers from the floor to the top of all blackboard spaces, the same to be securely bridged. Lath and plaster the same as on brick walls."

NATURAL-SLATE BLACKBOARD.

I furnish the best grade of dark Pennsylvania slate, hand-polished or shaved. Specifications and details on request.

HYLOPLATE BLACKBOARD.

Hyloplate Blackboard is made of successive layers of wood pulp put together with a waterproof cement under heavy hydraulic pressure, making large sheets or boards which will not warp, check or crack. The surface is finished with several coats of our specially prepared slate finish, giving a thoroughly smooth writing surface which is exceedingly durable.

It is always carried in stock 3 feet, 3½ feet, and 4 feet wide, and in even 1-foot lengths up to 12 feet. Colors, black or green. Price from 10 to 15 cents per square foot delivered, according to quantity and location.

IDEAL FRAMED BLACKBOARD.

Beckley's Ideal Framed Blackboards (Fig. 2) are furnished in any length up to 12 feet and either 3 feet, 3½ feet, or 4 feet wide, shipped complete ready to hang up. The construction of the Ideal Frames gives room for expansion; the strips at the back form an air space and prevent warping or bulging. The panels in these boards are the genuine Hyloplate, which has been used for the last thirty years with universal satisfaction. The Ideal Frames or Mouldings will also be sold by the lineal foot so they can be fitted at the building to actual spaces.

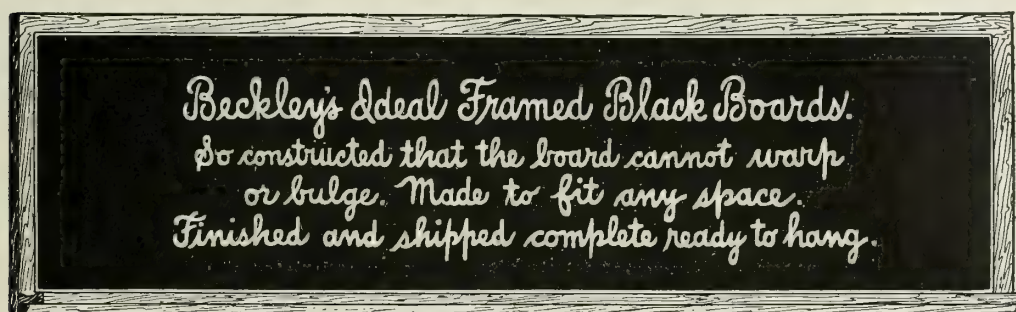


FIG. 2. BECKLEY'S IDEAL FRAMED BLACKBOARD



SECTION

SCHOOL DESKS.

The constant aim in making the Ideal School Desks is to maintain a standard quality which will be beyond question, and one which will insure us the continued patronage of every one who has ever used them. They embody the best features known in modern school-desk manufacture.

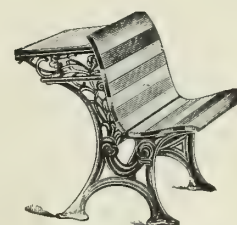


FIG. 3. SCHOOL DESK

STYLES.

Ideal Automatic Desks are made in three styles—single, double-entire and double-separate.

FLOOR SPACE.

SIZES	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6
Age of pupil,	Adults	15-18	12-16	9-13	6-10	3-7
Floor space, front to rear,	28 in.	28 in.	24 in.	24 in.	21 in.	21 in.
Length of single desk	24 in.	24 in.	21 in.	21 in.	19 in.	19 in.
Length of double desk	40 in.	40 in.	38 in.	38 in.	36 in.	36 in.
Minimum width of aisles	20 in.	20 in.	18 in.	18 in.	16 in.	16 in.
Average floor space including aisles	Singles,	6 sq. ft.	6 sq. ft.	5 sq. ft.	5 sq. ft.	4 sq. ft.
		9½ sq. ft.	9½ sq. ft.	8 sq. ft.	8 sq. ft.	6 sq. ft.

OPERA AND PORTABLE CHAIRS.

Opera and Portable Chairs are furnished in all styles, and in all varieties of woods and finishes. We furnish seating of all kinds for halls and auditoriums, and full information concerning seating arrangements will be promptly furnished upon application.

VENETIAN BLINDS.

The proper lighting of schoolrooms is of as much importance as the heating, ventilation or drainage.

Strong light is as injurious to the eyes as too little light. Ordinary curtains shut out the light and air, but the result with Venetian Blinds is just the reverse. Our Burlington Venetian Blinds solve the problem.

CATALOGUE.

Catalogues and full information upon application.

THE GLOBE-WERNICKE CO.

Filing Cabinets, Office Appliances, Cabinet Supplies
CINCINNATI, OHIO

CABLE ADDRESS, "GLOBE, CINCINNATI"

BRANCH STORES

NEW YORK, N. Y., 380-382 Broadway, cor. White Street
CHICAGO, ILL., 224-228 Wabash Avenue

BOSTON, MASS., 91-93 Federal Street
LONDON, ENGLAND, 7 Bunhill Row, E. C.

PRODUCTS.

Manufacturers of "GLOBE-WERNICKE" STEEL and WOOD FILING CABINETS, in Upright and Horizontal units; FILING APPLIANCES and SUPPLIES; STEEL and WOOD OFFICE FURNITURE; "ELASTIC" BOOKCASES.

STEEL FILING CABINETS.

"Globe-Wernicke" Steel Filing Cabinets, in upright and horizontal sections, are made of a selected grade of steel not obtainable in the open market. All ends are rounded and so tightly locked together as to be inseparable. There are no rivets, bolts or nuts used in their construction, consequently there are no exposed parts to work loose. All sections are finished in a close imitation of either quartered oak or medium dark mahogany, to harmonize with wood interiors and fittings. The units being made in uniform sizes, symmetrical proportions are maintained in simple or elaborate combinations, and they can be arranged with due regard for windows, heating and lighting apparatus.

Drawer and filing cabinet sections are fitted with or without universal locking device. The files remain in the units when pulled out to the extreme depth, the larger ones being supported by a sliding shelf and the smaller ones by a suspending bail device. The contents in the back of the files are therefore as easily referred to as those in front and without taking the file from the unit.

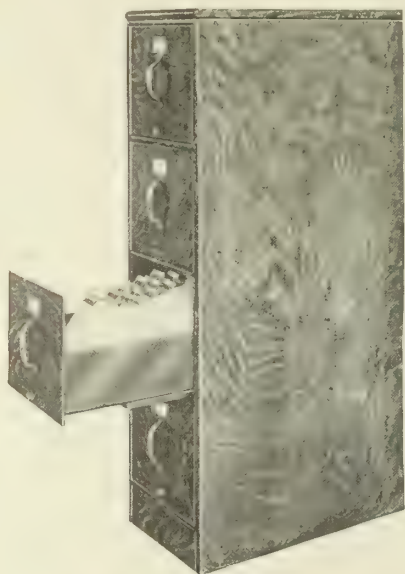
"Globe-Wernicke" Steel Sections are *not made to order*, but supplied from stock. The variety of different sized files is so large that we can comply with most any requirement and we contract for immediate delivery. No order work undertaken at any price.

SIZES.

Steel Upright Units are 54 inches high and 25½ inches deep outside.

Steel Horizontal Units, with the exception of top and base sections, are 32 inches wide and 17½ inches deep outside; single sections are 12½ inches high, and double-height sections 24½ inches high, outside.

Top and base sections 32 inches long, 17½ inches deep.



STEEL UPRIGHT UNIT



COMBINATION OF STEEL
HORIZONTAL UNITS

Consisting of Document File, Card Index,
Check and Vertical File and Base



STEEL HORIZONTAL
UNITS

WOOD FILING CABINETS.

"Globe-Wernicke" Wood Filing Cabinet Units are made in both upright and horizontal sections, of quartered oak and mahogany.

UPRIGHT SECTIONS.

The Upright Units are complete in themselves and do not require separate tops and bases as do the horizontal sections.

Upright Units are furnished in two heights, one series of sections three files high being $48\frac{3}{4}$ inches high outside and those four files high being $55\frac{1}{4}$ inches. Both series have a uniform depth of $25\frac{1}{4}$ inches outside.

All Upright Sections are furnished with either paneled ends or open ends. They are interlocked by means of small bolts running through the sides, so that units with open ends can be placed between those of paneled ends and the combination will have the appearance of a solid finished cabinet.

All vertical files operate on roller bearings, likewise the sliding shelf which supports the file. Underneath each file are two steel tracks which travel on these rollers.

The Universal Locking Device, which locks all files by turning the key in one, is furnished at slight extra cost in upright units containing one style of files.

The vertical files are furnished with either rigid fronts or drop fronts, and in the back of each drawer is a follower block which slides on a counter-sunk rod. This block supports the papers in upright position.

Wood Horizontal Sections have a uniform width of $41\frac{3}{8}$ inches outside, but are made in three depths, 13, 17 and 25 inches outside, front to back.

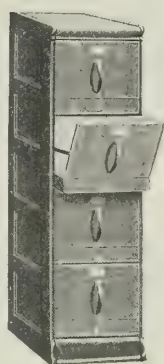
In vertical extension, horizontal units of same or less depth fit on top of one another.

In horizontal extension, units of the same or different depths can be interlocked.

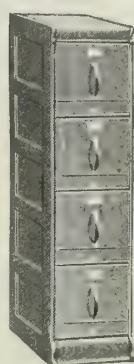
Shifting is prevented by the interlocking strip on the top of each unit which fits into the center between the two outer strips on the bottom of the unit above it.

The patent metal interlocking strip at the end of each section intended for horizontal extension insures perfect rigidity and alignment and is absolutely essential to substantial construction.

"Globe-Wernicke" Filing Cabinets are sold at uniform prices everywhere. They are carried in stock by authorized agents in all principal cities and towns of the United States. Where not represented, we ship on approval, freight paid.



Bill Files
No. 420 V. B.
Unit



Letter Files
No. 421 V. L.
Unit



Cap Files
No. 422 V. C.
Unit

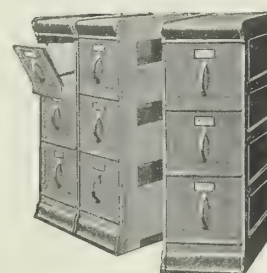


Card Index
and Letter
Files



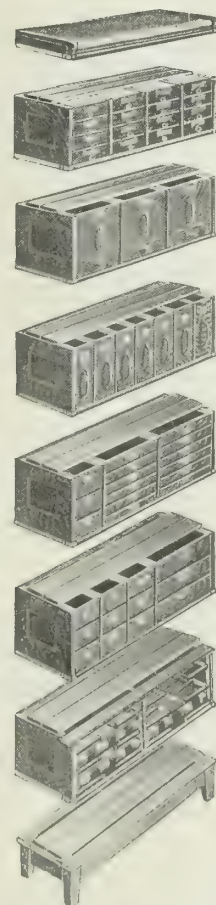
Document
and Letter
Files

WOOD UPRIGHT UNITS



WOOD UPRIGHT
UNITS

Units with open ends
go between those with
panel ends



WOOD HORIZONTAL
UNITS

HORIZONTAL SECTIONS.

PRICES AND REPRESENTA- TION.

JAMESTOWN METAL FURNITURE COMPANY

JAMESTOWN, N. Y.

EASTERN SALES OFFICE
NEW YORK, N. Y., 18 West 27th Street

PRODUCTS.

We manufacture ARTISTIC EQUIPMENTS in METAL FURNITURE for Public Buildings, Banks, Offices and Libraries in STEEL and BRONZE; VERTICAL LETTER FILES, CARD INDEX DRAWERS, DOCUMENT FILES, and all STANDARD FILING DEVICES.

VAULT CASES, STEEL SECURITY BOXES, TRANSFER BOXES and RACKS, COUNTERS, ROLLER BOOK SHELVES, LIBRARY SHELVING, ROLL-TOP DESKS, FLAT-TOP DESKS, TABLES, and SPECIAL EQUIPMENTS of all kinds designed and built to meet requirements.

ORNAMENTAL WROUGHT-IRON or BRONZE RAILINGS and GATES for Offices and Banks; GRILLES, and BANK WICKETS.

HIGH-GRADE
WORK OUR
SPECIALTY.

The highest grade of cold-rolled steel is the sole material used in the construction of our work. We combine all the elegance and grace of high-grade wood furniture with the added qualities of strength, durability, and fire-resistance, which go with steel. We imitate the beautiful wood finishes of oak, walnut, and mahogany in a manner to deceive the expert. Steel construction is free from all the annoyances which architects and builders have to contend with in wood. A moment's consideration will force this thought home.



STACK ROOM, LAW LIBRARY OF ONEIDA COUNTY, UTICA, N. Y.
Showing Standard Library Shelving

RIGID AND
SANITARY.

Steel construction is free from the influence of varying climatic conditions. Drawers do not shrink or swell, consequently slide easily; the frames of desks and tables do not become distorted and "creaky" from moving them around; the tops remain true and level. Steel furniture is also freer from dust and in every way more sanitary.

“EVERLAST”
STOCK
STYLES.

To meet the increasing demand for steel office fixtures ready to ship, we have stocked several staple styles. Embodied in them are all the best points of our special designing. “Everlast” styles in stock are 4- and 8-Drawer Vertical Letter Files, Flat and Roll Top Desks, Document Files, Security Boxes, and many others. “Everlast” Catalogue sent to you upon request.



SPECIAL STEEL FILING CASES BUILT FOR BISHOP GUERTIN, MANCHESTER, N. H.

ARCHITECTS’
DESIGNS.

The attention of architects who have work of complicated construction and elaborate design is particularly called to our Drafting Department. No work is too difficult for us to undertake. Back of us stands a force of skilled artisans and draftsmen who are ready and willing to supply you with detailed plans in accordance with your most exacting data. We will cheerfully submit equipment designs for any Public building, Bank, Library, or Office which you may have under consideration.

CATALOGUES.

Illustrated catalogues of our goods, giving all necessary detailed information, are gladly sent upon application.

REFERENCES.

As a reference, among many similar ones, we are permitted to publish the following letter from the John Peirce Company:

NEW YORK, June 26, 1909.

JAMESTOWN METAL FURNITURE COMPANY—

Gentlemen:—It gives us great pleasure to state that the work which you have done for us on the New York Public Library has been most satisfactory in every respect.

The people in charge of the work, the method of handling it, and the workmanship is equally excellent.

We shall be glad to afford any prospective customers of yours an opportunity to examine this work, and we are sure that after such an examination no further recommendation will be needed.

Yours truly,

(Signed) JOHN PEIRCE COMPANY.



SANITARY TYPE COMBINATION CASE
Containing six Vertical Letter Files, four Card
Index Drawers, and two Cupboards

LAMSON CONSOLIDATED STORE SERVICE COMPANY

Builders of Carrier and Conveyor Apparatus

GENERAL OFFICES

BOSTON, MASS.

AGENCIES IN ALL PRINCIPAL CITIES

WORKS
LOWELL, MASS.
TORONTO, CANADA

PRODUCTS.

PNEUMATIC DESPATCH TUBES, all types and sizes; CASH CARRIER SYSTEMS; PARCEL CARRIER SYSTEMS; CABLE CARRIER SYSTEMS; SELECTIVE, PICK-UP and SWEEP-OFF CARRIERS; BELT CONVEYORS; LIBRARY CONVEYORS and BOOK DISTRIBUTERS; SPECIAL DUTY CONVEYORS for Factories, Small Elevators, etc.

STORE SERVICE.

Originators of Store Service Carrier Systems for handling cash and merchandise.

SPECIAL SERVICE SYSTEMS.

Builders of Special Service Systems to meet any requirement for rapid and economical transmission of materials or documents in factories, publishing houses, public offices, libraries, banks, hotels, etc.

CO-OPERATIVE SERVICE.

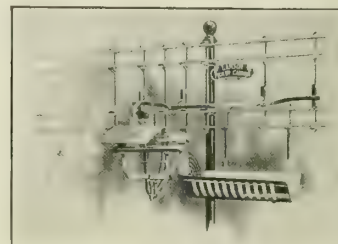
Complete data, plans and memoranda for specifications promptly supplied to architects. Catalogue files containing special bulletins descriptive of Lamson Service, sent on application.

REFERENCES.

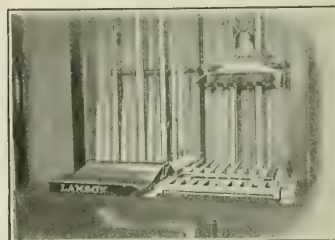
Principal retail stores throughout the world. Following are a few of the many prominent architects and contractors to whom we refer:

McKim, Mead & White
Shepley, Ruten & Coolidge
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Chas. T. Wills
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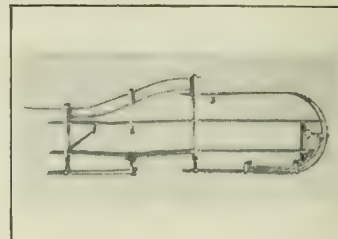
D. H. Burnham & Co.
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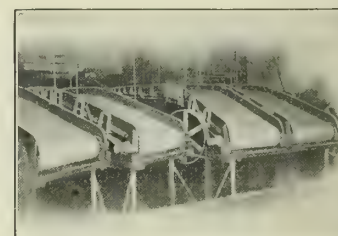
SELECTIVE PICK-UP CARRIERS



AUTOMATIC LIFTS



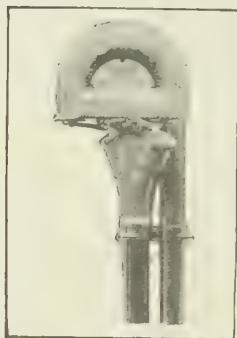
ELECTRIC CABLE CARRIERS



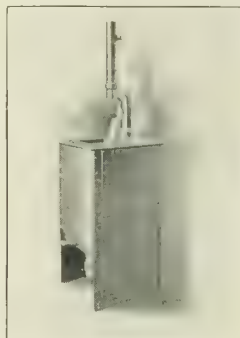
BELT CONVEYORS



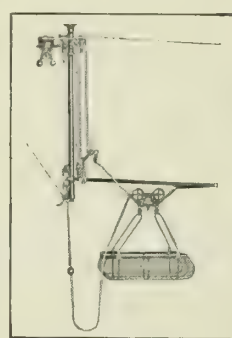
BOOK DISTRIBUTERS



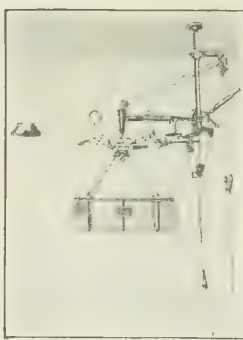
PNEUMATIC DISPATCH TUBES



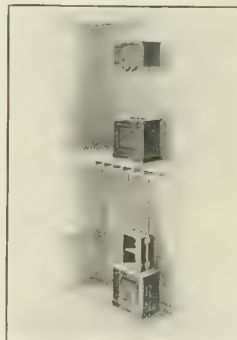
FOOT POWER PNEUMATIC



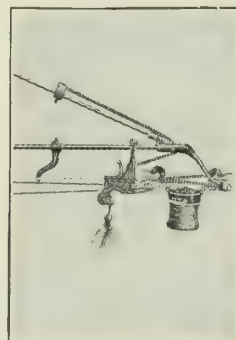
GRAVITY WIRE CARRIERS



DOUBLE-WIRE PARCEL CARRIERS



SMALL ELEVATORS



WIRE CASH CARRIERS

LYON METALLIC MANUFACTURING COMPANY

"Lyon" Steel Racks and Adjustable Shelving

GENERAL OFFICES AND FACTORY

AURORA, ILL.

PRODUCTS.

STEEL FACTORY EQUIPMENT—RACKS, ADJUSTABLE SHELVING, BOXES, BARRELS, TRUCKS, etc.

"LYON" STEEL RACKS.

"Lyon" Steel Racks will carry a greater load per weight of rack than any other made. Adaptable for any purpose; a combination of strength, convenience and adjustability.

CONSTRUCTION.

"Lyon" Steel Racks are the most approved form of construction for general storage of all materials, light or heavy, small or large. They are built on the Unit System. Every part *standardized* and *interchangeable*. Adaptable to any required space. Adjustable to any requirement.

SHELVES.

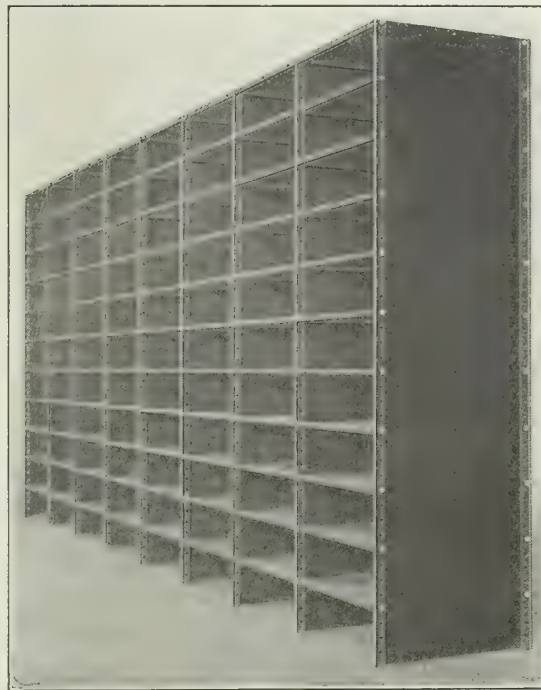
In the "Lyon" Rack the shelves do more than carry their respective loads; they act as a stiffening or strengthening member to the rack as well.

ADJUSTMENT.

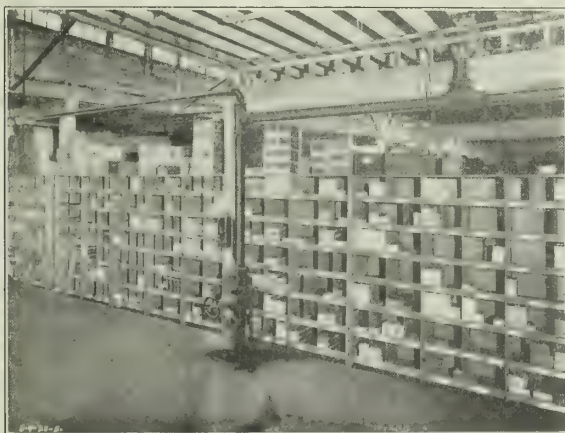
The Truss System design of the "Lyon" Rack is the nearest approach to Bridge Work that a right-angle construction will permit.

Each shelf is not only compressed between the upright members but is also supported front and back by means of our Patented Tie Rods, each tie rod independent of the other to permit independent adjustment of shelves.

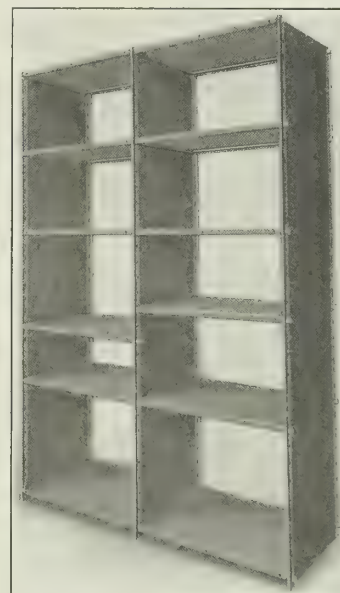
Our Bulletin No. 301-A gives complete specifications and description. Sent on request.



EIGHT-SECTION ADJUSTABLE "LYON" RACK



"LYON" RACK IN USE FOR INDUSTRIAL PURPOSES



SECTION OF "LYON" RACK SHOWING ADAPTABILITY FOR VAULT STORAGE

LIBRARY BUREAU

MANUFACTURERS OF

Bank, office, library and vault fittings, business furniture and library equipment, card and filing systems, in wood and steel

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CHICAGO, ILL., 160-162 Wabash Ave.
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ST. LOUIS, MO., 'Frisco Bldg.
DETROIT, MICH., Majestic Bldg.
INDIANAPOLIS, IND., Am. Na. Bank Bldg.
MINNEAPOLIS, MINN., 16 South 5th St.
HARTFORD, CONN., 684 Main St.
BALTIMORE, MD., 219 East Baltimore St.
DENVER, COLO., 1604 Broadway

LOS ANGELES, CAL., 546 So. Spring St.
NEW YORK, N. Y., 316 Broadway
PHILADELPHIA, PA., 910 Chestnut St.
PITTSBURG, PA., Westinghouse Bldg.
SAN FRANCISCO, CAL., 509 Market St.
CLEVELAND, O., Arcade Bldg.
KANSAS CITY, MO., 917 Grand Ave.
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WORCESTER, MASS., State Mutual Bldg.
PROVIDENCE, R. I., 79 Westminster St.
NEW ORLEANS, LA., Hibernia Bank Bldg.

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OTTAWA, 201 Queen Street
TORONTO, 77 Bay Street
MONTREAL, 296 St. James Street

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NEWCASTLE-ON-TYNE, ENG., Milburn House
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FACTORIES

CAMBRIDGE, MASS.
NEW YORK, N. Y.
ILION, N. Y.

COLD-SPRING-ON-HUDSON, N. Y.
OTTAWA, CAN.

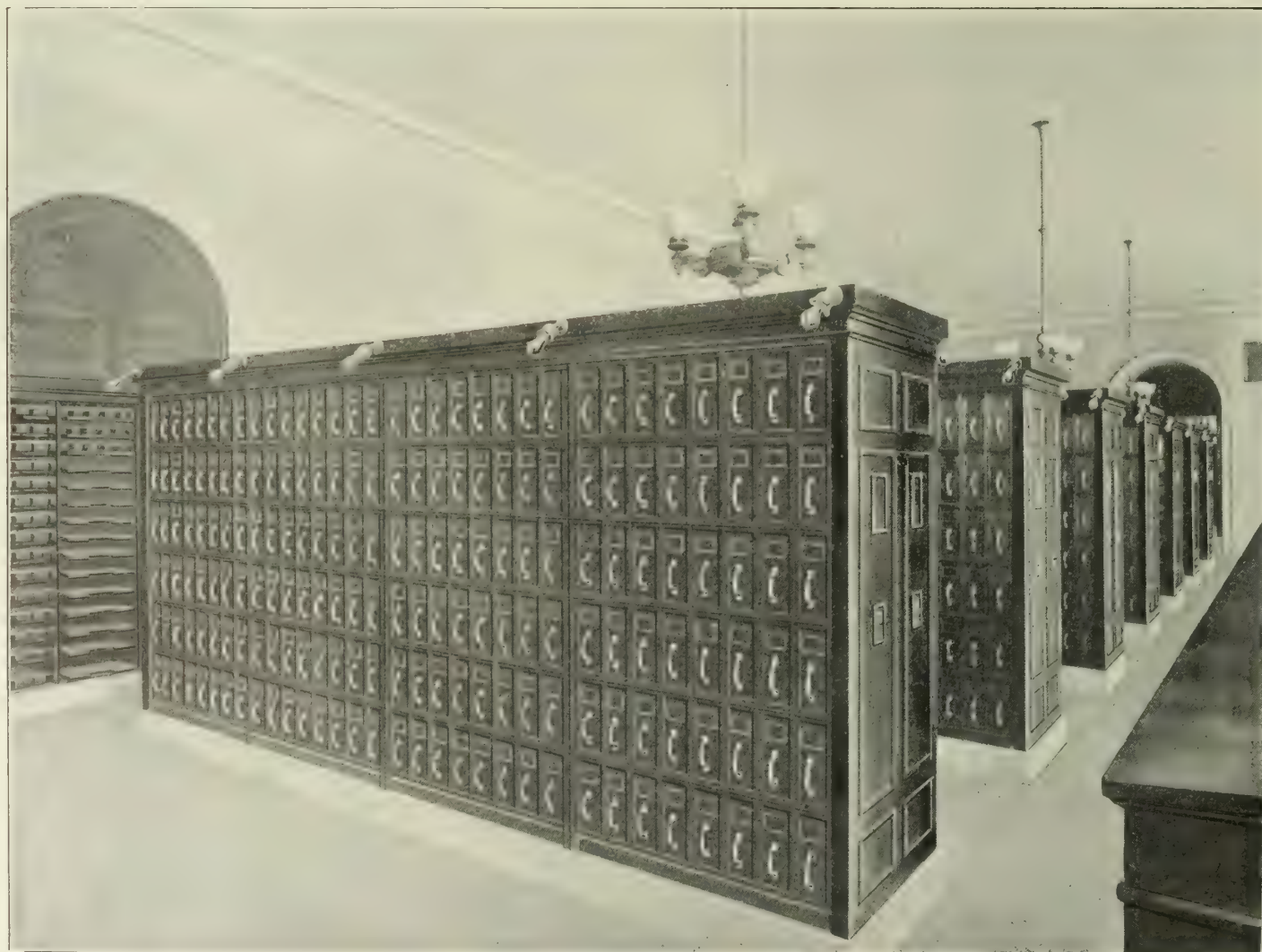
CHICAGO, ILL.
LONDON, ENG.

PRODUCTS.

WOOD and STEEL BANK, LIBRARY and VAULT FITTINGS; BANK and OFFICE FURNITURE; LIBRARY FURNITURE; TECHNICAL LIBRARY EQUIPMENT and STACK; CARD INDEX and FILING SYSTEMS.

FACILITIES.

Our seven factories, one devoted entirely to steel work, give us a productive capacity which enables us to handle promptly orders of any size.



DOCUMENT FILING CASES, NEW HALL OF RECORDS, NEW YORK, N. Y.
Entire metal equipment from main floor to eighth floor by LIBRARY BUREAU

STOCK. We carry a comprehensive line of stock goods and on these can make immediate delivery.

DESIGNS, ESTIMATES, ETC. Sketches, designs, and estimates, either suggestive or according to architects' specifications, will be promptly submitted on application to our nearest salesroom.

QUALITY. Exclusively the highest type of commercial and library fittings and furniture. Our draughting-room force includes the leading designers on these lines in the country. Our product not only challenges the strictest artistic criticism, but embodies practical elements which are almost invariably overlooked in commercial and library work.

STEEL EQUIPMENT. We added this department to our business after satisfying ourselves by several years of practical experiment that the artistic and mechanical possibilities in the manufacture of steel furniture had scarcely begun to be appreciated. We offer our customers a product which in design sets an entirely new artistic standard. Mechanically it embodies radical ideas in construction, ease of manipulation, increased practicability at every point, which will give it a service value not before approached in steel equipment.

LIBRARY EQUIPMENT. We are specialists in the technical equipment of libraries and are constantly consulted by leading architects of this and other countries. The interior equipment of the most important and most beautiful library buildings in America is our product. By co-operating with the architect, we enable him to include in his library plans the most practical and modern ideas of interior arrangement and to deliver to his client not only a well-designed but a well-equipped library building.

On submission to us of sketch of interior library plan, we will return complete layout, with sketches and estimates if desired.



THOMPSON MEMORIAL LIBRARY, VASSAR COLLEGE, POUGHKEEPSIE, N. Y.
Note how the Gothic design of the building has been worked into the furniture, the ends of tables, and all exposed panels

MANUFACTURING, EQUIPMENT AND ENGINEERING CO.

Metal Equipment and Equipment Engineers
BOSTON, MASS.

PRODUCTS.

INDIVIDUAL SANITARY WASH BOWLS in BATTERIES of any number; METAL LOCKERS in great variety of types and sizes; METAL STOCK RACKS of standard and special construction for all purposes; ALL-METAL STOOLS and CHAIRS, with and without backs; SODA KETTLES, with or without Thermostat, and arranged for Steam, Gas, or Electricity, as desired; FACTORY and HOSPITAL EQUIPMENT; EMERGENCY OUTFITS; INSTANTANEOUS WATER-HEATERS; MISCELLANEOUS METAL EQUIPMENT.

INDIVIDUAL WASH BOWLS IN BATTERIES.

Perfectly sanitary and prevent spreading of disease. Arranged in single or double batteries of practically any number for hot and cold or for one temperature of water only. Plain iron, galvanized iron or vitrified porcelain enameled iron bowls. Self-closing or compression bibbs.

METAL STOCK RACK.

We manufacture many types of Stock Racks. We have standard patterns and also make them to any specifications. Open and Closed Shelf Racks, Bin Racks, Tote-Box Racks, Vault Racks, Library Shelving, and Racks for general and special purposes.

ALL-METAL STOOLS AND CHAIRS.

Three and four-legged All-Metal Stools and Chairs, with and without backs, with regular or 14-inch seat. We use a heavy pressed steel back and seat with inch angle-iron and $\frac{1}{4}$ -inch rivets. They are finished in baked enamel and are the delight of purchasing agents.

METAL LOCKERS.

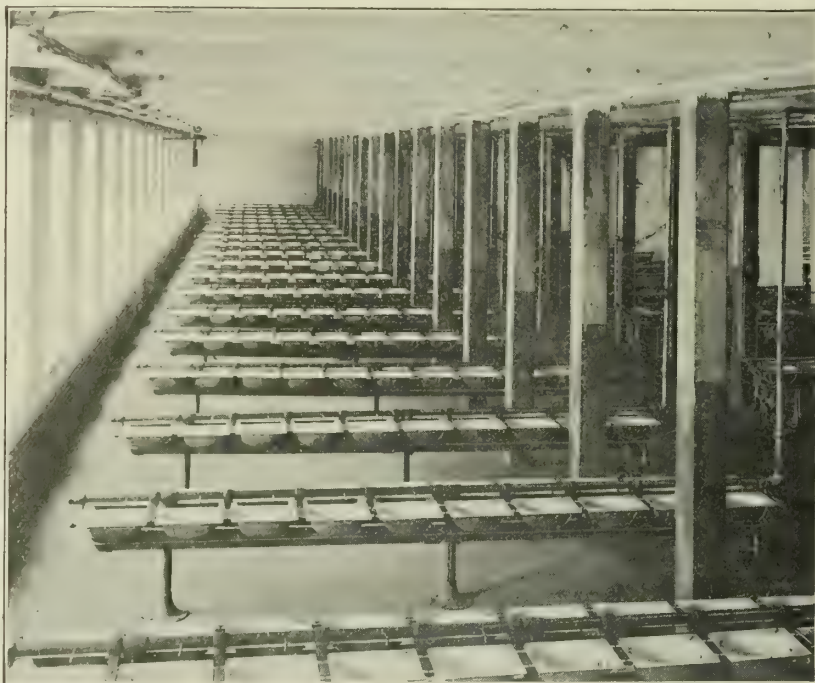
We manufacture Metal Lockers in a great variety of standard types from plain or expanded metal and to specifications. All sizes, baked enameled in color to suit and arranged as required. With or without three-way locking device; with padlock, combination lock, or any type of master-keyed lock. With standard or special hooks; with or without shelves and with special equipment, as desired.

SODA KETTLES.

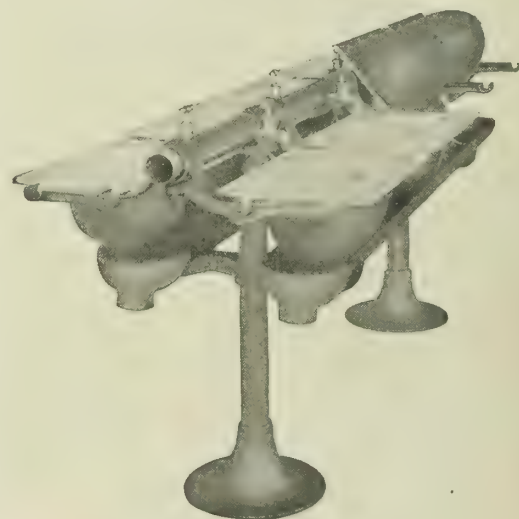
Our Soda Kettles are furnished in two sizes, forty and sixty gallons. They are of specially improved design, being provided with removable cover and a stop-basin which prevents all over-flow of the kettle. They can be heated with steam, gas, or electricity.

MISCELLANEOUS.

We manufacture various other lines, in addition to those of which cuts are here shown, which go to make up general equipment for shops, factories, and club houses.



A PARTIAL INSTALMENT OF OUR SANITARY WASH BOWLS
Double batteries



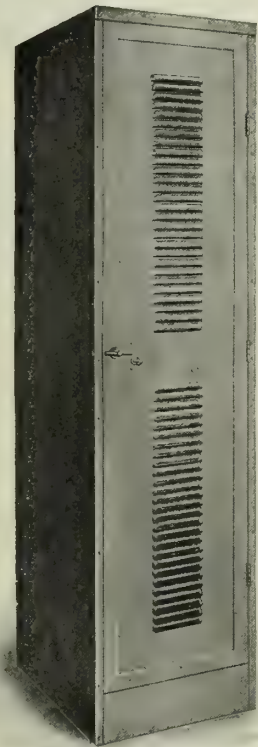
SANITARY WASH BOWLS
Open Waste Type

ENGINEER-
ING DEPART-
MENT.

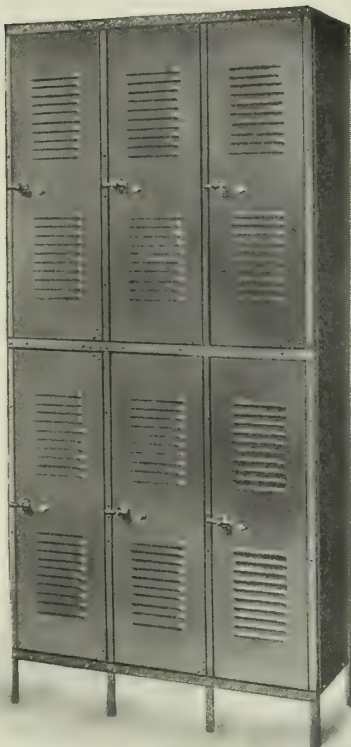
This Company, when desired, takes full charge of the equip-
ment of shops, factories and plants. We solicit inquiries and oppor-
tunity to quote prices and make lay-outs for all equipment
requirements.

REFERENCES.

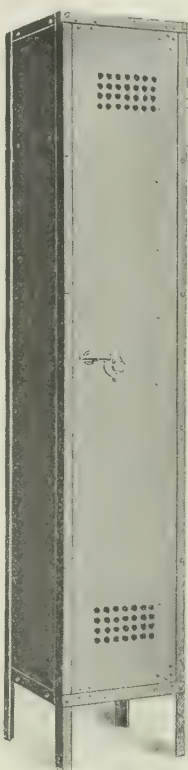
Our Equipment is in general use throughout this country, and
largely abroad, and we shall be pleased to furnish references and full
information at any time.



SINGLE-TIER LOUVERED LOCKER



TWO-TIER METAL LOCKERS



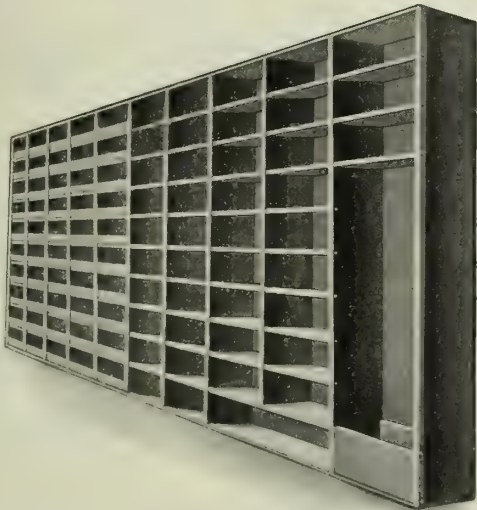
PERFORATED LOCKER



ALL-METAL STOOL WITH
BACK



ALL-METAL STOOL



OPEN-SHELF STOCK RACK



PART OF ONE OF OUR LOCKER INSTALMENTS

PULL-FASTENER COMPANY

Manufacturers of "Pull-Fasteners"

301 Cox Building
ROCHESTER, N. Y.

PRODUCTS.

We are sole manufacturers of the "PULL-FASTENER" (U. S. Patent No. 756,496), the best device for securing packages or parcels, and a practical substitute for rubber bands.

Pull-Fastener
Manufactured under U. S. Patent No. 756,496
TRADE-MARK

DESCRIPTION.

It is a new invention that abolishes knots and saves time; besides, it holds fast with a grip of steel.

The accompanying illustrations show what it is and exhibit some of the special uses to which it is adapted.

ADVANTAGES AND USES.

It is a perfect fastener and does all that those old-fashioned tying appliances—the string, tape, straps, and rubber bands—can do and does it quicker, better and easier.

It saves money, time, temper, and worry. Twisting ordinary tape or string around your papers or packages, holding them in position and tying, then cutting off surplus, is a slow, annoying process, antiquated and unnecessary.

With the "Pull-Fastener" you simply place it around the package and pull—that's all. It is fast in a flash and binds with a firm grip. Pull either end to fasten (but not both at the same time), and pull short end to loosen.

A bulky parcel, clumsy bundle or dainty package are all the same to the "Pull-Fastener."

Until you have actually tried it yourself, the thousand and one uses to which these little, always fastened, yet always loose, ready-made package ties can be put are hard to believe.

They are used by State, City and County officials, Boards of Education, Banks, Railroads, Lawyers, Civil Engineers, Architects, and in every other profession where quick service is appreciated.

STYLE, SIZES AND COST.

Made in cord, tape, webbing and strap form; in thirty-eight different styles, sizes and prices, for every purpose. Loop forms have closed ends like rubber bands, and Strap forms have open ends like any other strap. (See illustrations.)

They cost less than rubber bands and last twenty times longer, as they are climate-proof and neither rot nor knot.

Send for leaflet—"How the United States Government Loses Thousands of Dollars."

SAMPLES.

Write on your business letter-head for free samples, or send ten cents for assorted lot.



STRAP MADE
OF HEAVY
BROWN
WEBBING

For securing bulky
packages of all
kinds



A single pull fastens it tight.
Pull short end to loosen



TAPE FASTENER FOR DRAW-
INGS, MAPS, PACKAGES
OR PAPERS



CORD FASTENER
For general use in place of string



A STRAP THAT HOLDS
ANY PACKAGE OR
ROLL MADE

THE SNEAD & CO. IRON WORKS

MANUFACTURERS OF

Metal Bookstacks and Shelving for Libraries
JERSEY CITY, N. J.

CABLE ADDRESS, "SNEAD, JERSEY CITY"

OFFICE AND FACTORY
FOOT OF PINE STREET

PRODUCTS.

Sole manufacturers of the GREEN-SNEAD SYSTEM of LIBRARY BOOKSTACKS and SHELVING; also, makers of various types of BRACKET STACKS and ARCHITECTURAL IRON and BRONZE WORK.

DESCRIPTION.

The Green-Snead Standard Bookstack was first designed for the Library of Congress at Washington. It is the most substantial, sanitary and practical stack made. The vertical shelf supports are solid iron castings, perforated to permit of ventilation and lighting. There are no hollow, enclosed spaces or inaccessible pockets where dust, vermin and disease-germs can lodge. Every part is susceptible of being easily cleaned and fumigated. The stack may be finished as desired, but an air-drying enamel, applied after erection, is recommended, as it can be renewed in place.

Upper tiers are superimposed one above the other, the steel framing of the intermediate floors or "decks" being carried directly on the shelf supports. The deck floor covering is usually marble or glass. The standard tier height is 7' 0" or 7' 6" from floor to floor.

The adjustable shelves are preferably of the "Open Bar" construction as in cut herein shown, although the cheaper form of solid plate shelves can be furnished. The "Open Bar" shelves consist of a series of inverted U-shaped steel bars bound together at the ends and braced through the center. They are firm and resilient. Their openness permits the circulation of air for the preservation of books. They lock in place automatically and are easily and quickly adjusted. Their form allows the attachment of many convenient accessories, such as book supports, label holders, back stops, and portable ledges. They are finished in baked enamel.

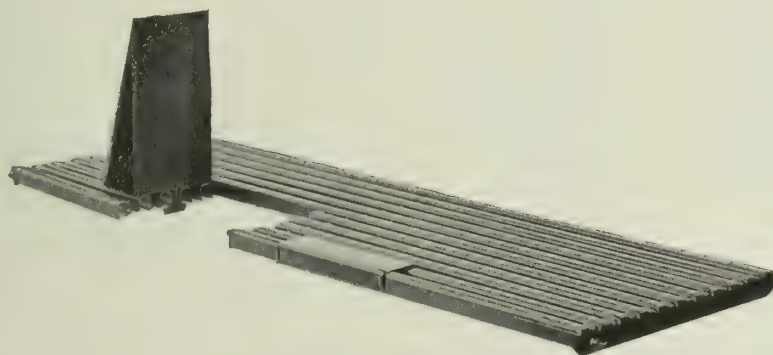
SHELF SIZES.

Standard shelf widths are 8, 9, 10 and 12 inches; length, 3 feet.

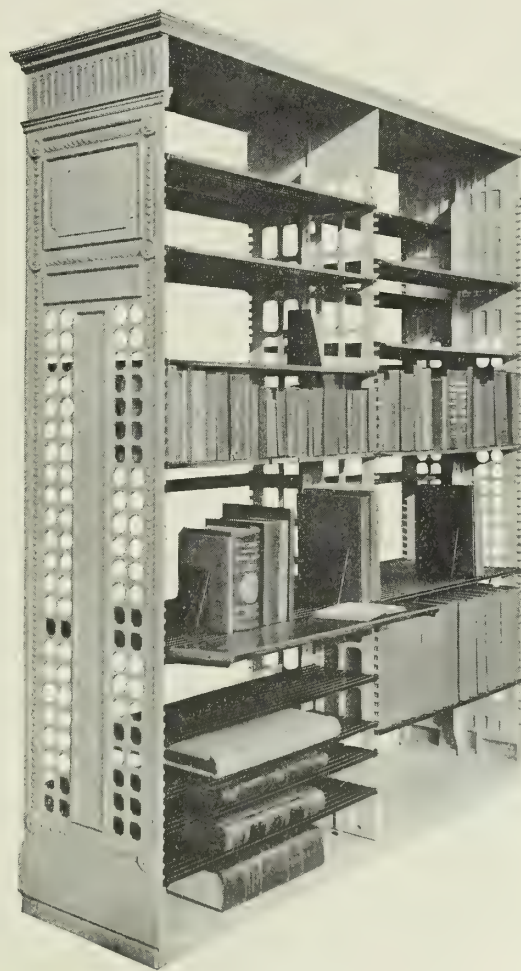
BRACKET STACKS.

Besides the Standard Stack described above, various forms of Bracket Stacks can be furnished at a low cost.

An illustrated catalogue will be sent on request.



OPEN-BAR SHELF, CUT OUT TO SHOW CONSTRUCTION, WITH
BOOK STOP AND LABEL HOLDER



BOOKSTACK IN THE LOUISVILLE, KY.,
FREE PUBLIC LIBRARY
PILCHER & TACHAU, Architects

THE VAN DORN IRON WORKS

Metallic Furniture Department

CLEVELAND, OHIO

PRODUCTS.

We design and manufacture "VAN DORN" STEEL FURNITURE, FIXTURES, and LOCKERS of every description, for Banks, Libraries, Offices, Court Houses and Public Buildings.

DESCRIPTION.

The "Van Dorn" construction, finish and workmanship are unsurpassed in strength, beauty, and excellence of execution.

FACILITIES.

Sixteen years of experience in metal furniture construction, coupled with the unsurpassed equipment of our extensive factory at Cleveland, where we employ only skilled designers and artisans, enables Van Dorn to execute the largest contracts and most difficult designs with despatch, and to the complete satisfaction of the most fastidious architects and owners.

DESIGNS, ESTIMATES, ETC.

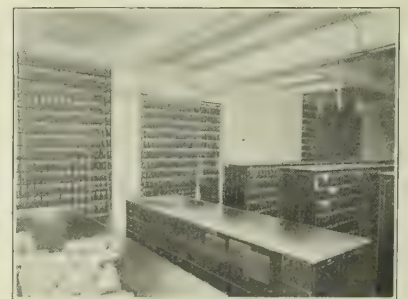
We will gladly submit "Van Dorn" designs and specifications for any contemplated work of this nature, or furnish promptly estimates on work of a special character or on designs from architects' drawings.

We invite correspondence from those interested in metal furniture, and will lend our assistance to architects and owners.

Van Dorn
TRADE-MARK



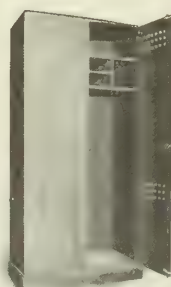
TABLE AND CHAIRS, LARKIN BUILDING, BUFFALO, N. Y.



COOK COUNTY COURT HOUSE, CHICAGO, ILL.



TYPE A LOCKER



NAVAL BATTALION LOCKERS, BROOKLYN, N. Y.



FOUR-DRAWER VERTICAL FILE



LARKIN STEEL CHAIR



KINGS COUNTY HALL OF RECORDS, BROOKLYN, N. Y.

THE J. P. WADELL SHOW CASE AND CABINET CO.

Show Cases, Store Furniture, and Special Cabinet Work

FACTORY AND MAIN OFFICE

DETROIT, MICH.

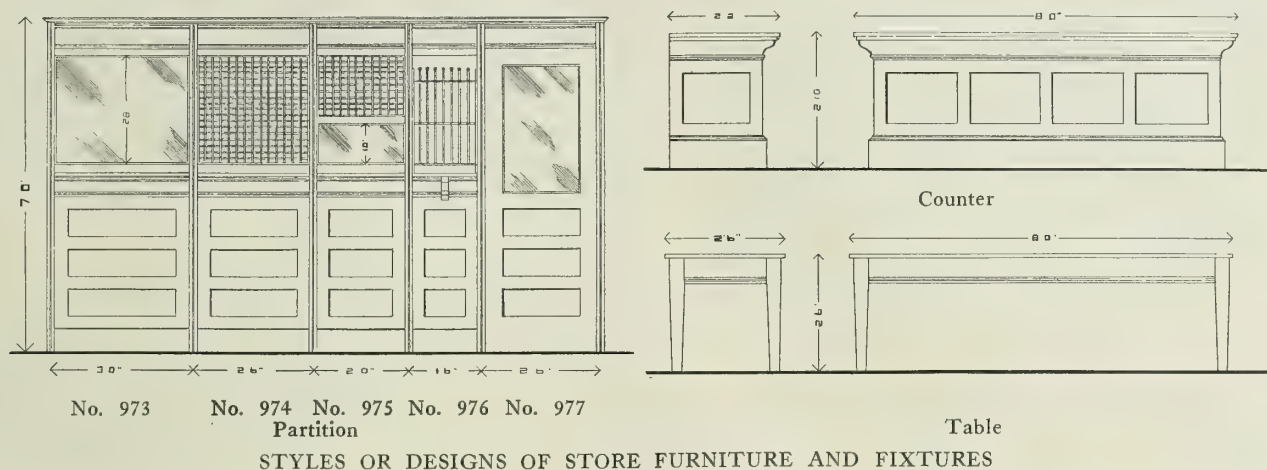
TELEPHONE, FIELD 281 R

EXPORT OFFICE

NEW YORK, N. Y., 93 Wall Street

PRODUCTS.

Manufacturers of SHOW CASES, OUTSIDE SHOW CASES, STORE FURNITURE, TABLES, COUNTERS, WALL CASES, SHELVINGS, CLOTHING CABINETS, FITTING ROOMS, MIRROR FRAMES; and SPECIAL CABINET WORK to order.



MATERIAL.

Partitions, Tables and Counters are made of plain oak exterior and soft wood interior. All lumber used by us is thoroughly seasoned and kiln-dried.

THE CON- STRUCTION AND ITS ADVANTAGES.

Tops are tongue grooved and glued and are fastened with screws to frame to allow for easy expansion and contraction.

The frame is joined by mortise and tenon.

FINISH.

One coat of filler; one coat of shellac; two coats of varnish, sandpapered between each coat. The last to be rubbed with pumice-stone and oil to a smooth cabinet finish.

UPPER FRAME OF PARTI- TIONS.

Style No. 973, double thick "A" quality glass or syenite glass.

Style No. 974, oxidized copper flat crimped wire, $1\frac{3}{4}$ in. mesh.

Style No. 975, oxidized copper flat crimped wire, $1\frac{3}{4}$ in. mesh and double thick "A" quality glass or syenite glass.

Style No. 976, oxidized copper wicket, round bars.

Style No. 977, door, double thick "A" quality glass or syenite glass.

PRICES.

Being located in the center of the lumber region where the finest woods are grown we can quote the lowest figures.

FACILITIES.

We have a large factory, equipped with the most modern machinery and consequently are in a position to execute all commissions with the greatest care and dispatch. Our shipping facilities are excellent, insuring prompt delivery.

TERRITORY.

Our product is in demand not only in the United States and Canada, but also abroad; we maintain an export office in New York, where all foreign orders are promptly attended to.

CO-OPERATIVE SERVICES.

We are at all times ready to co-operate with architects, and shall be glad to submit designs and estimates for any work in our line requested by them.

REFERENCES.

References will be furnished upon application.

WEAR-PROOF MAT COMPANY

426 Madison Street
CHICAGO, ILL.

TELEPHONE, MAIN 2423

PRODUCT. The "WEAR-PROOF" COMBINATION-LINK DOOR MAT.

DESCRIPTION. As shown in Fig. 1 the units of "Wear-Proof" Mats consist of a number of small strips (b) made from a pure wool felt specially treated to resist the action of air, salt, acids or water, and binding pieces (a) of a hard cold-rolled galvanized steel, or hard brass when so desired; and are all woven together on steel tie rods, as shown in Fig. 2.

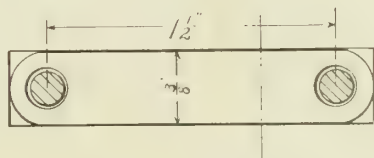


FIG. 1. DETAILS OF "WEAR-PROOF" LINK DOOR MAT

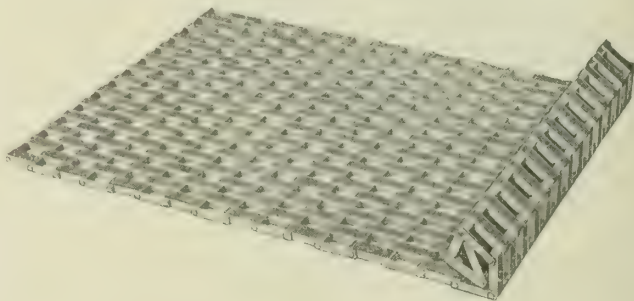
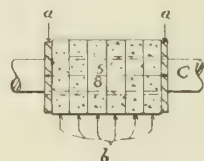


FIG. 2. "WEAR-PROOF" COMBINATION-LINK DOOR MAT

WEARING QUALITIES. The life of this mat is limited only to the amount of wear-resistance offered by the steel or brass binding pieces, which will not rust; and the felt filling is also impervious to the action of the elements.

SAFETY. "Wear-Proof" Mats can not slip, warp or twist, and always lie flat and in place.

SPECIFICATION. The "Wear-Proof" Mat is made in one standard thickness, viz., $\frac{3}{8}$ inch, and woven into any length or width consistent with convenience in handling. Its weight is $2\frac{1}{2}$ pounds per square foot, and stock sizes are as follows:

No. 1	16 in. x 24 in.	No. 4	26 in. x 48 in.	No. 7	36 in. x 54 in.
No. 2	18 in. x 30 in.	No. 5	30 in. x 48 in.	No. 8	36 in. x 60 in.
No. 3	22 in. x 36 in.	No. 6	36 in. x 48 in.	No. 9	36 in. x 72 in.

PRICES. Prices will be furnished upon request.

SAMPLES. We prepay express charges on samples to any part of the United States and Canada.

REFERENCES. References in any of the following classes of buildings furnished upon request: Bank and Office Buildings, Apartments, Theaters, Hotels, Street and Interurban Car Lines, Steam Railroads, Saloons and almost any place where mats are used.

THE LOWRIE SAFE AND LOCK COMPANY

1117 Flatiron Building
NEW YORK, N. Y.

TELEPHONE, 640 GRAMERCY

PRODUCT.

SMALL WALL SAFES. Since 1902 the first and only producers of a practical type of small Wall Safes exclusively.

Going into two courses of bricks, leaving outer course intact. Overall depth 9½ inches.

SIZES,
DIMENSIONS,
PRICES.

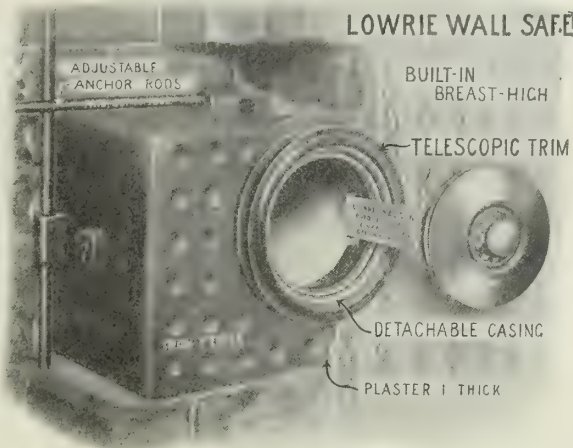
Style BH (B Box, H Door)—Inside width, 11 inches; height, 8 inches; depth, 7¼ inches; weight, 60 pounds. Price, \$25.00.

Style DH—Inside width, 15 inches; height, 10 inches; depth, 7½ inches; weight, 105 pounds. Price, \$28.00.

Style EH (three courses of brick)—Inside width, 15 inches; height, 10 inches; depth, 10½ inches; weight, 125 pounds. Price, \$30.00.

All boxes go with temporary wood-door finishing flush with plaster and carrying full instructions. Outside width and height always about three inches more than inside as given.

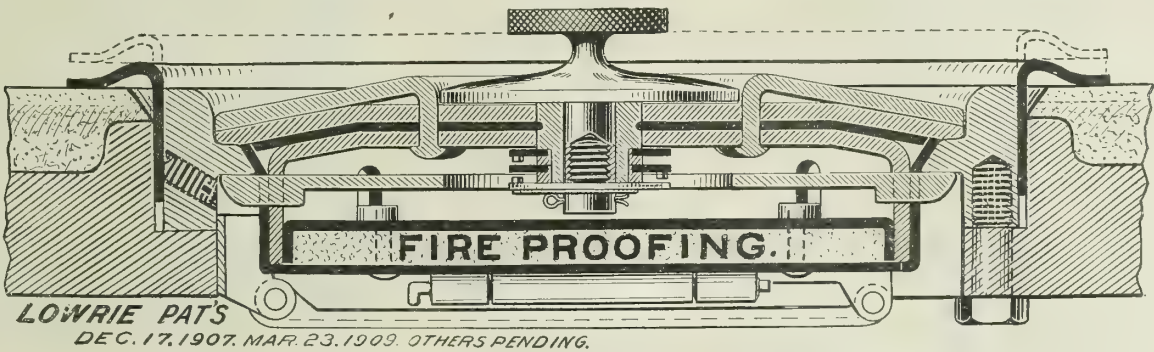
The lock is a three tumbler combination, right and left bolts, each 2½ inches wide, with



GENERAL STYLE OF WALL SAFE

Clear opening always 5½ inches. Boxes, varying sizes, B, D, E

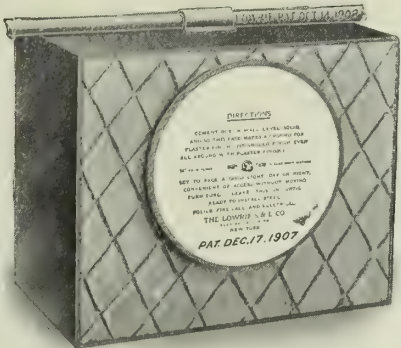
DETAILS OF
H DOOR,
CONICAL
FACE FOUR-
PLY STEEL
PLATES
(HARD
FILLER).



SECTIONAL DETAILS OF H DOOR—TWO THIRDS FULL SIZE

moving parts of brass to avoid dust. Every door with our name and its own number. The L Door (for lockers) is more cheaply made, but much the same, and the exterior is not distinguishable. Each style is equipped with our patent telescopic trim and concealed spring hinge which holds the door two inches from the wall and allows panel work over it, if desired.

FRAME
HOUSE
AND
PARTITION
SAFES.



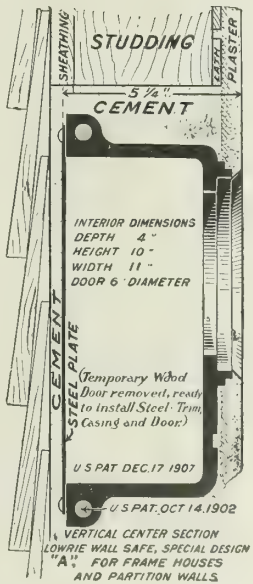
LOWRIE STEEL LOCKERS

STEEL
LOCKERS.

Special Wall Safe A for frame house, with H Door, \$23.00; with L Door, \$20.00. Dimensions, etc. (see cut).

Locker G—Inside 12 inches wide, 10 inches high and 7¼ inches deep, with L Door. Weight, 20 pounds. Price, \$16.00. Locker F—Inside 4 inches deep. Price, \$15.00. Large discounts for quantity. List price covers railroad freight.

The Lowrie Steel Lockers have cement facings and take H or L Lowrie Doors, and all fittings.



WALL SAFE A FOR
FRAME DWELLINGS

THE SAFE-CABINET COMPANY, INC.

"Dick" Steel Fireproof Office Cabinets

Suite 51, Perin Building
CINCINNATI, OHIO

FACTORY
MARIETTA, OHIO

PRODUCT. We manufacture the "DICK" STEEL SAFE-CABINET (Patented), for general and office use.

DESCRIPTION. The construction consists of double walls of the finest patent leveled sheet steel, with capacious air-chamber between. The inner surfaces in the entire structure are lined with fireproof material. Each section, constructed of a single sheet, is complete in itself. There are no heat-conducting connections between the double walls.

It possesses fire-resisting power to a very high degree.

There are independent bar fastenings on the doors, which overlap and are secured by a latest improved keyless combination lock. The inner corrugated walls are independent, and a single air-chamber is formed around the three sides of the cabinet. The doors, base and crown are likewise protected. The shelves and partitions are also of steel.



DOUBLE-DOOR CABINET

Standard Interior Adjustment of Nos. 51, 52, 53 and 54.
Interchangeable

ADVANTAGES. The question of vaults vs. safes in office buildings has always been debatable. Both have objections that in the eyes of some managers condemn them.

The vault, for instance, as every one knows, is a "catch all" and soon becomes a filthy dark hole into which everything the tenant wants out of sight goes. Another objection is that frequently several rooms are rented to one tenant, and vaults often make it impossible to throw this suite together. This results in a needless expense of original construction, as few tenants want more than one vault. From a renting standpoint the vault is a dead space.

The steel safes, therefore, are used by many building managers, but to these there are also objections. Steel safes are heavy. In case of the weakening of floors during a fire they will go to the bottom of the building. A safe does not give burglar protection, as any safe-blower can open it without much trouble. In these days tenants do not leave money in their safes or vaults, and there is no reason for having so many steel plates to protect it. The only real insurance a tenant wants is that of its being fireproof.

The unique construction of the Safe-Cabinet, its enormous capacity in proportion to its size, its security, its lightness of weight combined with its great strength, the adjustability

of the interior to any requirement of the user; these, together with its handsome appearance and reasonable cost, make it a valuable substitute for a vault or safe, and also a valuable part of office equipment.

ADAPTABILITY.

THE SAFE-CABINET COMPANY'S slogan is: "For Universal Use."

SIZES AND WEIGHTS.

There are twelve standard sizes, the interior dimensions being as follows:

No.	Depth	DOUBLE DOORS		Approximate Weight
		Width	Height	
51	12 in.	30 $\frac{1}{4}$ in.	57 in.	260 lbs.
52	15 "	30 $\frac{1}{4}$ "	57 "	285 "
53	18 "	30 $\frac{1}{4}$ "	57 "	300 "
54	24 "	30 $\frac{1}{4}$ "	57 "	370 "
SINGLE DOORS				
21	12 in.	20 $\frac{1}{4}$ in.	52 in.	185 lbs.
22	15 "	20 $\frac{1}{4}$ "	52 "	200 "
23	18 "	20 $\frac{1}{4}$ "	52 "	215 "

Five smaller sizes.

The exterior dimensions are 8 $\frac{1}{2}$ inches more each way.

The weight of the steel-covered shipping crates is about one third the weight of the cabinets.

PATENTS.

The "Dick" Steel Safe-Cabinet was patented January 9, 1906. Other patents are pending.

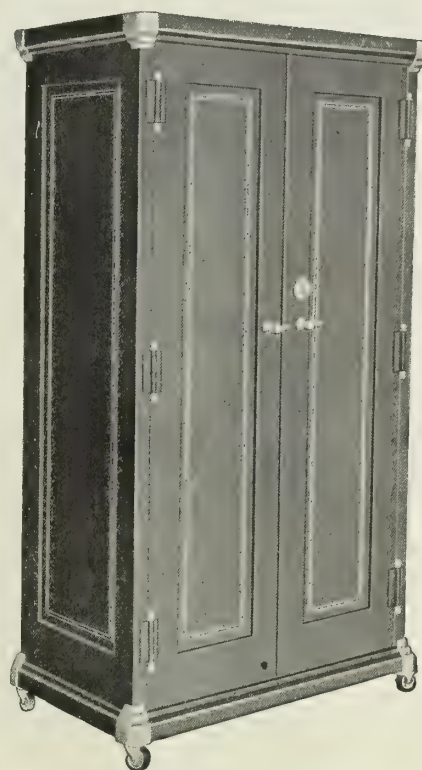
USERS.

The United States Government (both at home and abroad), Express Companies, Railway Companies, Office Building Managers, Churches, Libraries, Merchants, Lawyers, Doctors, Dentists, Publishers, Architects, Builders, Artists, Teachers, Photographers and Public Officials.

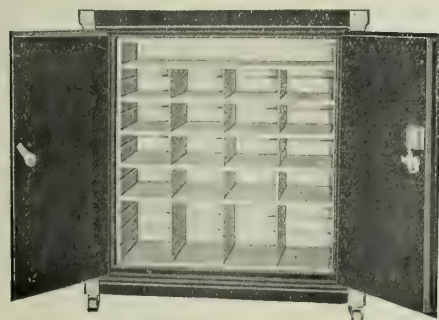
SPECIFICATION.

Architects should be instructed, in order to avoid substitution, to specify as follows:

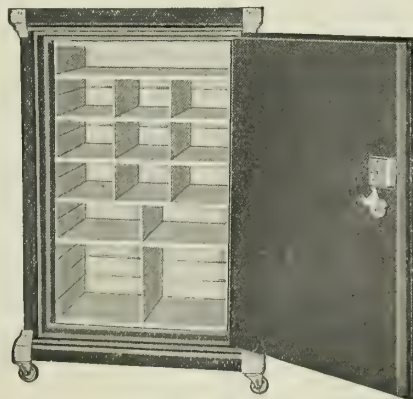
The Safe-Cabinets used in this building shall be those known as "The 'Dick' Safe-Cabinet, manufactured by THE SAFE-CABINET COMPANY, INC., of Cincinnati, Ohio."



DOUBLE-DOOR CABINET
Showing Exterior



DOUBLE-DOOR CABINET
Standard Interior Adjustment of Nos. 61,
62 and 63. Interchangeable



SINGLE-DOOR CABINET
Standard Interior Adjustment of Nos.
31 and 32. Interchangeable



SINGLE-DOOR CABINET
Showing Interior

THE VICTOR SAFE & LOCK CO.

CINCINNATI, OHIO

PRODUCTS.

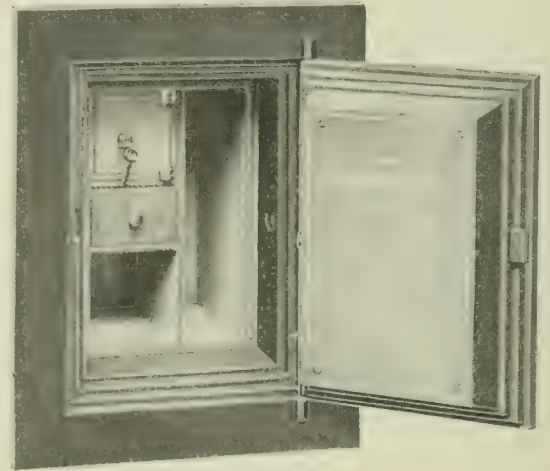
Manufacturers of FIRE and BURGLAR PROOF SAFES, VAULT DOORS, STEEL LININGS and SAFETY-DEPOSIT BOXES.

WALL SAFES.

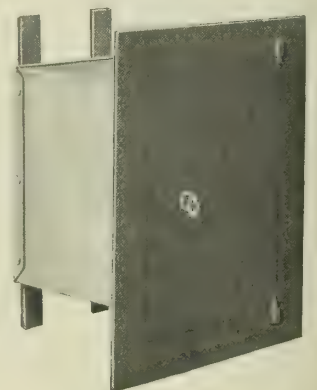
Every householder his own custodian. A fireproof vault in every home.

The doors of these safes are the same as used in the standard fireproof safes. The door swings on an almost invisible hinge and is guarded by key lock, so that when the body and frame are built in either a brick or concrete wall the front of the safe can be hidden from view by painting, papering or fitting woodwork so as to conceal the joint around the door.

When built in a brick wall, the space between wall and body of safe should be filled in with mortar. The wall covering back of safe should be not less than four inches in thickness, of either brick or concrete. The safes are generally located in chimneys where the thickness of the flue is sufficient to receive them without requiring any special arrangement.



FIREPROOF WALL SAFE



SIDE VIEW OF WALL SAFE

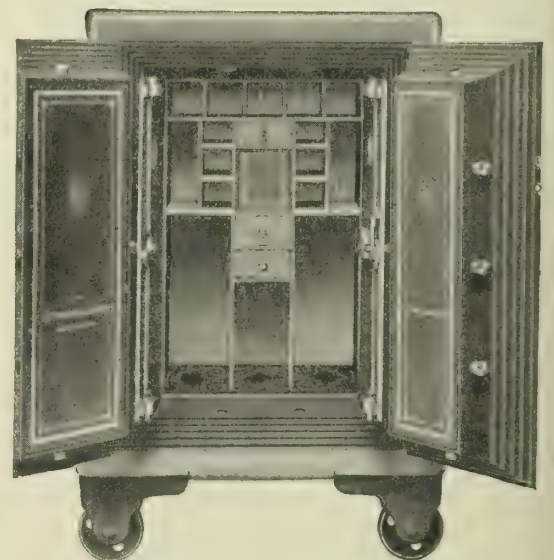
DIMENSIONS		
No. 02½	Outside	21½ inches high, 17½ inches wide, 13 inches deep
	Inside,	13 inches high, 9 inches wide, 10 inches deep
Approximate Weight, 100 pounds		
No. 03	Outside,	24 inches high, 19 inches wide, 13½ inches deep
	Inside,	15 inches high, 10 inches wide, 10 inches deep
Approximate Weight, 135 pounds		
No. 03½	Outside,	25½ inches high, 20½ inches wide, 15½ inches deep
	Inside,	17 inches high, 12 inches wide, 12 inches deep
Approximate Weight, 175 pounds		

"VICTOR" FIREPROOF SAFES.

You will find by comparison that the "Victor" Standard Fireproof Safes show advanced ideas in design and construction that give them a distinguishing mark of superiority over similar work put out by other companies; and the improved non-pickable combination lock, and upward of twelve hundred severe fire tests (including the San Francisco calamity, in which the "Victor" Safes preserved their contents better than any other make) furnish but a few of the many reasons why we are entitled to the confidence placed in our products by two hundred thousand users.

ENDORSEMENT.

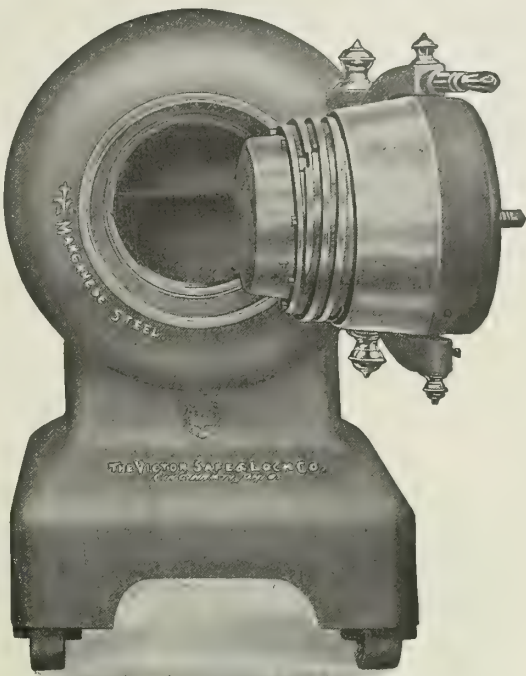
We received the highest award, grand prize and gold medal, at the World's Fair in St. Louis in 1904.



"VICTOR" FIREPROOF SAFE

THE "VICTOR"
SPHERICAL
MANGANESE
STEEL
SCREW-DOOR
BANK SAFE.

This Safe is made in a variety of sizes. Its body is spherical in shape so that at any point at which it may be attacked the strength of an arch is secured; and it is made in one solid piece of manganese steel, of uniform thickness. The door is ground into its jambs with carborundum and oil until an absolute metal to metal contact is formed, and is fitted so perfectly that a single human hair, placed on either the door or door jamb at any point, would be entirely crushed when door is screwed up to a locked position. The heavy double-screw thread forces the door into position with a jack-screw pressure. This screw is then interlocked by a system of bolts operated and controlled by a triple movement Bankers' Dust-Proof time lock, which system permits the door to be made solid like the body of the safe. No holes through the door for combination-lock spindles or bolt levers are necessary, as are so commonly found in other makes of safes.

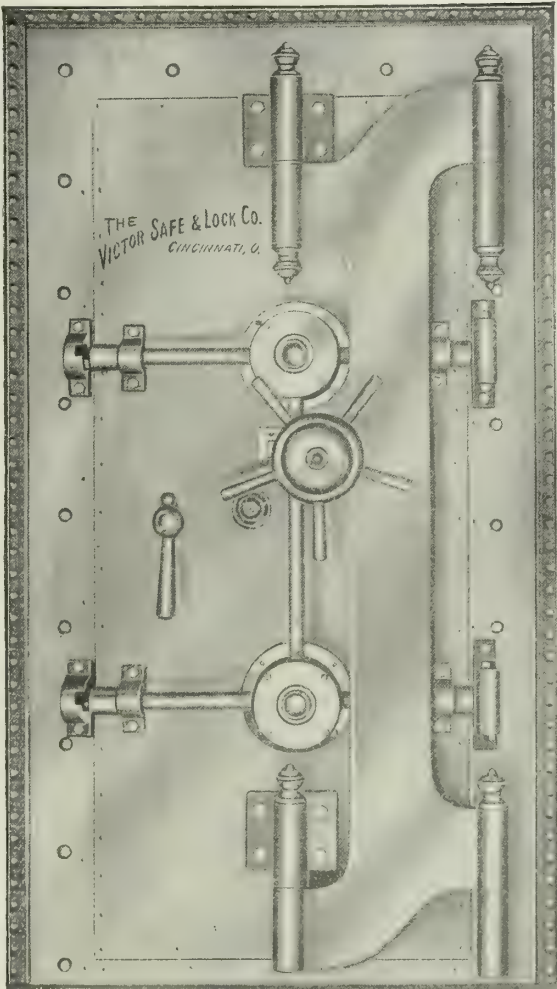


"VICTOR" SPHERICAL MANGANESE
STEEL SCREW-DOOR BANK SAFE

BURGLAR-
PROOF.

From the description given, the impossibility of the insertion of any explosive around the door is readily seen; and as there are no joints, plates or screws in the body, charges of nitro-glycerine, that would entirely wreck the bank building in which the safe is placed, would have no effect whatever upon this safe.

It is the climax of twenty-five years of consistent progress in the manufacture of the highest types of solid manganese steel burglar-proof bank safes, and therefore takes the lowest rate of burglary insurance.



EXTERIOR VIEW OF VAULT DOOR

VAULT DOORS
AND
ESTIMATES.

We build vaults of any size, weight or description; and shall be pleased to figure on anything in this line that may be required. Send us your specifications.

CATALOGUES.

Send for catalogue 206B, describing various styles and designs.

YORK SAFE AND LOCK COMPANY

FACTORY AND MAIN OFFICE

YORK, PA.

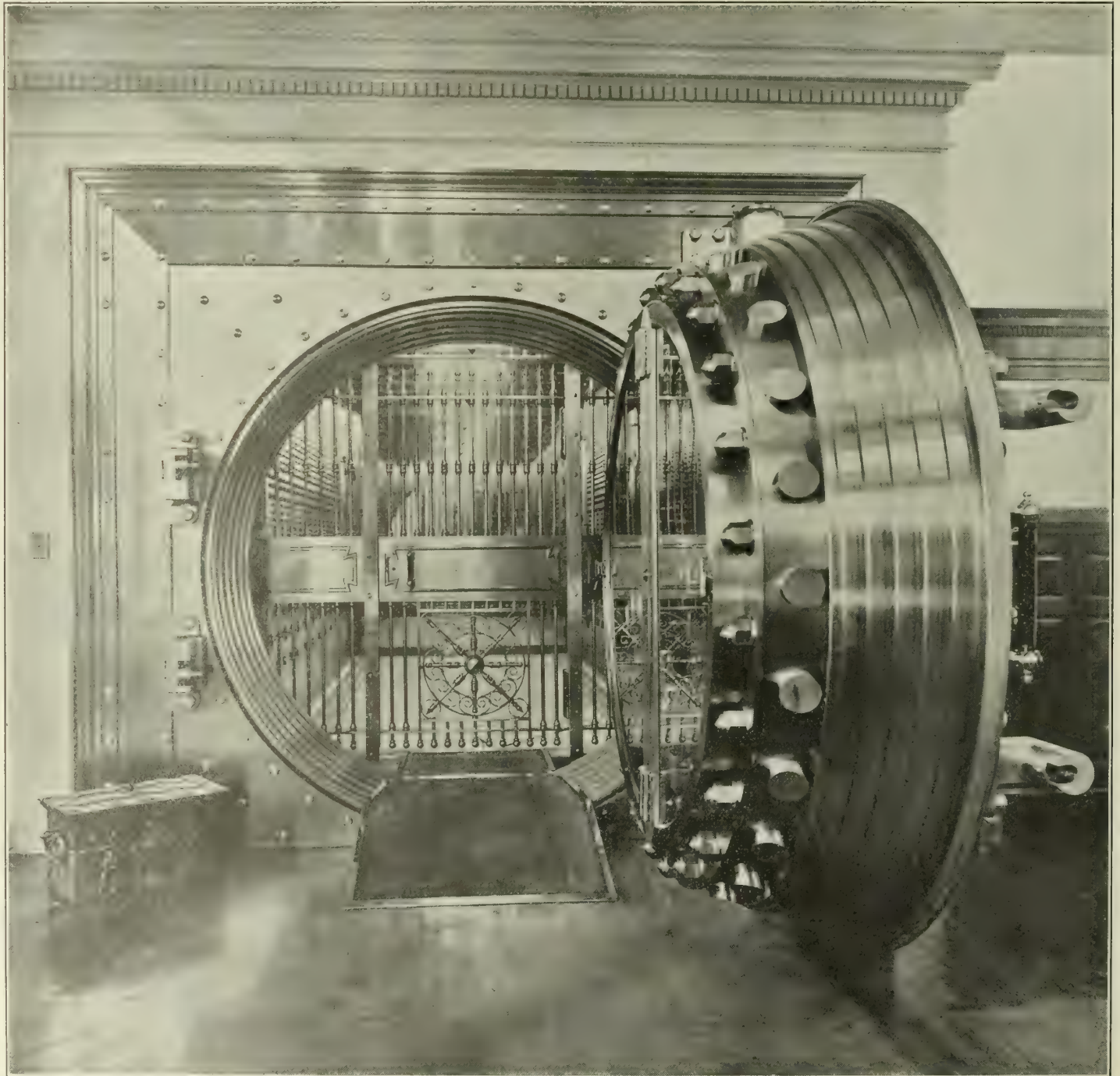
BRANCH OFFICES AND SALESROOMS

NEW YORK, N. Y., 55 Maiden Lane
BALTIMORE, MD., 5 and 7 West German Street
PHILADELPHIA, PA., 119 North Fourth Street

BOSTON, MASS., 98 Sudbury Street
CHICAGO, ILL., 202 East Washington Street
PITTSBURG, PA., 321 Third Avenue

PRODUCTS.

BANK and SAFETY-DEPOSIT VAULTS, SAFETY-DEPOSIT BOXES, BANK VAULT ENTRANCES, FIREPROOF VAULT DOORS, FIREPROOF SAFES, BANKERS' SQUARE DOOR SAFES, MANGANESE STEEL BANK SAFES, PLATE SAFES, EXPRESS MESSENGER BOXES, etc.



ROUND-DOOR VAULT BUILT FOR THE NATIONAL BANK OF GERMANTOWN, PHILADELPHIA, PA.

BANK AND
SAFE-DEPOSIT
VAULTS.

We make a specialty of building heavy bank work and our facilities for the prompt execution of large contracts are unequalled. If desired we will furnish, free of cost, plans and specifications. We also make Safe and Vault Work of every description from architects' plans and designs.

SAFE-DEPOSIT
BOXES AND
INTERIOR
FITTINGS.

We are prepared at all times to submit plans for equipping the interior of vaults with Safety-Deposit Boxes, Safes, Tellers' Lockers, Storage Shelving, or interior fittings of any description.

BANKERS'
SAFES.

We manufacture Bankers' Safes of chrome steel, with square or round doors, also manganese steel safes with round doors.

FIREPROOF
SAFES.

Our Fireproof Safes are made with solid welded angle frames; interlocking tongue and groove joint in doors; projecting hinge flange; "Electro Vulcan" calcined dry filling, making the safe moisture and damp proof as well as fireproof; drill-proof plate under lock and inside bolt work and outside hinges; solid body and solid back. These features combine to make the "York" Safes the strongest and most reliable office safes in the world.



FIREPROOF SAFE

FIREPROOF
VAULT
DOORS.

We constantly carry on hand Fireproof Vault Doors of standard sizes in various designs. We are also prepared to furnish promptly special doors of any size or style.

SPECIAL
SAFES FOR
FIREPROOF
BUILDINGS.

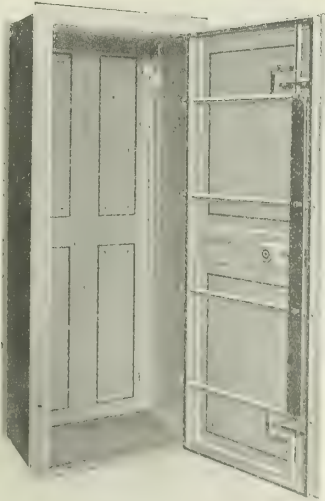
These Safes are constructed with lighter walls than the regular standard Fireproof Safes, and are designed for use in modern fireproof buildings.

CO-OPERATIVE
SERVICE.

Architects who are interested in Vault or Safe Work of any description are respectfully requested to communicate with us. Estimates on all kinds of work furnished promptly, and we cheerfully co-operate with architects for working out the details of special designs.

WARRANTY.

All goods warranted to be absolutely as represented. We also take special pride in the superior finish of our work and can meet the most exacting requirements. Our workmanship and finish is superior to anything on the market to-day. We are the largest Safe and Vault builders in the world.



VAULT DOOR

CUTLER MAIL CHUTE COMPANY

GENERAL OFFICES

Cutler Buildings

ROCHESTER, N. Y.

BUSINESS ESTABLISHED BY CUTLER MFG. CO., 1883. INCORPORATED, 1909

FACTORY

ROCHESTER, N. Y., Anderson Avenue

NEW YORK OFFICE
TIMES BUILDING

AGENCIES IN ALL PRINCIPAL CITIES

PRODUCTS.

CUTLER MAIL CHUTES, AUTOMATIC MAIL CHUTES, U. S. MAIL CHUTES, U. S. MAIL BOXES and PRIVATE MAIL CHUTES.

DESCRIPTION.

The Cutler Mailing System is furnished in two forms:

Model C (Fig. 1), with its entire front of hinged doors under government lock, is practically a continuation of the mail box to the top of the building. It is adapted to buildings of the highest class where the best possible equipment is required.

Model F (Fig. 2) is the latest development of the mail chute. It is substantial in construction, simple in operation, quickly and easily accessible to authorized persons only. Made with the fronts in the form of removable panels, any two of which are released by the turn of a single key.

AUTHORIZATION.

Cutler Mail Chutes in each model, are fully protected by recent patents, are authorized in a formal order of the Postmaster-General, under the provisions of a special Act of Congress, and are "a part of the receiving box, under the exclusive care and custody of the Post Office Department," and letters deposited therein are legally "mailed."

INSTALLATION.

Our work, installed in connection with the U. S. Free Collection Service, is subject to the regulations of the Post Office Department, copies of which we furnish on application, and which we are under heavy bond to observe. Mail-chutes and boxes are, however, frequently installed for private use, in which case, as post office requirements do not have to be met, special prices and terms can be made.

SPECIFICATIONS.

To prevent the substitution of infringing and unsatisfactory imitations the Cutler Mail Chute should be specified by name, and the type, either Model C, Model F, or Automatic, designated. *Infringers are being prosecuted. Do not specify a patent suit.*

FULL-SIZED DETAIL.

We have prepared and furnish to architects full-sized detail sheets illustrating not only the space occupied by the Mail Chute but the various methods of preparing the building to receive our work. If you have not received these drawings, a postal card request will bring them promptly, free of any expense.

RENTAL DEPARTMENT.

We have a very large number of Mail Chutes installed under lease and this plan affords a means of securing the mail equipment of a building at a very small outlay, chargeable to expenses rather than to investment, and as we give an option of purchase it provides for buying, with installment payments. Particulars will be furnished on application.

PRICES.

As the cost of installation depends upon the conditions and requirements in each particular building, we do not print a price-list, but make a special proposition in each case, upon receipt of the necessary information, or our representative will call, if preferred. Let us send you full information as to the various models of chutes.



FIG. 1. MODEL C FIG. 2. MODEL F

AUTOMATIC
DIVISION.

Having purchased the property, patents, and good will of the Automatic Mail Delivery Co., as well as the Cutler Manufacturing Co., the CUTLER MAIL CHUTE COMPANY operates both the Cutler and Anderson system of mail chute patents, and will furnish chutes of the Automatic type, authorized and patented, and, owing to simpler construction, at a somewhat less price than the Cutler models.

MAIL
BOXES.

For work of the usual character, our stock boxes are satisfactory, and we illustrate four designs, which are most frequently specified by architects, Nos. 1165, 1570, and 1590 "Cutler," and 107 "Automatic." These boxes are furnished in electro-bronze plate, unless specifically designated to be of bronze. We also make cast bronze work of the highest character from special designs of our own, furnished subject to the approval of the architect, or from the architect's own drawings, as preferred.

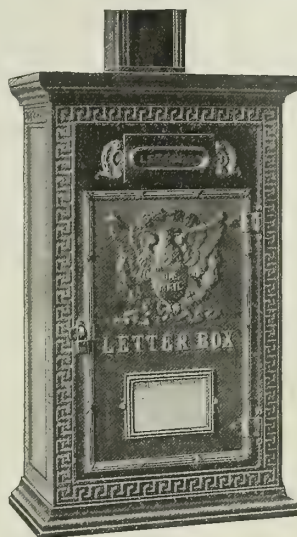
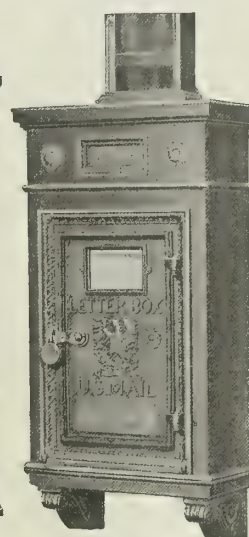
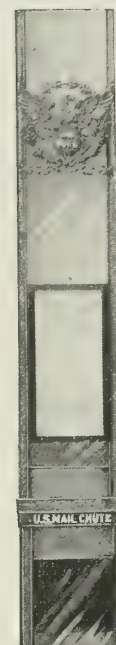
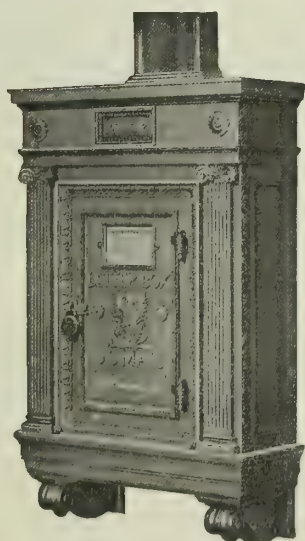
DISTRIBU-
TION.

Our work is so well known, owing to the wide distribution of it during the past quarter of a century in which we have been in business, that reference to specific buildings seems unnecessary. Cutler Mail Chutes will be found in all the principal structures of the commercial and hotel class, and in all the principal cities of the United States and Canada, as well as in London and Liverpool, England, Hawaii, Sandwich Islands, Cape Colony, Transvaal, City of Mexico, etc.

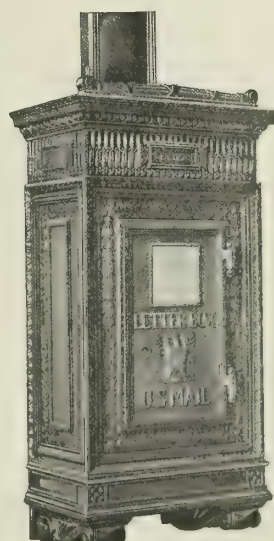
We mention, however, among recent buildings in New York City, Singer Tower, City Investing Building, Hudson Terminals, Metropolitan Tower, which is the highest office building in the world, and the 23rd Street Arcade. In St. Louis the National Bank of Commerce. In San Francisco since the fire over eighty installations.

We illustrate two recent examples of special work, one made from the design of Messrs. McKim, Mead & White, and one from the design of Mr. H. P. Knowles.

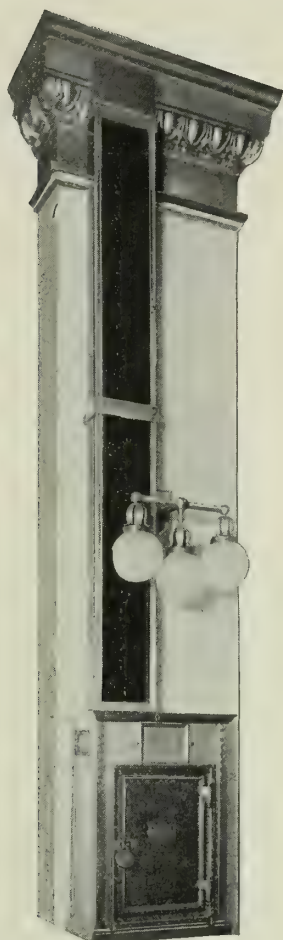
Photographs, special drawings and any information will be promptly furnished.

NO. 107 "AUTOMATIC"
MAIL BOXNO. 1590
MAIL BOX"AUTO-
MATIC"

NO. 1570 MAIL BOX

SPECIAL CAST BRONZE
MAIL BOX
Masonic Hall Extension,
New York, N. Y.
C. P. KNOWLES, ArchitectSPECIAL CAST BRONZE
MAIL BOX
Down-town Building
McKIM, MEAD & WHITE,
Architects

NO. 1165 MAIL BOX



ACTUAL APPEARANCE
OF OUR APPARATUS
ERECTED ON A SOLID
WALL

Note absence of back-
ground and locking de-
vices.



ACTUAL APPEARANCE OF OUR APPARATUS ERECTED ON A
COMBINATION OF MARBLE AND WIRE-GLASS
ELEVATOR FRONT

INSTALLA- TION.

We are prepared to execute orders anywhere in the world. We usually send our own mechanics to make installations, but our chutes are so simple and directions so complete that any ordinary workman can install them.

PRICES.

No fixed price can be given, but must be made in accordance with style of box, finish, height of floors, etc. We are always glad to furnish estimates. Owing to simplified form of construction and method of installation our prices are much lower than those of any other hinged-front chute, and are as low, and often lower, than those of other makes that have to be taken apart. We build only one type of chute—the best; but if cheapness in price is desired we can furnish the “Security” chute in such a finish and with such receiving boxes as to enable us to make very low quotations, still furnishing the highest and finest type of apparatus known.

SPECIFICA- TION.

Prepare the building to receive the Mail Chute System as located on plans by cutting openings $4\frac{1}{2}$ " x 10" in each floor through which the chute will pass. Furnish and erect the “Security” Mail Chute and Letter Box complete, ready for collections, as manufactured by the U. S. MAIL CHUTE EQUIPMENT COMPANY, of St. Louis, Mo., erected on steel angles and made to swing open on hinges; hinges, locks, levers, etc., concealed. The entire system to comply in every respect with the latest postal laws and regulations governing mail chutes and receiving boxes.

REFERENCES.

The “Security” Mail Chute is in successful operation in practically every city from Boston to San Francisco and St. Paul to New Orleans.

UNITED STATES CHANGEABLE SIGN COMPANY

Manufacturers of Building Directories

3 West Twenty-Ninth Street

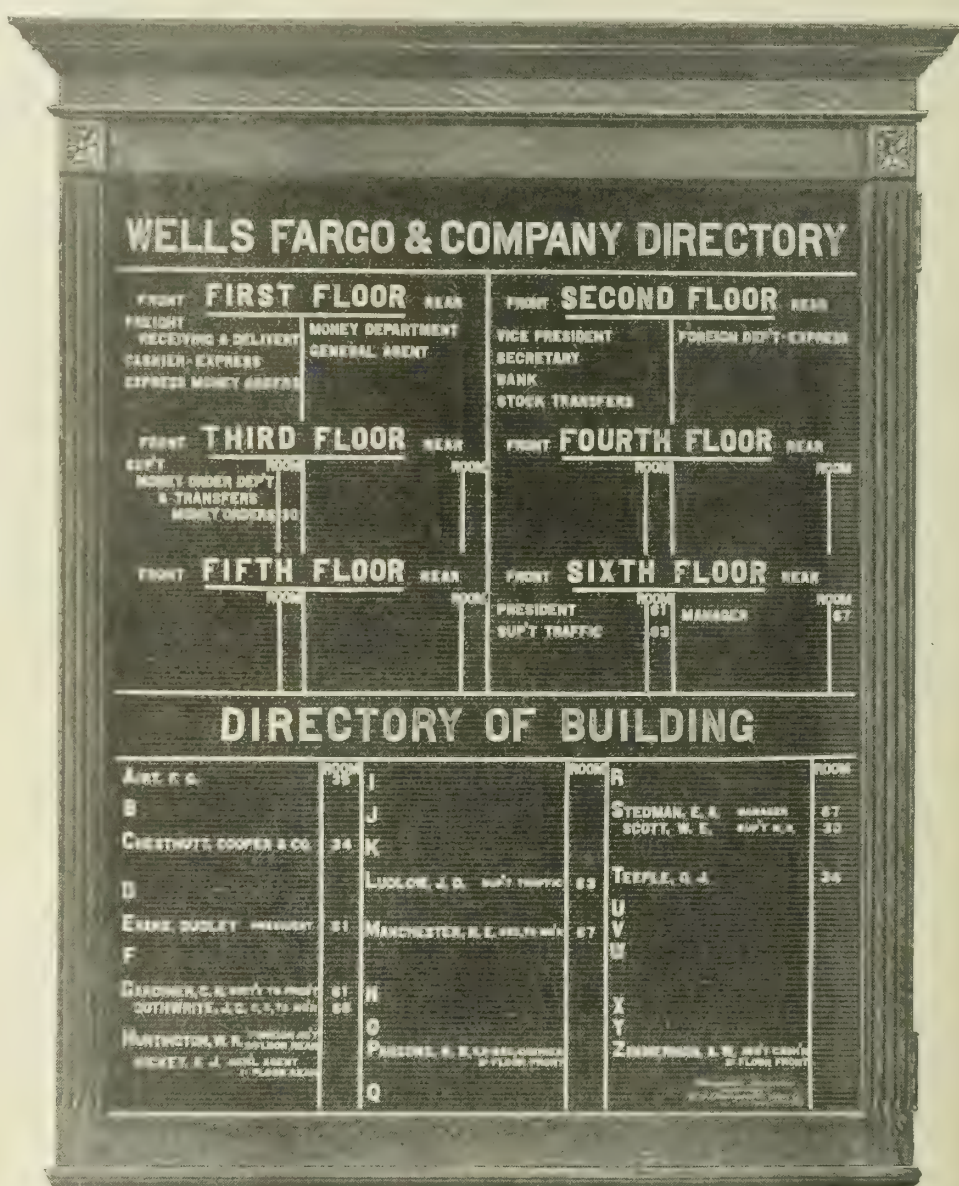
NEW YORK, N. Y.

PRODUCTS.

DIRECTORIES for OFFICE BUILDINGS, ROSTERS for Clubs, ANNOUNCEMENT BOARDS for Hotels, TIME-TABLES for Tourist Agencies or Railroads, and BULLETINS for every need.

SUGGESTED USES.

These Directories are particularly suitable for the following uses: apartments, brokerage lists (firm specialties and quotations), churches and Sunday-schools, city halls, clubs (list of officers and members), dry-goods stores (special sales), fire departments (calls, stations), golf clubs (officers, members, handicaps), hospitals (ward nurses, doctors, and lectures); hotels (steamship sailings, theaters, announcements), insurance-rate lists, office buildings, police-department bulletins (day's instructions), public buildings, public schools (lecture rooms), railroad bulletins (time-tables of special trains, stop-over points, rates of fare), real-estate offices (lists of property for rent or sale), rosters (clubs, regiments, etc.), salesmen's competitive bulletins, steamship announcements (tours, sailings), steamship bulletins (log announcements, concerts, wireless reports), stock boards (quotations), telephone numbers, theater bulletins, tourist offices (special railroad and steamship excursions).



STYLE A DIRECTORY

Quartered Oak, cabinet finished, best double-thick glass in door. Size $37\frac{3}{4} \times 52\frac{1}{2}$. Letters used $\frac{1}{2}$, $\frac{3}{4}$, 1, and $1\frac{1}{2}$ inch

steamship announcements (tours, sailings), steamship bulletins (log announcements, concerts, wireless reports), stock boards (quotations), telephone numbers, theater bulletins, tourist offices (special railroad and steamship excursions).

PRICES.

The following prices are for style A directory only. Prices on other stock will be found in catalogue, which will be sent on request.

Style of Frame	Grooved for Letters of Size	No. of Columns	Sight Size of Frames	Size Over All	Price F. O. B. New York	Style of Frame	Grooved for Letters of Size	No. of Columns	Sight Size of Frames	Size Over All	Price F. O. B. New York
50-NAME DIRECTORY						150-NAME DIRECTORY					
A	$\frac{1}{4}$ in.	2	22 x 30 in.	28 $\frac{3}{4}$ x 39 $\frac{1}{4}$ in.	\$45.75	A	$\frac{1}{4}$ in.	3	30 x 52 in.	38 $\frac{3}{4}$ x 62 $\frac{1}{4}$ in.	\$88.00
A	$\frac{1}{2}$ in.	2	24 x 36 in.	30 $\frac{3}{4}$ x 45 $\frac{1}{4}$ in.	50.00	A	$\frac{1}{2}$ in.	4	40 x 42 in.	49 $\frac{3}{4}$ x 52 $\frac{1}{4}$ in.	88.00
A	$\frac{3}{4}$ in.	2	30 x 42 in.	38 $\frac{3}{4}$ x 52 $\frac{1}{4}$ in.	60.00	A	$\frac{1}{2}$ in.	3	36 x 54 in.	44 $\frac{3}{4}$ x 64 $\frac{1}{4}$ in.	96.00
75-NAME DIRECTORY						A	$\frac{1}{2}$ in.	4	48 x 42 in.	57 $\frac{3}{4}$ x 53 $\frac{1}{4}$ in.	99.00
A	$\frac{1}{4}$ in.	2	22 x 36 in.	28 $\frac{1}{4}$ x 45 $\frac{1}{4}$ in.	\$50.00	A	$\frac{3}{4}$ in.	3	45 x 69 in.	54 $\frac{3}{4}$ x 80 $\frac{1}{4}$ in.	121.00
A	$\frac{1}{2}$ in.	2	26 x 48 in.	33 $\frac{3}{4}$ x 58 $\frac{1}{4}$ in.	61.00	A	$\frac{3}{4}$ in.	4	60 x 54 in.	*74 $\frac{3}{4}$ x 64 $\frac{1}{4}$ in.	165.00
A	$\frac{1}{2}$ in.	3	36 x 30 in.	44 $\frac{3}{4}$ x 40 $\frac{1}{4}$ in.	57.00	200-NAME DIRECTORY					
A	$\frac{1}{2}$ in.	2	30 x 48 in.	37 $\frac{3}{4}$ x 58 $\frac{1}{4}$ in.	64.00	A	$\frac{1}{4}$ in.	4	40 x 42 in.	49 $\frac{3}{4}$ x 52 $\frac{1}{4}$ in.	\$89.00
A	$\frac{3}{4}$ in.	3	45 x 42 in.	54 $\frac{3}{4}$ x 53 $\frac{1}{4}$ in.	95.00	A	$\frac{1}{4}$ in.	5	50 x 36 in.	59 $\frac{3}{4}$ x 46 $\frac{1}{4}$ in.	94.00
100-NAME DIRECTORY						A	$\frac{1}{2}$ in.	6	60 x 30 in.	69 $\frac{3}{4}$ x 40 $\frac{1}{4}$ in.	97.00
A	$\frac{1}{4}$ in.	2	24 x 45 in.	31 $\frac{3}{4}$ x 55 $\frac{1}{4}$ in.	\$58.00	A	$\frac{1}{2}$ in.	3	36 x 72 in.	45 $\frac{3}{4}$ x 83 $\frac{1}{4}$ in.	114.00
A	$\frac{1}{2}$ in.	3	30 x 36 in.	37 $\frac{3}{4}$ x 45 $\frac{1}{4}$ in.	56.00	A	$\frac{1}{2}$ in.	4	48 x 54 in.	57 $\frac{3}{4}$ x 64 $\frac{1}{4}$ in.	108.00
A	$\frac{1}{2}$ in.	2	27 x 54 in.	34 $\frac{3}{4}$ x 64 $\frac{1}{4}$ in.	66.00	A	$\frac{1}{2}$ in.	5	60 x 72 in.	*74 $\frac{3}{4}$ x 83 $\frac{1}{4}$ in.	204.00
A	$\frac{1}{2}$ in.	3	36 x 36 in.	44 $\frac{3}{4}$ x 46 $\frac{1}{4}$ in.	56.00	A	$\frac{1}{2}$ in.	6	72 x 36 in.	*87 x 46 $\frac{1}{4}$ in.	152.00
A	$\frac{1}{2}$ in.	4	48 x 30 in.	57 $\frac{3}{4}$ x 41 $\frac{1}{4}$ in.	60.00	A	$\frac{3}{4}$ in.	4	60 x 78 in.	*77 x 90 $\frac{1}{4}$ in.	215.00
A	$\frac{1}{2}$ in.	2	32 x 72 in.	41 $\frac{3}{4}$ x 84 $\frac{1}{4}$ in.	110.00	300-NAME DIRECTORY					
A	$\frac{3}{4}$ in.	3	45 x 54 in.	54 $\frac{3}{4}$ x 64 $\frac{1}{4}$ in.	105.00	A	$\frac{1}{4}$ in.	4	40 x 54 in.	49 $\frac{3}{4}$ x 64 $\frac{1}{4}$ in.	\$100.00
A	$\frac{3}{4}$ in.	4	60 x 39 in.	*75 x 49 $\frac{1}{4}$ in.	147.00	A	$\frac{1}{4}$ in.	5	50 x 48 in.	59 $\frac{3}{4}$ x 58 $\frac{1}{4}$ in.	105.00
125-NAME DIRECTORY						A	$\frac{1}{2}$ in.	6	60 x 42 in.	*75 x 52 $\frac{1}{4}$ in.	140.00
A	$\frac{1}{4}$ in.	2	24 x 48 in.	31 $\frac{3}{4}$ x 58 $\frac{1}{4}$ in.	\$80.00	A	$\frac{1}{2}$ in.	7	70 x 36 in.	*85 x 46 $\frac{1}{4}$ in.	140.00
A	$\frac{1}{2}$ in.	3	30 x 42 in.	37 $\frac{3}{4}$ x 52 $\frac{1}{4}$ in.	80.00	A	$\frac{1}{2}$ in.	4	48 x 78 in.	57 $\frac{3}{4}$ x 90 $\frac{1}{4}$ in.	132.00
A	$\frac{1}{2}$ in.	3	36 x 48 in.	44 $\frac{3}{4}$ x 58 $\frac{1}{4}$ in.	92.00	A	$\frac{1}{2}$ in.	5	60 x 60 in.	*77 x 71 $\frac{1}{4}$ in.	185.00
A	$\frac{1}{2}$ in.	4	48 x 36 in.	57 $\frac{3}{4}$ x 47 $\frac{1}{4}$ in.	94.00	A	$\frac{1}{2}$ in.	6	72 x 48 in.	*87 x 58 $\frac{1}{4}$ in.	173.00
A	$\frac{1}{2}$ in.	3	45 x 60 in.	54 $\frac{3}{4}$ x 71 $\frac{1}{4}$ in.	110.00	A	$\frac{1}{2}$ in.	7	84 x 36 in.	*101 x 46 $\frac{1}{4}$ in.	165.00
A	$\frac{3}{4}$ in.	4	60 x 45 in.	*74 $\frac{3}{4}$ x 55 $\frac{1}{4}$ in.	154.00	* Double doors					

SPECIAL DIRECTORIES.

Directories made to order from architects' plans and specifications, such directories carrying out the decorative scheme of the building. Frames will be made in any metal or wood required.

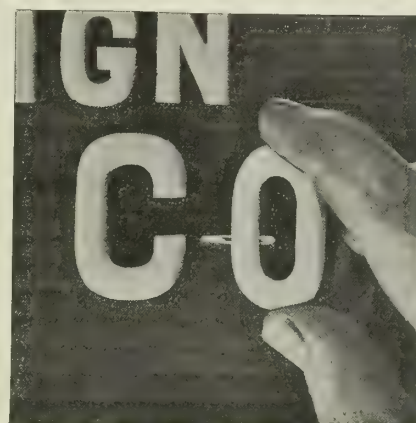
PRICES.

Prices include frame, patent backboard, enameled dividing-strips, best double-thick glass in door, and lock and key.

CHARACTERS, LETTERS, ETC.

The letters are composition of celluloid and other plastics. Springs are fastened in the composition so that the letters will never come loose with ordinary usage. When directories or bulletins are ordered under architect's specifications, the number of offices in the building should be stated, so that we may quote prices on the proper size of the frame and the number of letters needed for its equipment.

$\frac{1}{4}$ -in. Letters, \$4.00 per hundred
 $\frac{1}{2}$ -in. Letters, 5.00 per hundred
 $\frac{3}{4}$ -in. Letters, 6.00 per hundred



METHOD OF INSERTING LETTERS IN BACKBOARD

Spring on back of letter fits in broadcloth covered grooves

1-in. Letters, \$7.20 per hundred
1 $\frac{1}{2}$ -in. Letters, 10.50 per hundred

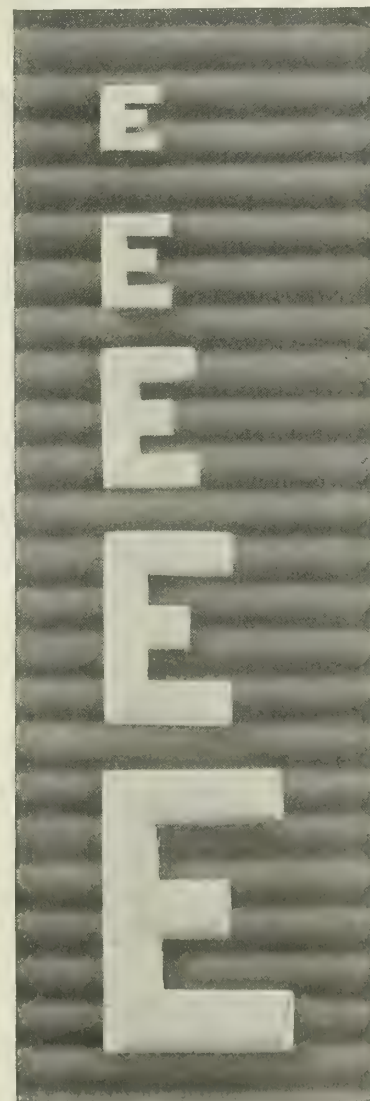
In the price-list, under the heading "Grooved for Letters of Size," any larger letters than the size designated may be used.

TERMS.

Our terms are net 30 days f. o. b. New York. On orders of over \$150 we allow two per cent discount for cash in ten days.

CO-OPERATIVE SERVICE.

Sketches will be submitted for Directories for special purposes. Our descriptive catalogue with full range of prices and sizes sent on request.



LETTERS (ACTUAL SIZE)

THE HAHL AUTOMATIC CLOCK CO.

SOLE MANUFACTURERS OF

The "Hahl" Pneumatic Clock System

103 Park Avenue
NEW YORK, N. Y.

2644-2648 North Maplewood Avenue
CHICAGO, ILL.

682 Howard Street
SAN FRANCISCO, CAL.

PRODUCTS.

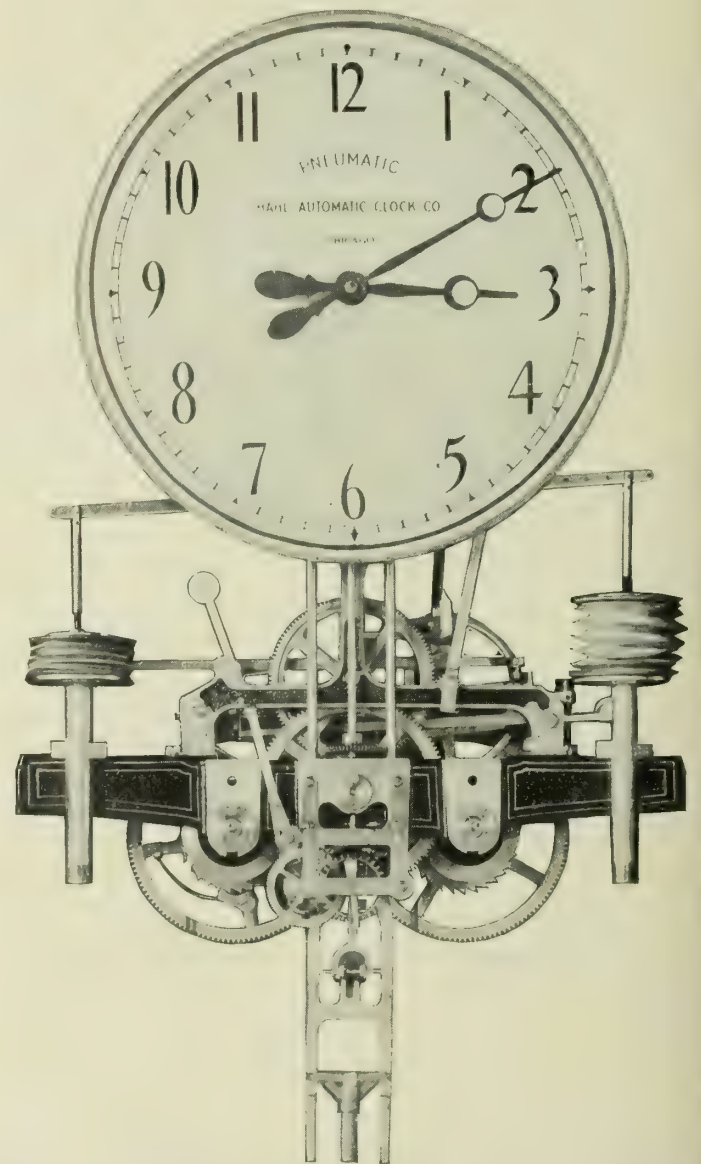
CLOCK SYSTEMS (PNEUMATIC), including MASTER CLOCK, SECONDARY CLOCKS and PROGRAM CLOCKS; SELF-WINDING ELECTRIC CLOCKS. STREET and TOWER CLOCKS built and connected with System.

THE SYSTEM.

Master Clock is operated by gravity. Time-train has self-compensating pendulum, beating seconds, propelled by spring, automatically wound every minute. Air impulse and release of air emanating from the pneumatic device within the clock controls and operates the secondary clocks without the aid of any auxiliary apparatus whatsoever. The air within the tubing is brought under slight pressure (1-inch water gauge) during one minute and is released by a valve in the master clock, remaining open the next minute, thereby allowing the air to regain its normal atmospheric pressure.

AIR CONDUITS.

One quarter inch wrought-iron pipe for mains, $\frac{1}{8}$ inch for branches. No return pipe. Start with two mains from location of master clock in systems over twelve clocks, each main feeding about one half of the clocks. Not over five clocks to be fed by $\frac{1}{8}$ -inch branch.



THE "HAHL" MASTER CLOCK

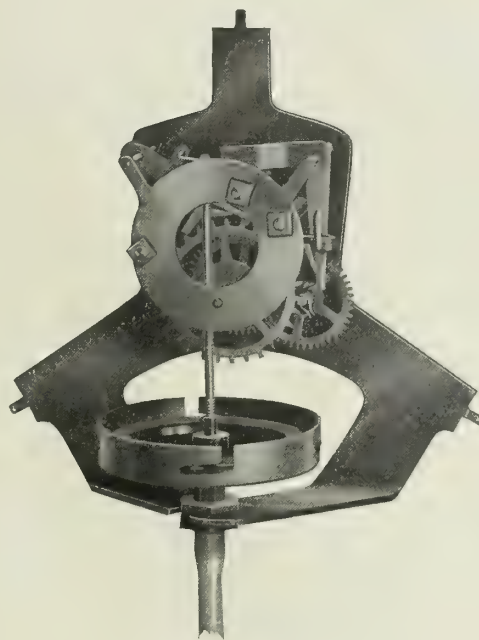
SECONDARY
CLOCKS.

The construction of these movements is extremely simple. The impulse of air furnished by the master clock moves the hands exactly one minute at a time. No possibility of moving them either more or less. The hands are perfectly balanced. Motion is elastic, without jerking and noiseless. These clocks are not disturbed by vibration, jarring or dust. Once connected, they are run, regulated and set from the master clock and require no attention whatsoever.



SECONDARY CLOCK

Marble Dial, with Bronze Bezel, Numerals
and Hands



SECONDARY CLOCK MOVEMENT

PROGRAM
CLOCKS.

Master Clock Program Apparatus. Program cylinder located within master-clock case is built up in sections of one program each. New sections may be added as required. Lugs upon face of cylinder make contacts for signals of required duration at one minute intervals. Signals eliminated automatically during hours and days not requiring signals.

Switchboard arranged for shifting bells to any of the programs, without affecting bell wiring or requiring the assistance of an expert.

CASES.

Illustrations of our standard cases will be mailed on request. We build cases and dials to order.

ADVANTAGES.

Motive powers employed being free atmosphere and gravity, the highest degree of reliability and accuracy is attained. Under our system the cost of operation as well as wire and battery troubles are eliminated.

REFERENCES.

Our system has been adopted by:

Marshall Field Co., Chicago, Ill.
Cook County Court House, Chicago, Ill.
State Capitol, Madison, Wis.
School Boards of Chicago, Ill., Kansas City, Mo., St.
Louis, Mo., and many others
U. S. Post Office, Atlanta, Ga.
First National Bank, Pittsburg, Pa.

State Normal School, Milwaukee, Wis.
High School, Covina, Cal.
High School, Richmond, Ind.
High School, Beatrice, Neb.
County Court House, San Jose, Cal.
People's Gas Building, Chicago, Ill.

THE E. HOWARD CLOCK CO.

373 Washington Street

BOSTON, MASS.

TELEPHONE, MAIN 643

NEW YORK OFFICE: 67 MAIDEN LANE
TELEPHONE, 3148 JOHN

CHICAGO OFFICE: 103 STATE STREET
TELEPHONE CONNECTION

PRODUCTS.

Manufacturers of CLOCKS: TOWER CLOCKS, all sizes, with or without striking apparatus, for one or more dials; WATCHMEN'S CLOCKS to record the faithful or unfaithful performance of duty; ELECTRIC CLOCK SYSTEMS for public buildings or municipal use; PROGRAM CLOCKS, for ringing bells at stated periods; MARINE and SHIP BELL CLOCKS; ASTRONOMICAL CLOCKS for Observatories; WESTMINSTER CHIMING CLOCKS; GATE, LODGE, and STABLE CLOCKS; SPECIALLY DESIGNED CLOCKS from ARCHITECTS' DRAWINGS; HALL CLOCKS, LIBRARY, SCHOOL, BANK and OFFICE CLOCKS, and SIDEWALK and BRACKET CLOCKS.

Also, Agents for the HOWARD EMPLOYEES' TIME RECORDERS.

DESCRIPTION AND MATERIALS.

Our clocks are made of the highest grade materials, the wheels of hard hammered brass with teeth accurately cut, and arbors and pinions of best open-hearth steel. The escapements are the Graham Dead Beat or the Denison Gravity. The frame and supports are of cast-iron and bearings of bronze metal. The striking part is a repeater, making it impossible for the clock to strike wrong. A simple device disconnects the dial works from the main clock, so that the hands can readily be set from the inside of the tower. The pendulum rod is of wood, or of iron compensated with zinc. Clocks may be made to strike the halves and quarters of the hour, either on the same or on different bells from those on which the hours are struck.

DIALS.

Dials may be of fine marble or onyx; of metal finished in gold, silver, and bronze; of glass, or of carved wood, and are always in harmony with, and appropriate to, the design and surroundings. Figures on dials may be painted on or made in metal and attached. They may be finished in gold or oxidized silver, various bronzes or steel blue.

GUARANTEE.

We warrant our clocks to be first-class in every respect and free from all original defects, for five years.

INSTALLATION.

We contract for these clocks delivered and put up if desired—In fact we prefer to put up our clocks, having experienced men trained to superintend and assist in performing the work. We do not furnish dials or weights, and do no carpenter work, unless by special contract. The usual weights are small stones, gravel or sand, enclosed in a wooden box.

In arranging the plans of a building with reference to an outside clock, errors are frequently made in size and style of dials. It is well to have them of proper size, the old established rule being that "the diameter of the dial should not be less than a tenth of the height of its center from the ground."



MEMORIAL CLOCK

This Clock was furnished by us for Brown University,
Providence, R. I.
GUY LOWELL, Architect

ILLUMINATED
DIALS.

We recommend that all dials for illumination over 36 inches in diameter be made with skeleton iron frame. The advantages of such construction are:

First—Should any one section of the glass become broken it can be replaced at small cost, and any accident that would break a section would, of course, if a whole plate had been used, destroy the entire dial.

Second—When figures are painted on the glass or fastened to it with cement they are quite short lived, because storms and extremes of heat and cold soon wear them off; and when they are fastened on by drilling holes in the glass the glass is very materially weakened and will break much easier. On our sectional dials when figures and hands need repainting it is only necessary to remove one or more of the section glasses.

Inasmuch as patterns of skeleton frames for sectional illuminated dials are an item of great expense, we carry stock patterns only for dials that advance in sizes by multiples of six inches, commencing at 3 feet 6 inches diameter. Therefore it is advisable to arrange the openings in tower walls intended for dials with this fact in mind.

AUTOMATIC
ILLUMINATION
REGULATORS.

We make in several sizes Automatic Illumination Regulators, for governing gas jets or electric lights; the time for lighting and extinguishing being made adjustable to conform to the varying hours of darkness.

ACCURATE
AND LONG-
LIVED.

Our clocks do not vary more than twenty to thirty seconds in a month. A first-class clock, properly made, will last fifty years with little or no expense. Lawrence Hall Tower, at Toronto, Canada, has a clock made by us that has been running for sixty years and is still in excellent condition.

CO-OPERATIVE
SERVICE.

Conditions and circumstances are so wide and varied that the majority of our clocks are built entirely to order, so that the peculiar conditions prevalent in the sections where the clock is to be erected are completely mastered. We are ready at all times to conform to the ideas of the purchaser, blending our experience with his desires, or submitting special designs to meet requirements.

PRICES.

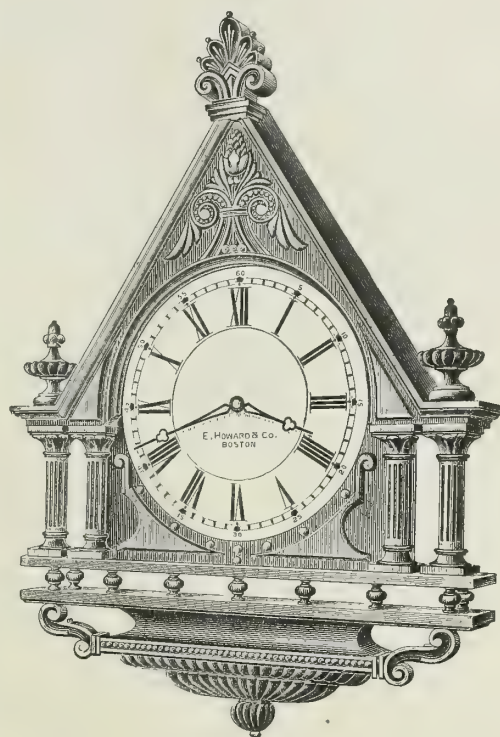
In view of the various conditions that must be met and overcome we can not give an intelligent estimate of the cost of a tower clock, until we know something of these conditions. We have prepared a question blank which any of our offices will supply upon application, that, when properly filled out, will enable us to give quickly and accurately the desired quotation.

Prices upon our regular line of clocks will be furnished upon request.

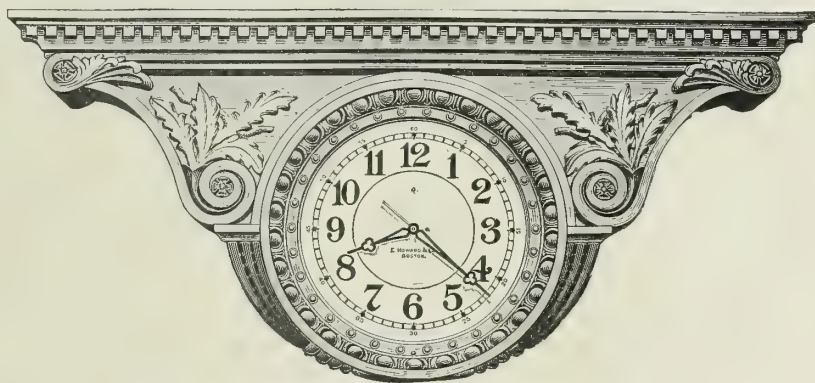
WHERE USED.

Thousands of our clocks are in use all over the United States, in municipal, public and private buildings. Among others, we supplied:

Geo. W. Vanderbilt's Mansion at Biltmore, a Tower Clock and twenty-two secondary Electric Clocks; the Prudential Insurance Company's Building, Newark, N. J., a Master Clock and thirty-six secondary Electric Clocks; the Lick Observatory's Astronomical Regulator; the New York Life Insurance Company's Building, New York, a four-dial Tower Clock and secondary Electric Clocks throughout the Building; the Union Depot and Ferry House, San Francisco, one of the largest four-dial Tower Clocks in the United States.



CLOCK NO. 63, FOR CHURCH OR CHAPEL



CLOCK NO. 141, FOR GALLERIES, BANK VAULTS, ETC.

THE STANDARD ELECTRIC TIME CO.

MANUFACTURERS OF

“Standard” Electric Time Systems
WATERBURY, CONN.

BRANCH OFFICES

NEW YORK, 50 Church Street
BOSTON, 35 Congress Street

CHICAGO, Monadnock Building
SAN FRANCISCO

PRODUCTS.

The “STANDARD” ELECTRIC TIME SYSTEM, including ELECTRIC SELF-WINDING REGULATORS or MASTER CLOCKS, ELECTRIC SECONDARY CLOCKS, PROGRAM CLOCKS, TOWER CLOCKS, STREET CLOCKS, TIME STAMPS and SYNCHRONIZERS for keeping other makes of clocks in perfect unison with our Time System, and various types of kindred equipment.

“STANDARD”
ELECTRIC
TIME
SYSTEM.

In this System control is centralized in a Master Clock so well made and compensated as to be just as accurate as can be desired. The other clocks or apparatus in the System must equal in accuracy the Master Clock and must agree with each other.

The “Standard” Electric Time System will therefore furnish uniform and accurate time in every room of a school, factory, hotel, public building or institution, and will embrace groups of buildings as readily as one, in an effective Time Plant for the whole.

Anything and everything which measures time may be incorporated in our System and kept uniform, even to the blowing of the whistle. Details are given in bulletin S-32.

MASTER
CLOCK.

The Master Clock or Regulator is the source of time for the whole Plant or System whether the clocks are few or many, or whether they are part clocks and part bells, gongs, time stamps, whistle valves, tower clocks or street clocks, etc.

Master Clocks are furnished with heavy metal ball or mercury compensating pendulum; usually sixty-beat type.

PROGRAM
CLOCKS.

A Program Clock is used wherever automatic time-signals are required, as for change of classes in schools, starting and stopping work periods, despatching cars, etc. The mechanism is controlled by the Master Clock and may be in the same or in a separate case. It will sound with absolute accuracy any code of signals that can be given by hand, doing the work unerringly and saving the care and forethought necessary for manual operation.

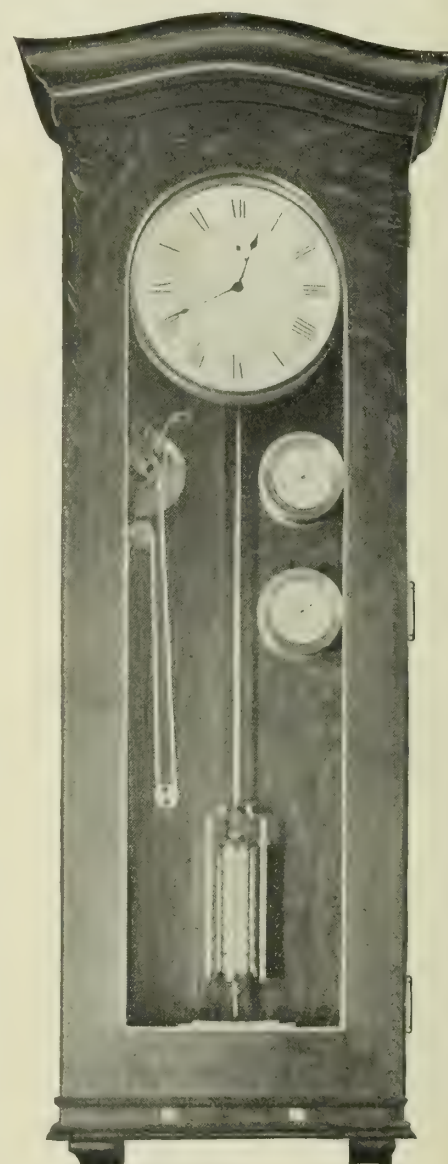
SECONDARY
CLOCKS.

The “Standard” Electric Secondary Clocks are located wherever time is required, and can be placed at the most advantageous points for observation without regard to their accessibility.

Dials vary as desired from four inches to ten feet in diameter, and are made in several regular styles and sizes; but special designs are frequently worked out in wood, bronze, iron, or different marbles. Clock cases are made according to engineers' or architects' designs, if preferred to any of the numerous regular patterns, and they are made fume, dust, or moisture proof, to order.

“Standard” Secondary Clocks require no winding, oiling or cleaning. They do not run down and are not affected by changes of temperature or vibration. They are made right, inside and outside—first-class in every way, and adapted to every use.

A few types are shown on next page.



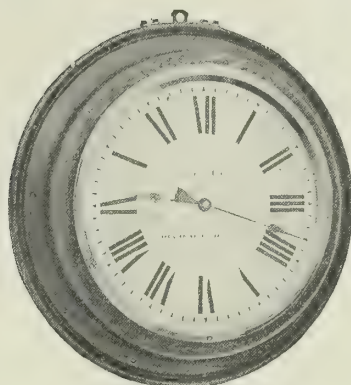
NO. 40. MASTER CLOCK, WITH
PROGRAM CLOCK IN SAME CASE
Sixty-beat compensating pendulum



Architect's Special Design for Banks or Public Buildings



Wood Case



Wood Case, Round Type



Marble Dial

A FEW "STANDARD" ELECTRIC SECONDARY-CLOCK DESIGNS

TOWER CLOCKS.

"Standard" Tower Clocks require less care than any other type in use. Being operated by an electric motor they deliver ample power to the hands—far more than any weight-driven clock—and are not stopped by snow or ice storms. They require very little space for the movement. The source of time is the Master Regulator.

SYNCHRONIZERS.

Synchronizing attachments can be placed on employees' time registers, winding clocks or other timing devices, thus bringing them into unison with the precise Master Clock.

TIME STAMPS.

Time Stamps can be no more accurate than the clocks operating them, and if different clocks run different stamps no two will be in unison. Any number of electric time stamps, whether one or one hundred, can be operated with the utmost precision from a "Standard" Master Clock. Furthermore, they will run in synchronism and without winding.

ADVANTAGES.

The "Standard" Electric Time System is simple, automatic in action, economical, efficient and exact. Low voltage wires are the only connection between the different parts, so that the installation is not difficult and extensions are easy.

Technical improvements in "Standard" equipment are the product of twenty-five years' experience; no pains or expense have been spared to produce the best in the field.

CO-OPERATION.

Wiring diagrams, special designs and estimates as to cost will be cheerfully furnished at any time. Do not hesitate to write for Catalogue S-32 and quotations.

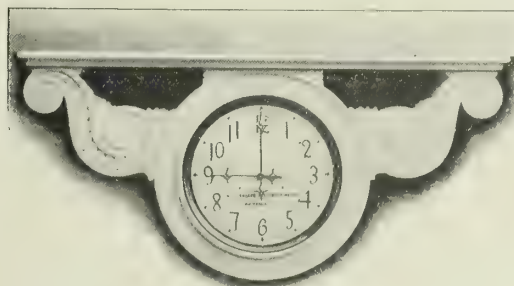
Engineers and Architects should feel free to call upon us for specifications intelligently covering a System to meet all conditions for any building or group of buildings.

GUARANTEE.

All of our apparatus is guaranteed for five years; batteries for one year.

REFERENCES.

The STANDARD ELECTRIC TIME CO. will furnish catalogues upon request, to all interested, together with list of hundreds of users of this equipment, if desired. The "Standard" Time Systems are extensively used by the Government, large buildings (public and private), clubs, stores, hotels, industrial works, etc. It is the service to be relied upon.



ORNAMENTAL DESIGN OF "STANDARD" ELECTRIC CLOCK

SETH THOMAS CLOCK COMPANY

ESTABLISHED 1813

70 Wabash Avenue
CHICAGO, ILL.15 Maiden Lane
NEW YORK, N. Y.6 Clerkenwell Road
LONDON, ENG.

FACTORIES: THOMASTON, CONN.

PRODUCTS.

Manufacturers of CLOCKS and WATCHES; TOWER CLOCKS of every description for Public Buildings, Churches, Factories, Schools, Private Estates, etc.; MARBLE DIAL CLOCKS for Banks, Libraries, Halls, etc.; MARINE CHRONOMETERS and SHIPS' BELL CLOCKS for Marine Service and Engine-Rooms; HOUSE CLOCKS for every purpose; REGULATORS and CALENDAR CLOCKS for Offices, Hotels, Stables, etc.; SIDEWALK and BRACKET CLOCKS; PRECISION CLOCKS for Observatories, and SPECIALLY DESIGNED CLOCKS. Also, complete line of High-Grade WATCHES of many sizes and styles.

TOWER CLOCKS.

They are always made to order to suit the requirements of the buildings in which they are to be placed. There are seldom two made exactly alike and costing the same. It is impossible to issue a price-list and we must have a description of your wants before submitting an estimate.

PROVISION FOR TOWER CLOCKS.

Upon request we will gladly mail our Tower-Clock Catalogue No. 642, which illustrates many styles, gives dimensions and weights, and shows plans of installing clocks with and without bells; also, gives many useful suggestions which are most valuable to the architect when drawing plans for a building in which a clock is to be installed.

INFORMATION.

We shall be pleased to enter into correspondence with any one contemplating purchasing a clock, using our ninety-six years' experience to assist the buyer to secure a clock which shall be best suited for his purpose. The size and cost of a Tower Clock depends chiefly on the size, number, and nature (wood, glass, iron, or stone, etc.) of the dials, and the weight of the bell or bells, if a striking clock is desired.

ADAPTABILITY.

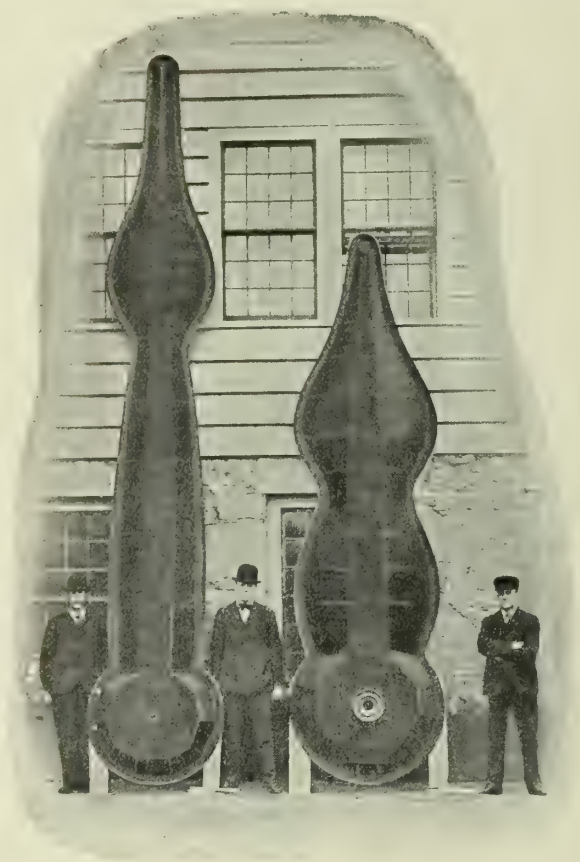
The enormous production of so many styles of timepieces allows us to satisfy every conceivable demand.

FACILITIES.

A large factory, equipped with modern automatic machinery, employing skilled mechanics, enables us to fill every order accurately and promptly.

WHERE THEY ARE INSTALLED.

Many thousands of our clocks are being used throughout the world, demonstrating our ability to serve you.



HANDS OF THE LARGEST CLOCK IN THE WORLD
Manufactured by the SETH THOMAS CLOCK Co., for
Colgate & Co., Jersey City, N. J.
Diameter of dial, 40 feet

KEWAUNEE MANUFACTURING CO.

Manufacturers of Laboratory Furniture

KEWAUNEE, WIS.

PRODUCTS.

We make all kinds of high-grade LABORATORY FURNITURE for Physics, Chemistry, Biology, Physiography; also, MANUAL TRAINING BENCHES.

DESCRIPTION.

Our designs are the results of close study of the needs of the modern laboratory, supplemented with valuable suggestions from teachers. We supply all plumbing fixtures and pipes complete. We put black acid-proof finish on chemical desks and it can be put on biological tables, if desired. Each piece of furniture is set up complete in the factory and inspected before packing.

FACILITIES.

Our manufacturing facilities consist of factory buildings with 30,000 feet of floor space, a modern equipment of wood and metal working machinery, dry-kiln capacity of 40,000 feet of lumber and the services of skilled cabinet makers trained in this special work.

CONSTRUCTION.

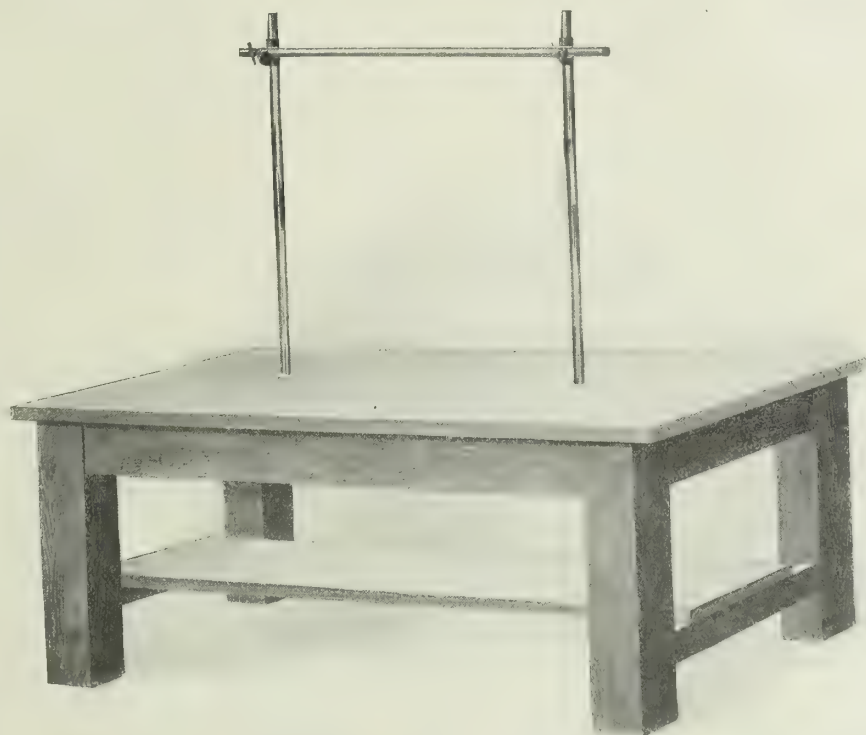
Special attention is given to securing great strength, solidity and permanency. We specially refer to the construction of table tops, for which we use maple or birch strips of 2-inch stock. This wood is thoroughly dried, cut in strips of 2 to 4 inches wide and 2 inches thick, matched, glued and dressed to $1\frac{3}{4}$ inches thickness. Oak, ash and elm, all hard and durable woods, are used in building our furniture.



CONSTRUCTION OF TABLE TOP

PHYSICAL LABORATORY TABLE.

This table, with its massive proportions and absence of iron in its construction, is recommended for electrical laboratories. The shelf underneath is convenient for the temporary storage of instruments or for holding batteries. The vertical rods can be supplied in any length, brass or iron, plain or graduated. The construction of this table is the best we can give and its durability has been proved by constant service. We make another physical laboratory table similar to this, except that it has in addition liberal drawer space and electrical connections. This table can be supplied without the large drawers, or it can have



PHYSICS LABORATORY TABLE

lower drawers and cupboards in place of the large drawers if desired. Two nickel-plated flush diamond H receptacles and plugs are attached to the end rails for electrical connections.

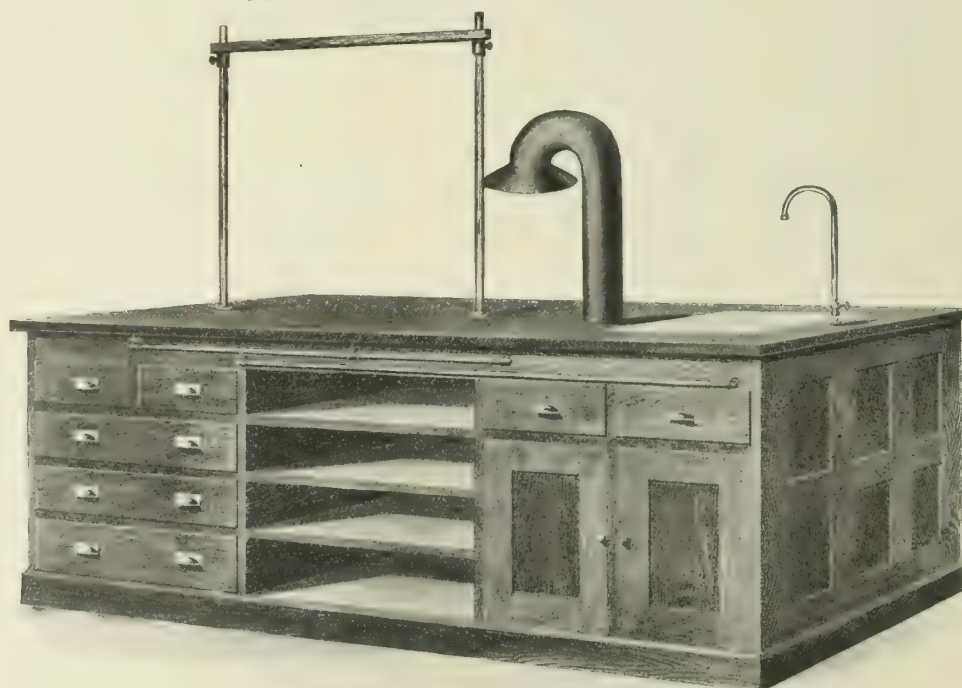


STUDENTS' CHEMICAL DESK

STUDENTS'
CHEMICAL
DESK.

This desk, twelve feet long, is made with open plumbing and trough, and is rapidly receiving favor as is shown by its installation in many laboratories. The gas and water pipes, with convenient outlets, are placed under the lowest shelf and directly over the trough. The trough is lead-lined and slopes from the middle toward the two end sinks. Above each sink is placed a standard water faucet with suitable thread for attaching a filter pump, and these faucets also supply as liberal a flow of water as may be desired. It accommodates sixteen students working in sections of eight. Special lengths of over twelve feet long will be made to order at proportionate prices.

When ordered with locks we supply a high-grade master-keyed lock in sets of two, both alike, of which no two sets are alike. Each desk has thirty-two locks or sixteen sets. Master-key to pass all locks is supplied for the instructor.

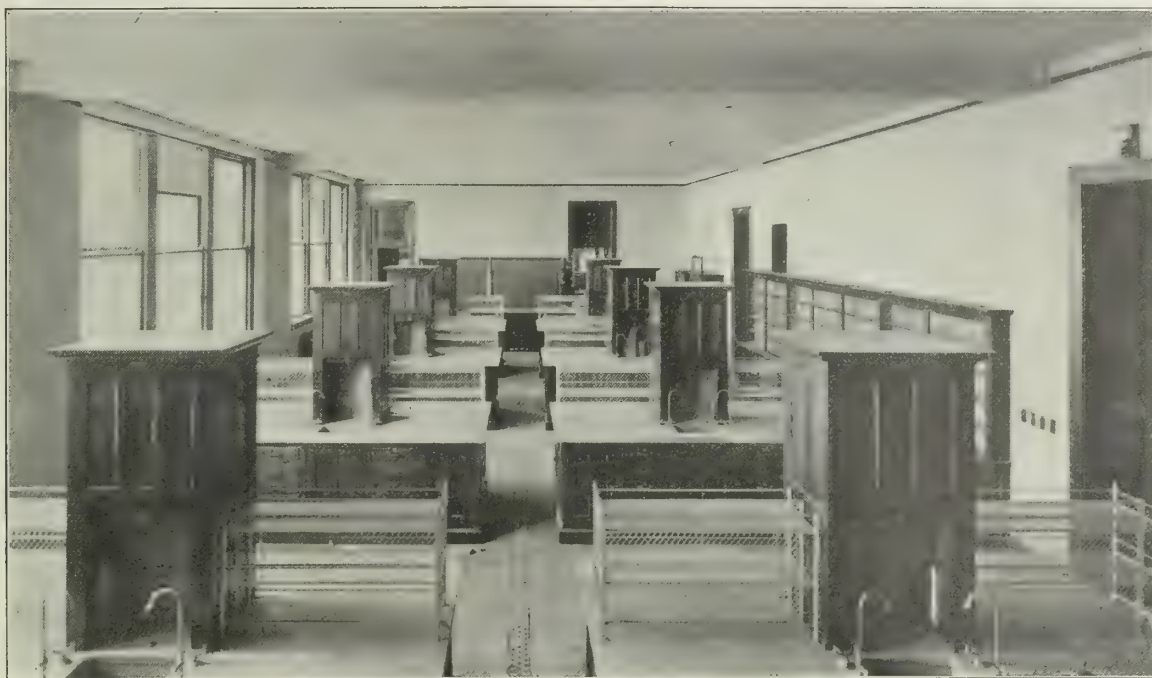


INSTRUCTOR'S DESK

INSTRUCTOR'S
DESK.

The design and construction of this desk are highly recommended. Although an instructor's desk is frequently of special design we find that this desk meets the requirements of the

majority of our customers. Various conveniences can be installed on the desk, such as gas, hot and cold water, direct ventilation, electrical connections, adjustable supports, air blast, steam, or anything of a similar character that may be desired.



CHEMICAL LABORATORY OF HIGH SCHOOL, BATTLE CREEK, MICH.

TYPICAL
INSTALLA-
TION.

We have installed our furniture and equipment in some of the most prominent educational institutions in the country. The accompanying illustration of the Battle Creek, Mich., High School is typical of our installations and gives a clear idea of a perfectly equipped laboratory. It is given prominence to show architects a complete installation as a sample of our work.

CO-OPERATIVE
SERVICE.

We offer our services to architects interested in laboratory furnishing, and place at their disposal our blue-prints, and will also assist in any way we can in the installation of our furniture.

PRICES AND
TERMS.

Our prices are reasonable for good products and our terms are all f. o. b. factory.



PHYSICS LABORATORY TABLE

THE S. & W. SPECIALTY COMPANY

MANUFACTURERS OF

"S. & W." Sanitary Medicine Closets, Toilet-Paper Holders, Fireplace Specialties
1520 Sansom Street
PHILADELPHIA, PA.

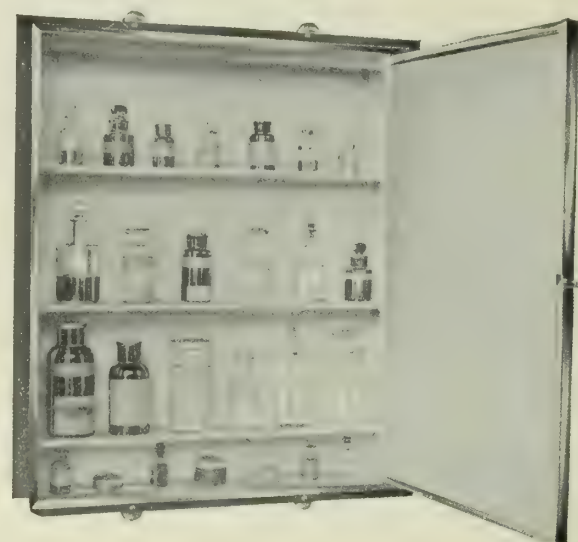
PRODUCTS.

"S. & W." SANITARY MEDICINE CHESTS; "S. & W." TOILET-PAPER HOLDERS;
"S. & W." ARCH BARS and DAMPERS; "S. & W." ASH DUMPS; SLIDING SPARK ARRESTERS,
and other patented specialties.



"S. & W." SANITARY MEDICINE CLOSET

Has every appearance of being a mirror and part of the room



"S. & W." SANITARY MEDICINE CLOSET, OPEN
Showing the Closet and Storage Capacity

"S. & W." SANITARY MEDICINE CLOSET.

The body of the "S. & W." Sanitary Medicine Closet, which is set into the wall, is made of cast-iron, porcelain-enameled on the interior.

The corners are all made to a radius, hence there are no crevices or seams, making cleaning easy. The shelves are of opal glass and made stationary on brackets or placed on adjustable pins. The French plate mirror front is fitted into a small nickel frame which is the door, and being part of the closet is set on pivot hinges, thus showing a uniform frame.

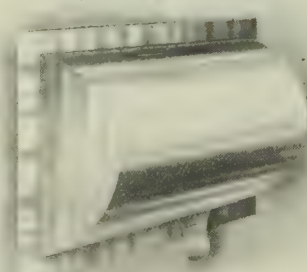
No. of Closet	SIZES OF MEDICINE CLOSET			
	Wall space, Inches	Depth, Inches	Mirror, Inches	Bevel, Inches
No. 1	29½ x 24½	4½	27 x 22	1½
No. 2	24½ x 29½	4½	22 x 27	1½
No. 3	34½ x 29½	4½	31½ x 28	1½
No. 4	29½ x 34½	4½	28 x 31½	1½
No. 5	21 x 25	4½	19 x 23	1½
No. 6	25 x 21	4½	23 x 19	1½

ADVANTAGES.

The closet has the advantages of being commodious and sanitary in every respect without disfiguring the lines of the room. When closed, one would not know there was anything behind the mirror.

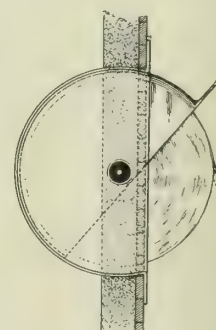


Open



Closed

"S. & W." TOILET-PAPER HOLDER



Sectional View

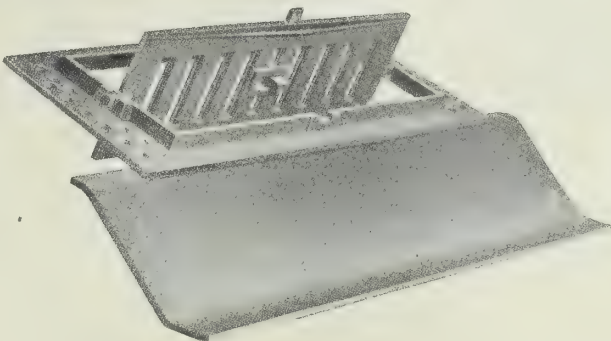
“S. & W.”
SANITARY
TOILET-PAPER
HOLDER.

The “S. & W.” Sanitary Toilet-Paper Holder is designed to meet the popular demand for sanitary and slightly bathroom fixtures and is so constructed as to be sunk into the wall, leaving but little projection in the room. The pivoted cover keeps the roll of paper from sight when not in use, and at the same time keeps the paper free from dust and germs and in a perfectly sanitary condition.

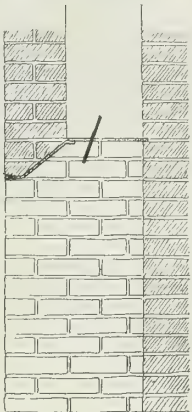
FINISH. Finished in nickel-plate, silver-plate, bronze, brass and the various oxidized effects, as desired, to match the plumbing or hardware fixtures, and built of the best materials and thorough workmanship; all of which have given our specialties their national reputation.

“S. & W.”
ARCH BARS
AND DAMPERS.

This is a combination Arch Bar and Damper for fireplaces to provide a contrivance obviating all the complicated mason work required to build a proper chimney arch and smoke throat. As a rule these brick throats are badly formed, making the fireplace smoky and often useless. Our device furnishes an iron ledge and hood on which to build the arch and its backing, thus securing the proper form and results.



“S. & W.” COMBINED ARCH BAR AND DAMPER



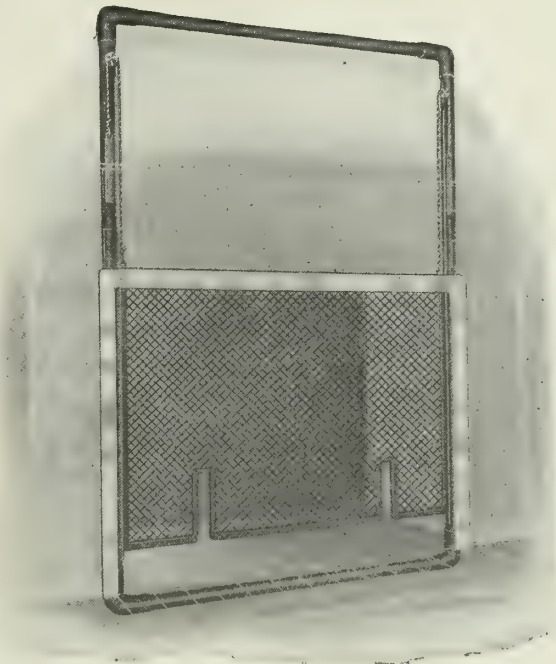
ARCH BAR AND
DAMPER IN
CHIMNEY
Sectional View

In addition it provides a pivot-and-slide damper which affords full regulation of the draft and stops down-blasts in windy weather. The damper is easily worked with a poker.

SLIDING
SPARK
ARRESTERS.

For wood fires a Spark Arrester is a necessity, as the flying sparks jump at times into the room, burning the carpets and rugs, singeing the furniture and clothing, and not infrequently setting fire to the house. The portable screens in use are easily broken, misplaced, and do not really cover the fireplace.

For these reasons our fixture should be a welcome improvement. It is permanent in character and concealed; the screen is hung to a pipe frame with chain and weights behind the tile front, and slides up and down like a window. The plan and view given explain the idea fully. The screen has a strong wrought-iron bar-frame and is filled with stout brass wire-netting. Guaranteed to operate easily and to be built to last.



PHANTOM VIEW OF SLIDING SPARK ARRESTER

PRICES,
CATALOGUE,
ETC.

Prices and catalogue covering these and other fireplace specialties promptly sent upon request. We respectfully solicit your inquiries.

TERRITORY.

We execute contracts anywhere in the United States.

REFERENCES.

Our sanitary specialties have been specified by architects for many of the finest hotels, apartment houses and residences recently built.

There are 600 of the “S. & W.” Sanitary Medicine Closets installed in the Plaza Hotel, New York City, H. J. Hardenbergh, architect; also, 375 are installed in the Bellevue-Stratford Hotel, Philadelphia, Pa., W. D. & G. D. Hewitt, architects.

Among recently completed residences in which our Sanitary Specialties have been used we mention the following:

RESIDENCE	LOCATION	ARCHITECT	RESIDENCE	LOCATION	ARCHITECT
C. Hartman Kuhn	Rosemount, Pa.	Horace Trumbauer	Samuel Vauclain	Rosemount, Pa.	Duhring, Okie & Ziegler
Randall Morgan	Chestnut Hill, Pa.	Mantel Fielding	Geo. W. Elkins	Asbourne, Pa.	Horace Trumbauer
Mrs. Paul Mills	Radnor, Pa.	Horace Trumbauer	A. J. Cassatt	Dalesford, Pa.	H. A. Dempwolf
W. C. Dull	Harrisburg, Pa.	H. A. Dempwolf	Charlton Yarnall	Philadelphia, Pa.	Frank Miles Day

BERNSTEIN MANUFACTURING COMPANY

Hospital Furniture and Metallic Bedsteads

Third Street and Allegheny Avenue
PHILADELPHIA, PA.

PRODUCTS.

Manufacturers of HOSPITAL FURNITURE; DISINFECTORS for Bedding; STERILIZERS for Dressings, Water, Instruments, etc.; ASEPTIC STEEL and GLASS FURNITURE; METALLIC BEDSTEADS in a large variety of styles; MATTRESSES and PILLOWS; the "BERNSTEIN" DETACHABLE INSTITUTION BEDS; and LOCKERS for all purposes.

HOSPITAL FURNITURE.

We manufacture a complete line of hospital furniture, designed on strictly sanitary principles, and provided with every convenience and comfort for both the attendant and the patient.

CABINETS—This line includes Bedside, Instrument, Medicine and Dressing Cabinets made of steel and glass, in a variety of designs to suit all requirements.

CHAIRS—Rolling, Reclining and Rocking Chairs, Commode and Examination Chairs, etc., for hospital use.

TABLES—More than fifty patterns of Steel Tables for various uses in hospitals and institutions.



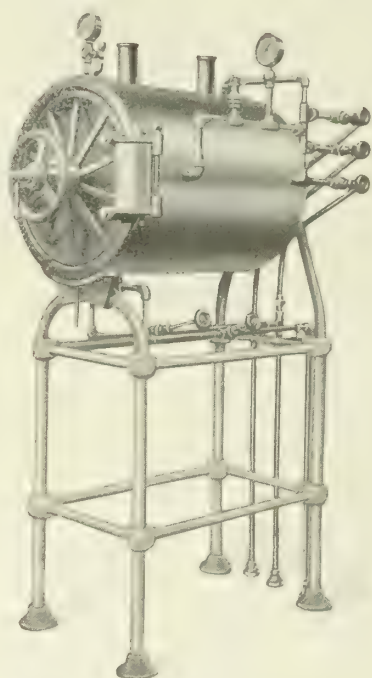
TRADE-MARK

STERILIZERS.

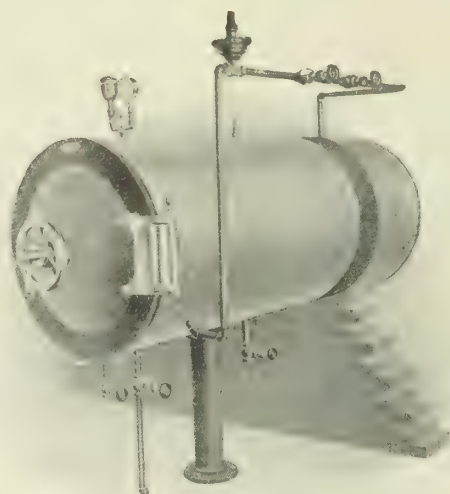
These are made for the sterilization of dressings, water, instruments and utensils. They are constructed in a workmanlike manner and will stand constant use.

DISINFECTORS.

Disinfectors should be built into a partition between two rooms; the goods to be disinfected are placed in the machine in the contaminated room, and removed from it to the room of purification. We can make to order, on short notice, disinfectors for any purpose and to any specifications.



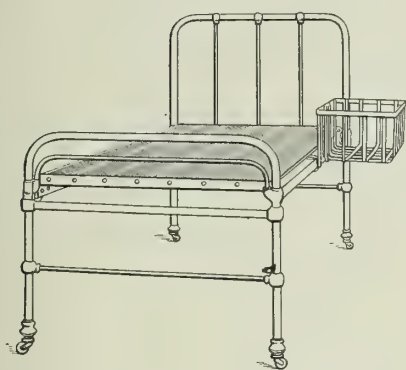
THE BERNSTEIN "IMPERIAL"
DRESSING STERILIZER



"BERNSTEIN" DISINFECTOR NO. 5



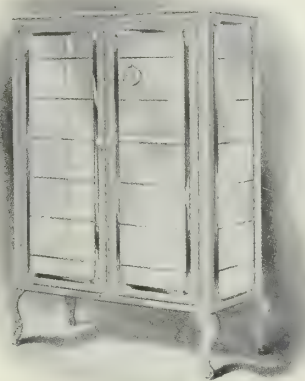
"BERNSTEIN" STEEL LOCKERS



"BERNSTEIN" SINGLE THREE-PIECE
HOSPITAL BEDSTEAD



"BERNSTEIN" STEEL TABLE



"BERNSTEIN" INSTRUMENT
CABINET

BEDSTEADS.

We make a specialty of the manufacture of Metallic Bedsteads, for both hospital and private uses. We are originators of the Three-Piece Bedstead, which is now imitated in many cheap and inferior so-called substitutes. The "Bernstein" attachment consists of a corner plate of cold-rolled steel chill-casted to each of the four posts; in this plate two hooks are stamped, which hooks engage two lugs at each end of the side rail. This device renders the bed perfectly steady, while at the same time it is easily assembled and taken apart.

Our line of Beds embraces Cots, Single Bedsteads, Ophthalmic and Obstetrical Bedsteads, Dormitory and Etherizing Bedsteads, Bedsteads for Epileptics, Canopy Bedsteads, Folding Steel Mantel Bedsteads, Ward Bedsteads, Cribs and Invalid Bedsteads for all cases. In addition to the line of bedsteads we manufacture a full line of Springs, Mattresses and Pillows, and various Bedstead Attachments such as Bassinets, Head-Rests, Basket Cribs, etc.

"Bernstein" Bedsteads are finished in enamel, brass, or enamel with brass trimmings.

LOCKERS.

We make a full line of Lockers for all purposes and to meet all possible requirements. Among the designs are lockers specially suited to gymnasiums, hospitals, clubs and industrial plants. Also metal closets for surgeons' and nurses' uses, and for general closet purposes. Our lockers can be made with either flat or sloping top; sizes not regularly carried in stock can be promptly made to order.

FACILITIES.

We manufacture our entire product from the foundation up, in our own factories, under personal supervision. Our facilities, which are second to none, enable us to execute the largest contracts with promptness and to give equal care to the smallest orders.

We give particular attention to the execution of specially designed Aseptic Hospital Supplies of every description to meet individual requirements. Our line has been on the market for twenty-seven years and large quantities of our specialties are in use in many of the prominent hospitals and institutions throughout the country, a list of which we will furnish on application.

CO-OPERATIVE SERVICE.

We furnish, when desired, blue-prints arranged from architects' designs, including drawings for the necessary plumbing and steam connections for the placing of sterilizers, disinfectors and other permanent fixtures.

DESCRIPTIVE CATALOGUE.

Our large catalogue, fully illustrating our entire line of hospital specialties, will be mailed upon application.

SPECIFICA- TION.

Architects will feel secure in serving the best interests of their clients when writing specifications for hospital and institution buildings by specifying supplies "to be furnished by the BERNSTEIN MANUFACTURING COMPANY, Philadelphia, Pa."

THE CELLU ENAMEL CO.

Manufacturers of Sanitary Specialties

Seventh and Pennsylvania Streets

CHESTER, PA.

PRODUCTS.

We are manufacturers of "CELLU ENAMEL."

DESCRIPTION AND QUALITY.

"Cellu Enamel" is a new Enameling Process to take the place of nickel plating on *metal* or *wooden* bathroom fixtures.

"Cellu Enamel" is perfectly white.

"Cellu Enamel" does not tarnish.

"Cellu Enamel" does not peel.

"Cellu Enamel" does not chip.

"Cellu Enamel" does not crack.

"Cellu Enamel" does not change color.

"Cellu Enamel" is alkali and acid proof.

"Cellu Enamel" is always clean and needs no polish.

It will stand hot or cold, fresh or salt water, and is absolutely germ-proof and sanitary in every respect.

It will outlast any other enamel on the market.

ADAPTABILITY. "Cellu Enamel" can be applied on Metal Fixtures, such as Traps, Basin Cocks, Supply Pipes, Stock Cocks, Standing Wastes, Overflow Gratings, Soap Cups, Towel Bars, Coat Hooks, Floats and Stems; and also on Wooden Tanks, Stools, Mirror Frames, Bathtub Seats, Closet Seats and Covers, Bath Cabinets Medicine Chests, and other articles for which a sanitary coating is absolutely necessary.

PRICES AND SAMPLES. Up-to-date architects and plumbers are requested to write for samples and prices, which will be gladly furnished, together with any other information desired regarding this product.

GUARANTEE. We guarantee our "Cellu Enamel" not to peel, crack, or craze; and that it is acid, alkali and germ proof.

KENSINGTON ENGINE WORKS CO.

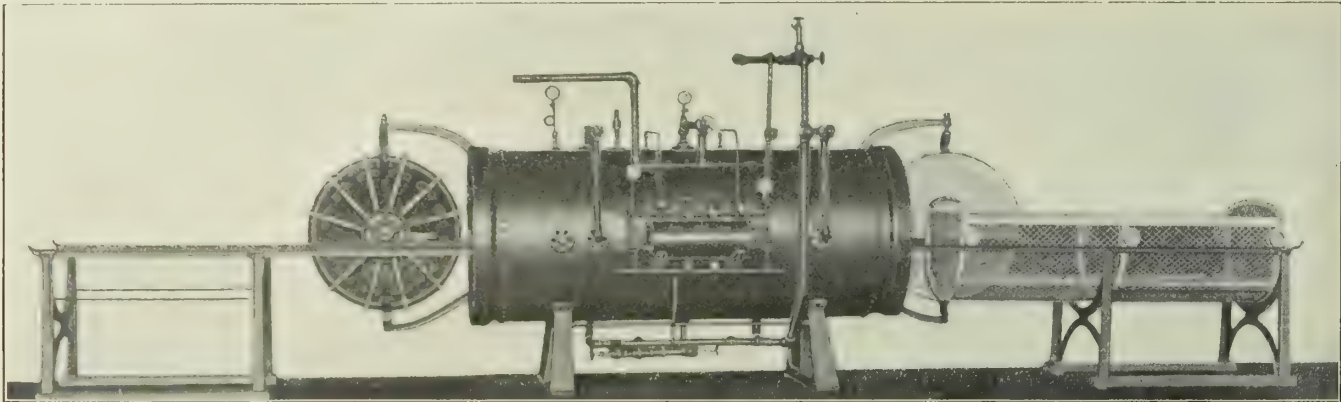
"Kinyoun-Francis" Disinfecting Machinery

Beach and East Berks Streets

PHILADELPHIA, PA.

PRODUCTS.

We manufacture the "KINYOUN-FRANCIS" DISINFECTING, STERILIZING, and FUMIGATING APPARATUS for Hospitals, Asylums, Boards of Health, and Quarantine Stations. JACKETED STEAM CHAMBERS, SULPHUR DIOXIDE FURNACES, PORTABLE and STATIONARY FORMALDEHYDE GENERATORS.



"KINYOUN-FRANCIS" DISINFECTING CHAMBER ERECTED FOR OPERATION
(Showing the Car and Track Supports and Formaldehyde Apparatus)

DESCRIPTION.

The wall separating the infected end from the disinfected end is placed in line with either saddle; the saddle is then built in the wall. It is preferable to have the working parts of the chamber in the disinfected end of the room. When the apparatus is to be used for the purpose of sterilizing only and no contagious diseases are to be provided against we recommend a chamber having but one door, thus economizing space and expense.

The saddles are made of sufficient area on the base so that no special provisions need be made for foundations.

ADVANTAGES.

"Kinyoun-Francis" Disinfecting Chambers have been designed under the supervision and at the direction of one of the most eminent surgeons of the United States Public Health and Marine Hospital Service, Walter Wyman Surgeon General, and are perfect in principle and design. Combining the Formaldehyde Apparatus with the steam chamber, as we do, gives the widest range of efficiency possible. The perfect design of the steam-circulating system makes it impossible to admit any but well saturated dry steam (not wet) into the chamber. "Kinyoun-Francis" Chambers will not wet or in any manner spoil the articles being disinfected; all other makes do.

EXPERIENCE.

"Kinyoun-Francis" Chambers have been in use years before other makes, and we, as manufacturers, have had the longest and widest experience.

REFERENCES.

About two hundred "Kinyoun-Francis" Chambers are in use in the United States. Some users are:

- United States Public Health and Marine Hospital Service

United States War Department

United States Navy Department

Board of Health, New York

Board of Health, Philadelphia

Board of Health, Pittsburg
- Ditmars & Brite, New York

Thompson-Starrett Co., New York

Clinton Mackenzie, New York, Architect

R. F. Almirall, New York, Architect

Philip H. Johnson, Philadelphia, Architect

A complete list of institutions furnished on request.

SPACE
OCCUPIED.

Size	A	B	C	D	E	F	Weight	Steam
34" O. D.	25' 0"	4' 0"	8' 4"	5' 6"	4' 4"	3' 0"	4,500 lbs.	1" diam.
40" O. D.	25' 0"	5' 0"	8' 7"	6' 6"	4' 6"	3' 0"	5,200 lbs.	1 1/4" diam.
56" O. D.	26' 0"	6' 8"	8' 7"	6' 8"	4' 6"	3' 2"	9,000 lbs.	1 1/4" diam.
60" O. D.	27' 0"	7' 0"	9' 6"	6' 10"	4' 6"	3' 2"	10,000 lbs.	1 1/2" diam.

NOTE—Lettered dimensions in above table refer to Space Diagram on page following.

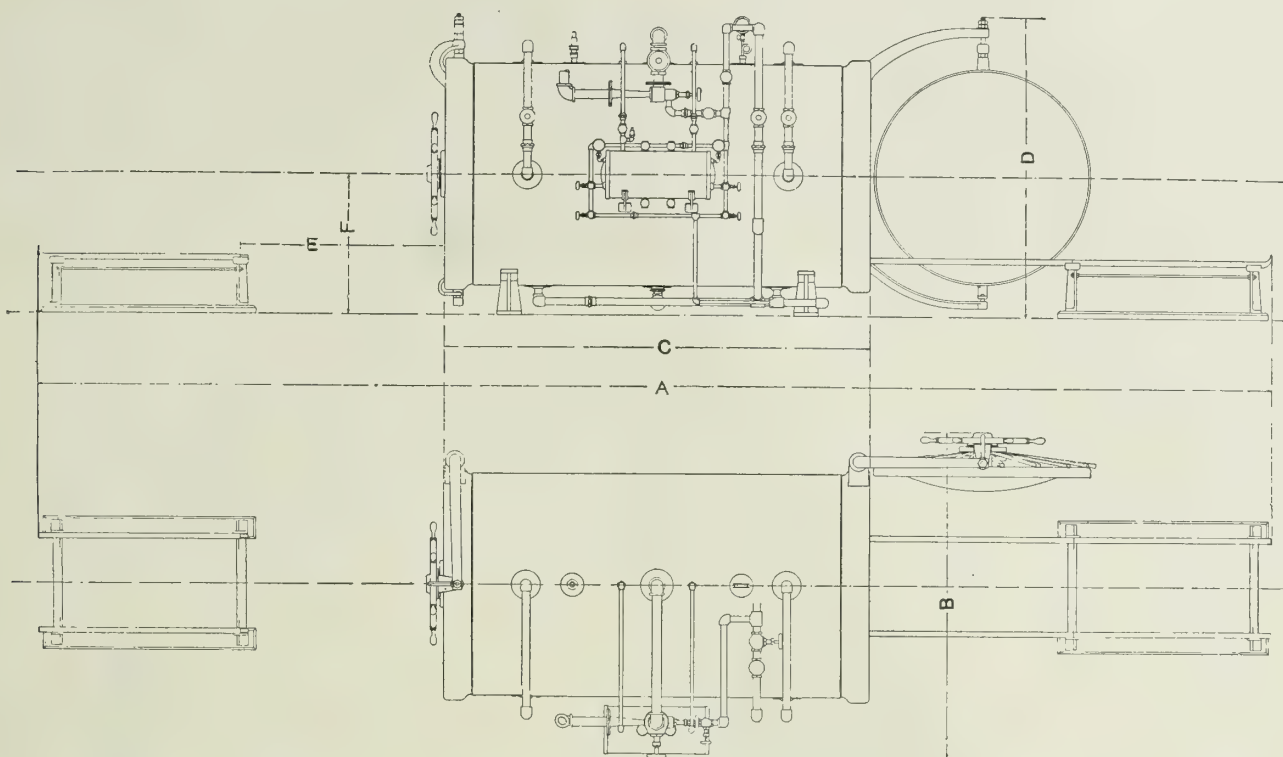


DIAGRAM OF SPACE REQUIRED FOR "KINYOUN-FRANCIS" CIRCULAR DISINFESTING CHAMBERS

SPECIFICATIONS FOR
"KINYOUN-FRANCIS"
CIRCULAR
DISINFESTING
CHAMBERS.

Chamber—To be of the circular jacketed type, 30" (40") (56") (60") outside diameter, 8' 4" (40 = 8' 7") (56" = 8' 7") (60" = 9' 6") long, face to face of end-frames, with a door at each end. The inside and outside shells of jacket to be constructed of open-hearth homogeneous steel, 5/16-inch thick, of an ultimate tensile strength of not less than 50,000 pounds per square inch of section. The shells to be separated and braced with 3/4-inch screw stay-bolts, spaced equally between rivets of end-frames. The end-frames to be close-grained cast-iron in one piece, free from blows or seams; to have a return flange, truly turned to engage arms of doors and to be faced with groove for gasket. The inner and outer shells to be securely riveted to end-frames, and all rivet holes may be punched or drilled, but in no case must drift-pins be used to bring holes fair. The flanges for pipe connections to be wrought-steel, bossed, riveted securely to shell, and where pipes pass through to inner chamber, to be tapped, expanded and caulked to make chamber entirely air-tight.

Doors—To be made of best homogeneous open-hearth flange steel, not less than 3/8-inch thick, dished to proper radius, with return flanges accurately faced to form an air-tight joint with gasket in end-frame of chamber. Each door to be provided with proper number of steel spring levers, arranged to be projected and retracted, so as to cause them to engage with flange on end-frames by a movement of partial rotation of a disc, to which the inner ends of levers are pivoted. The said disc to move upon a central threaded stem and limited in movement by a proper stop. A hand-wheel and nut, working on ball bearings, to be provided to force towards the door the inner ends of levers, and thereby cause the outer ends to engage with the flange on end-frame, fulcrums being provided on the door, causing it to be firmly and equally forced upon the gasket in end-frame of chamber. The doors to be carried on cast-steel hangers, supported by wrought-steel davit cranes, securely attached by cast-iron brackets to end-frames of chamber and carried on ball bearings. The doors to be arranged for proper adjustment and guided at bottom by lever arms attached to davit cranes. The chamber and doors to be carefully caulked and made air-tight, to enable a vacuum to be obtained and maintained; and to be painted inside with three coats of white enamel and outside with two coats of best iron paint.

Hood—The top of chamber to be fitted with a three-leaf hood of 16-ounce cold-rolled copper, supported by necessary number of iron bands.

Tracks—The inside of chamber to be provided with tracks for car, said tracks to have removable extensions provided at each end of chamber to fixed supports to enable doors to be opened and closed.

Saddles—Two suitable cast-iron saddles to be provided, upon which the chamber will be supported to working level.

Piping—The high-pressure steam to be led to an independent reducing-valve and thence to admission pipes at several points in jacket, while circulating pipes at points lead from jacket to inner chamber. Separate drains to lead from each system, so they can be connected to steam-trap or have free discharge as required. High-pressure steam to be led to air-exhauster of proper size for obtaining vacuum rapidly. Chamber to be provided with all necessary valves and fittings, including reducing-valve, air-exhauster, pressure and vacuum gauges, pop safety-valve set at 10 pounds, and brass-mounted angle thermometer, graduated from 100 degrees to 300 degrees Fahr., fitted to chamber by brass union and nipple, so as to be quickly attached and detached.

Car—To be of wrought-iron construction, 6' 10 1/2" long, the bottom of angles properly braced and carried by four cast-iron wheels, flanged. The ends of car to be angles, curved to suit, riveted to bottom angles and stayed at top by flats on which cypress strips are fastened, carrying bronze wardrobe hooks. The end-frames to carry wrought-iron removable trays formed of angle frames. These trays and bottom of car to be covered with galvanized screens, 3/8-inch wire, 1-inch mesh, bound by 1/2-inch and secured by clips. The car to be painted with three coats of white enamel paint.

Formaldehyde Apparatus—To consist of two retorts, one for Formalin and one for Ammonia. The Formalin Retort to be made of copper, with flange brazed thereon; of proper size for the capacity of the chamber; the cap of composition to be faced, finished and fastened to flange by bolts and nuts, with 3/8-inch rainbow gasket. To be fitted with 3-inch brass-case pressure gauge, brass filling funnel and valve, brass drainage-valve, brass pop safety-valve set at 80 pounds, and a copper steam-coil of ample size. The delivery pipe for the formaldehyde gas to be 3/8-inch brass, properly fitted with brass valves, and to be led to the interior of chamber. The side outlet from safety-valve to be piped with brass check-valve, so that any discharge of gas from overpressure will be delivered into the discharge pipe of air-exhauster. The Ammonia Retort to be made of high-grade casting of proper capacity and strength, the cap of same metal to be faced, finished and fastened to flange of retort by bolts and nuts, with 3/8-inch rainbow gasket. To be fitted with chemical pressure gauge, iron filling funnel and valve, iron drainage valve, and iron steam-coil of ample size. The delivery pipe for ammonia gas to be 3/8-inch iron, properly fitted with iron valve and to be led to interior of chamber. High pressure steam to be brought to the coils in retorts and condensation carried to drip system. The retorts to be cased with No. 18 Russia iron and supported on chamber by cast-iron brackets, and engraved plates, marked respectively "Formalin" and "Ammonia," to be fastened to casing opposite the proper retorts, to distinguish them.

McSHANE BELL FOUNDRY CO.

INCORPORATED

Bell Founders

BALTIMORE, MD.

ESTABLISHED 1856

OFFICE AND FOUNDRY
HOLLIDAY AND CENTRE STREETS

PRODUCTS.

Founders of CHURCH BELLS, CHIMES, PEAL and CHAPEL BELLS; FIRE-ALARM, COURT-HOUSE and TOWER-CLOCK BELLS; also, WESTMINSTER CLOCK CHIMES, SCHOOLHOUSE BELLS, FOG SIGNALS and SHIPS' BELLS and BELLS for general use.



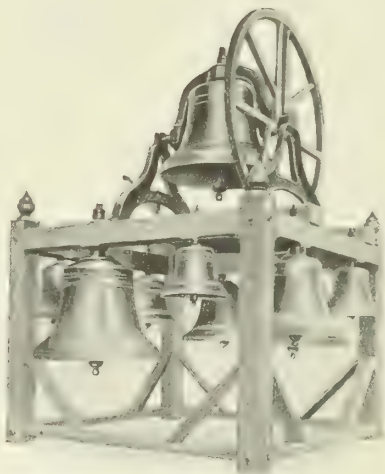
CHURCH BELL



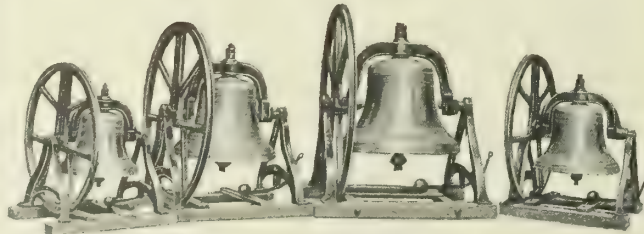
CHAPEL AND SCHOOL
BELL



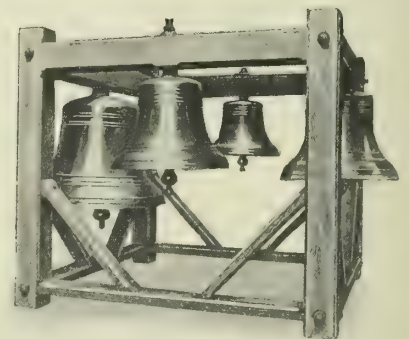
FIRE-ALARM AND COURT-
HOUSE BELL



CHIME BELLS



PEAL BELLS



WESTMINSTER CLOCK CHIMES

DESCRIPTION AND GUARANTEE.

We make exclusively genuine Bell-Metal Composition Bells which are fully warranted and guaranteed to be satisfactory. We ship bells to all parts of the world and have cast nearly 40,000 in a half century.

They can be installed by any first-class carpenter or contractor, full instructions being furnished for the purpose.

SUGGESTIONS
FOR CON-
STRUCTION
OF BELFRIES.

The best results are obtained when the floor of the bell deck is at least on a level with the comb of the roof of the building. Place the windows on a level with the belfry floor and a ceiling just above the top of the windows. See that the windows are as large and open as possible and if louvers are used see that they be pitched so as not to obstruct entirely the carrying of the tone.

The average church bell measures from three to five feet across the mouth. Make provisions for admission of bell.

APPROXIMATE
COST,
WEIGHT, AND
SPACE
REQUIRED.

Church bells cost approximately from \$300 to \$1,800 and weigh from 1,000 to 5,000 pounds.

Peals of bells cost approximately from \$800 to \$2,500, and weigh, together with the mountings, from two to ten tons.

The average full chime of bells weighs, with its frame-work, from five to ten tons and costs from \$3,000 to \$12,000. Chimes occupy a space of from twelve to fourteen feet square in the clear. In making plans it is well to allow a little extra space if possible.

Write for more detailed information. Catalogue sent on request.

REFERENCES.

Some of the Chimes we have furnished:

CHURCHES AND BUILDINGS	LOCATION	NUMBER OF BELLS
Trinity Methodist Episcopal Church	Montpelier, Vt.	10 bells
Congregational Church	Janesville, Wis.	10 bells
Second Presbyterian Church	Knoxville, Tenn.	10 bells
St. Paul's Church	Norwalk, Ohio	10 bells
St. Mary's Church	Delaware, Ohio	12 bells
St. Agnes' Church	Los Angeles, Cal.	12 bells
St. Luke's Church	Westboro, Mass.	10 bells
City Hall	Fall River, Mass.	11 bells
St. Lawrence's Church	New Bedford, Mass.	14 bells
Cathedral of Our Merciful Saviour	Faribault, Minn.	10 bells
St. Michael's Church	Stillwater, Minn.	10 bells
St. Michael and All Angels' Church	Anniston, Ala.	12 bells
St. Paul's Church	Key West, Fla.	10 bells
Trinity Church	Covington, Ky.	9 bells
First Baptist Church	Louisville, Ky.	10 bells
St. John's Church	Utica, N. Y.	10 bells
Episcopal Cathedral	Garden City, N. Y.	13 bells
St. Mary's Church	Brooklyn, N. Y.	13 bells
St. Michael's Church	Buffalo, N. Y.	8 bells
St. Michael's Church	Rochester, N. Y.	13 bells
St. Patrick's Church	Elizabeth, N. J.	10 bells
St. Mary's Church	Gloucester, N. J.	10 bells
Methodist Episcopal Church	Camden, N. J.	13 bells
St. Michael's Church	Newark, N. J.	10 bells
St. John's Church	Orange, N. J.	8 bells
St. Paul's Church	Reading, Pa.	9 bells
St. Paul's Church	Cheltenham, Pa.	10 bells
Trinity Church	Tamaqua, Pa.	9 bells
Holy Trinity Church	West Chester, Pa.	10 bells
Trinity Church	Rochester, Pa.	10 bells
St. Mary's Church	Wayne, Pa.	10 bells
Smith Memorial Church	Glen Mills, Pa.	10 bells
St. George's Church	Shenandoah, Pa.	10 bells
United Brethren Church	Chambersburg, Pa.	10 bells
St. Paul's Church	Vicksburg, Miss.	10 bells
St. Ann's Church	Detroit, Mich.	10 bells
Trinity Church	Detroit, Mich.	10 bells
St. Peter's Church	Danbury, Conn.	11 bells
St. Lawrence's Church	Portland, Me.	11 bells
Christ Church	Portsmouth, N. H.	9 bells
St. Paul's Church	Des Moines, Iowa	11 bells
St. James' Church	Chicago, Ill.	20 bells
Trinity Cathedral	Omaha, Neb.	10 bells
Cathedral	Kansas City, Mo.	11 bells
Green Methodist Episcopal Church	Roanoke, Va.	10 bells
Centenary Methodist Episcopal Church	Richmond, Va.	12 bells
St. Mary's Church	Providence, R. I.	10 bells
Reformed Church	Frederick, Md.	10 bells
St. Alphonsus' Church	Baltimore, Md.	15 bells
St. Vincent's Church	Baltimore, Md.	13 bells
Christ Church	Baltimore, Md.	13 bells
Methodist Episcopal Church	Wilmington, N. C.	10 bells
Central Presbyterian Church	Galt, Ont.	10 bells
Trivett Memorial Church	Exeter, Ont.	10 bells
St. George's Church	St. Catherine, Ontario, Can.	9 bells
Protestant Episcopal Church	Cornwall, Ont.	9 bells
St. Mary's Cathedral	Halifax, N. S.	8 bells
Cathedral	St. John, N. B.	10 bells

MENEELY BELL COMPANY

Manufacturers of Bells

177 Broadway
NEW YORK, N. Y.

22-26 River Street
TROY, N. Y.

PRODUCTS.

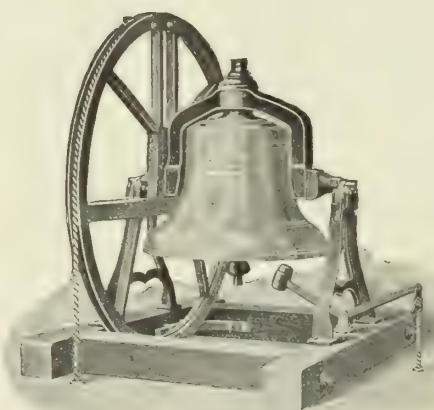
Manufacturers of BELLS: CHURCH, CHIME, PEAL, ANGELUS, SCHOOL, TOWER-CLOCK, WESTMINSTER, FIRE-ALARM, FOG-SIGNAL, SHIP, FARM, and other BELLS.

INSTALLATION.

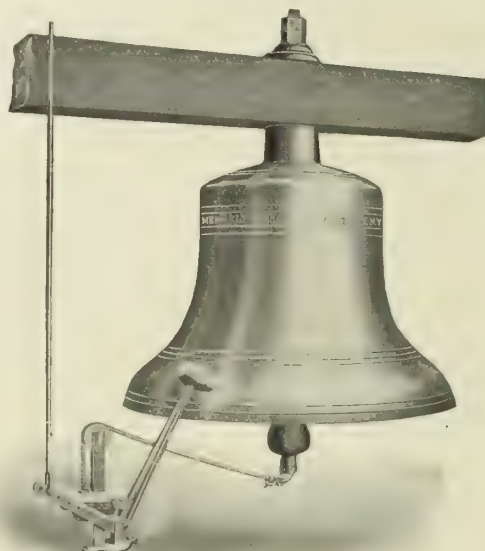
Our bells can be installed by local workmen, or we will undertake the erection of same in any part of the country.

ILLUSTRATIONS.

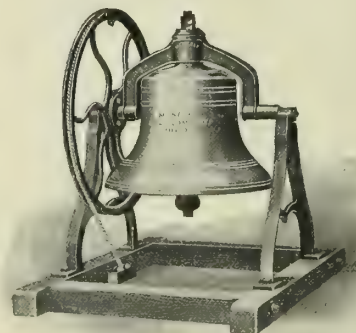
The following illustrations show a few of the principal bells that we manufacture.



CHURCH BELL



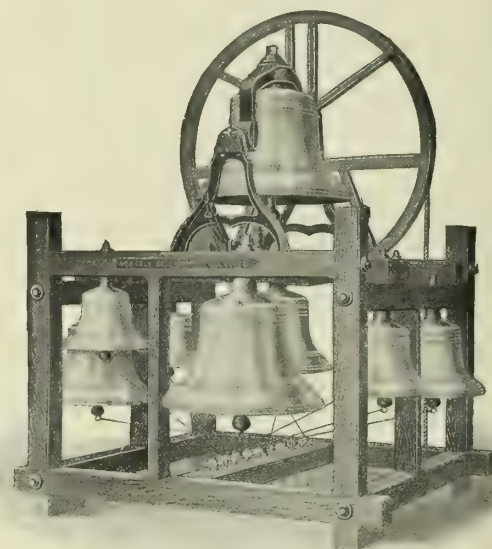
TOWER-CLOCK BELL



SCHOOL BELL



PEAL BELLS



CHIME BELLS

SUGGESTIONS FOR CONSTRUCTION OF BELFRIES.

Place bell deck level with the window sills and a wooden ceiling at window tops. Have windows as large and open as possible.

Make suitable provisions for admission of bell. Suburban churches sometimes procure bells measuring four or five feet across the mouth.

The height of a bell is seven eighths of the diameter at its mouth.

The average full chime of bells weighs, with its frame-work, from five to ten tons, and occupies a space from ten to twelve feet square, although if the occasion demands it is possible to get along with even less room.

Write us for more detailed information.

NOTABLE
INSTALLA-
TION.

The new sky-piercing fifty-story Metropolitan Life Insurance Tower is the tallest permanent structure in the world, and its belfry contains a gigantic peal of four bells made by the MENEELY BELL COMPANY. The largest bell is of 7,000 pounds pattern.

The splendid success achieved by the Metropolitan Bells, which are said to be twice as high above the street level as any other bells in the world, demonstrates anew the well-known law of sound that an instrument constructed strictly according to musical and mechanical rules has great carrying power, although not producing much noise near by. The tones of these bells carry for many miles and yet are listened to with pleasure by visitors to the Observatory Gallery, one story below the location of the bells. With almost equal distinctness they are heard in the street beneath, which many students of bell sounds thought would be impossible from such an extreme height, inasmuch as sound rises. To hear at close range these bells chiming the quarter hours is one of the features of "Seeing New York."

"THE NEW THING IN TOWN."

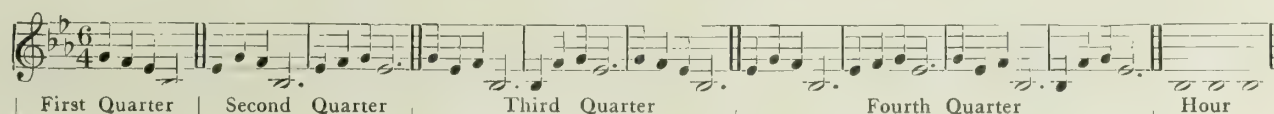
"Many of us have remarked, but not all of us have identified, a new and agreeable influence in the life of the city these several days past. Notes in part like a church chime and in part like the strokes of a great clock seemed to descend from the upper air, with a distinctness and yet a vagueness that did not readily associate itself with any quarter of the heavens. Only gradually are people awakening to the fact that the clock on the Metropolitan Life Tower has taken on itself to announce the time to multitudes remote from Madison Square, and that it marks with varying cadence the hour and its several quarters. We take it that this is really a service, and altogether a charming one. Most of what reaches the ear in this town comes under the head of noise. This is sound, mellow, liquid, haunting: a golden note that speaks to you in passing with an accent you may not resent. If it reminds you of the flight of time it yet suggests that what has gone with it was good while it lasted and that 'something beautiful has vanished.' There may be regrets in the burden of the message, but there are no exasperations in the manner of it."

—New York Evening Mail.



METROPOLITAN LIFE INSURANCE BUILDING,
NEW YORK

Arrow shows where the bells are located



THE CHIMING OF THE BELLS ON THE METROPOLITAN TOWER

NARRAGANSETT MACHINE COMPANY

Outfitters of Gymnasiums
PROVIDENCE, R. I.

PRODUCTS.

We make and install complete equipments for GYMNASIUMS and PLAYGROUNDS, including GYMNASTIC APPARATUS, RUNNING-TRACK, STEEL or WOOD LOCKERS and BOWLING-ALLEYS; also, LOCKERS for Factories, Schools, etc.

GYMNASIUM CONSTRUCTION.

To furnish information regarding gymnasium construction, we will send blue-prints, showing a section of plan of a typical gymnasium, giving the dimensions desirable for all gymnasiums and methods of constructing the running-track gallery, building the concave incline, etc.

ESTIMATES FOR GYMNASTIC APPARATUS.

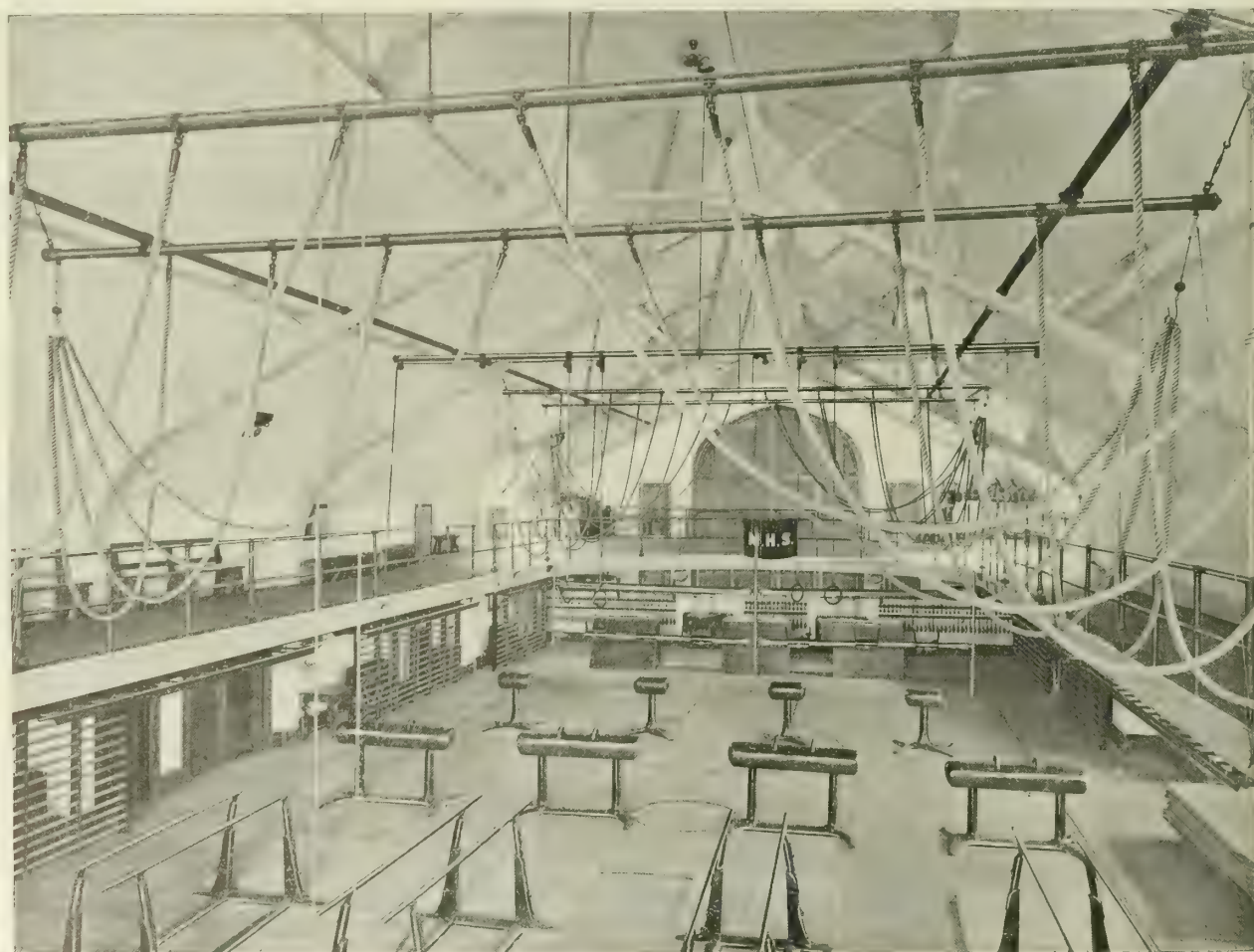
On receipt of plans and sections of a gymnasium we will prepare plans showing the location of each piece of apparatus, or the Running-Track, Lockers, or Bowling-Alleys, with itemized estimates ready for submission to committees, etc.

ESTIMATES FOR PLAYGROUND EQUIPMENT.

We furnish complete estimates for the equipment of playgrounds or out-door gymnasiums, including either wood or iron frames for the apparatus, swings, etc. If the order for apparatus is placed with us we will furnish plans and specifications for local contractors to build frames. We will contract to erect the apparatus, or furnish complete instructions for its erection, as desired.

CATALOGUES.

We publish catalogues of "Gymnasium Apparatus," "Playground Apparatus," "Lockers," and "Bowling-Alleys," any or all of which will be cheerfully furnished on request.



MORRIS HIGH SCHOOL (NEW YORK, N. Y.) GYMNASIUM
Equipped by the NARRAGANSETT MACHINE COMPANY

SPECIFICATIONS.

The following forms of specifications for architects are used by the United States War Department in equipping army post gymnasiums, and are recommended to architects to guard against substitution and consequently inferior apparatus.

"Standard" Gymnastic Apparatus, as made by the NARRAGANSETT MACHINE COMPANY.

"Standard" concave incline Running-Track, with either Roberts canvas and felt covering or linoleum covering, as made by the NARRAGANSETT MACHINE COMPANY.

"Standard" Regulation Bowling-Alleys, as made by the NARRAGANSETT MACHINE COMPANY.

INCLINED
RUNNING
TRACKS.

We furnish plans for the proper inclination of Running-Tracks and estimates for cork or canvas and felt coverings.

LOCKERS.

We make Lockers for shops, factories, schools, gymnasiums, etc.; of steel or wood, of standard sizes, with interchangeable parts, and carry them in stock ready for immediate delivery.

We furnish lockers arranged to connect with any system of ventilation, or with adjustable ventilating openings and expanded metal or perforated doors.

We call special attention to the strong, close-fitting, clean-cut, smooth finish of our new Standard Steel Locker Construction, as shown in the illustration below.

ESTIMATES.

We will submit plans showing the best arrangement of lockers in any given space, and give estimates for lockers erected ready for use.

PRICE-LIST
AND
STOCK SIZES.

STEEL LOCKERS

Double Tier, as shown in cut

Wide	Deep	High	With Padlock	Master- Keyed Lock	Combination Lock
12 in.	12 in.	36 in.	\$3.68	\$3.80	\$4.00
15 in.	12 in.	36 in.	3.96	4.08	4.28
12 in.	15 in.	36 in.	3.80	3.92	4.12
15 in.	15 in.	36 in.	4.08	4.20	4.40
12 in.	12 in.	42 in.	4.20	4.32	4.52
15 in.	15 in.	36 in.	4.08	4.20	4.40
12 in.	15 in.	42 in.	4.32	4.44	4.64
15 in.	15 in.	42 in.	4.68	4.80	5.00
Single Tier with Shelf					
12 in.	12 in.	72 in.	5.68	5.80	6.00
15 in.	12 in.	72 in.	6.28	6.40	6.60
12 in.	15 in.	72 in.	5.96	6.08	6.28
15 in.	15 in.	72 in.	6.56	6.68	6.88

We can furnish a combination lock for the same price as padlocks.

WOOD
LOCKERS.

WOOD LOCKERS

Double Tier

Wide	Deep	High	Master- Keyed Lock	Flat-Keyed Master-Keyed Lock	Combination Lock
12 in.	12 in.	36 in.	\$2.80	\$2.96	\$3.00
12 in.	12 in.	42 in.	3.20	3.36	3.40
12 in.	15 in.	42 in.	3.36	3.52	3.56
15 in.	15 in.	42 in.	3.60	3.76	3.80
Single Tier with Shelf					
12 in.	12 in.	60 in.	4.12	4.28	4.32
12 in.	15 in.	50 in.	4.40	4.56	4.60
15 in.	15 in.	60 in.	4.92	5.08	5.12

We can furnish a combination lock for the same price as master-keyed.



A STEEL LOCKER

THE STERLING ELLIOTT CO.

MANUFACTURERS OF

"Elliott's" Automobile Turntables

NEWTON, MASS.

PRODUCTS.

Manufacturers of "ELLIOTT'S" OIL-LESS STEEL-TOP AUTOMOBILE TURNTABLE and "ELLIOTT'S" WOOD-TOP BALL-BEARING AUTOMOBILE TURNTABLE.

DESCRIPTION.

"Elliott's" Oil-less Turntable is round, runs true, is fireproof, turns freely, is self-contained, and requires no oil.

ADVANTAGES.

"Elliott's" Oil-less Automobile Turntable will carry the heaviest cars. It may be easily turned by any one and securely locked in any position.



"ELLIOTT'S" OIL-LESS AUTOMOBILE TURNTABLE

Patent No. 885,842

TURNTABLE HISTORY AND EVOLUTION.

Mr. Elliott made, advertised, and sold the first Automobile Turntables ever placed on the market. In every instance those first tables are still in use.

As the length and weight of cars increased, and as many turntables were wanted for use above the ground floor, he found it necessary to make a larger, heavier, and better table; while he reduced the vertical thickness (i. e., the distance from top of foundation to top of table) to eleven inches.

DURABILITY.

A turntable, owing to its use and location, is peculiarly liable to suffer from lack of care. Its mechanism is under the floor, more or less dirty and hard to get at, and so "the man" lets it go as long as it will go. Having learned the above in that best of all schools the University of Hard Knocks, he planned the present table, which simply thrives on neglect. It needs no oil, and hence it is sure to get all it needs.

RESULTS.

We now make a steel-top table up to fifteen feet in diameter and weighing 6,200 pounds, upon which may be run a car weighing 5,000 pounds and having a wheel-base of 158 inches, the whole being readily turned around with the strength of one hand.

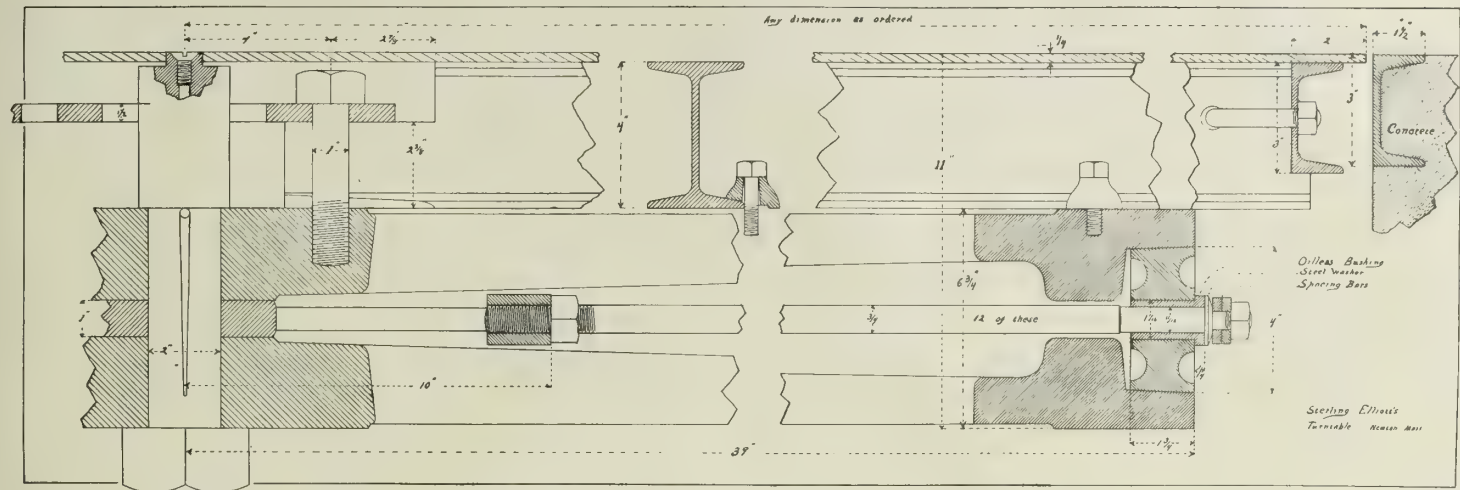
SPECIFICATION.

We furnish drawings and specifications for any class of foundations, so that the architect may incorporate one or more of these turntables in his plans with the assurance that the result will be in every way satisfactory.

Full particulars and detail drawings on application.

REFERENCES.

We refer to any high-class garage in New York City.



CROSS-SECTION OF WORKING PARTS, "ELLIOTT'S" OIL-LESS STEEL-TOP AUTOMOBILE TURNTABLE

OIL-LESS
STEEL-TOP
AUTOMOBILE
TURNTABLES.

"Elliott's" Oil-Less Steel-Top Automobile Turntable consists of two castings 6' 6" in diameter, each weighing 1,000 pounds. These heavy rings are accurately machined both top and bottom, as well as on the working surfaces. The weight is carried on twelve conical antifriction rolls having oil-less bushings, each secured adjustably to the steel truck frame. Our cheaper Wood-Top Tables are made with ball bearings.

The floor consists of a central circular steel plate fifty-seven inches in diameter surrounded by sixteen sections. (See cut on opposite page.) These floor-plates are accurately machined and the whole top surface is round and level and is supported on sixteen radial steel I-beams, the outer ends of which are connected by a three-inch steel channel ring. A similar channel ring is set in the concrete floor of the garage. (See above cut.)

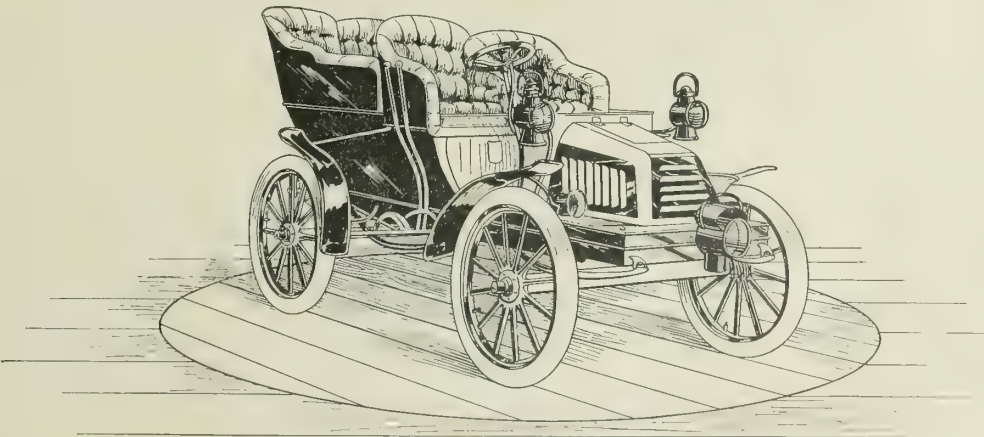
SIZES.

We furnish full instructions so that any builder can readily install either of these tables.

RELATIONSHIP OF WHEEL-BASE TO DIAMETER OF TURNTABLE				
Wheel-base (inches),	119	132	145	158
Turntable (feet),	12	13	14	15
About 6 1/2 inches allowed at each end for flattening of tires.				

WOOD-TOP
BALL-BEAR-
ING AUTO-
MOBILE
TURNTABLE.

The "Elliott" Wood-Top Ball-Bearing Automobile Turntable is specially recommended for buildings in which the floor is of wood, and where the non-absorbent steel top and fireproof qualities of our higher-priced tables are not considered necessary. We furnish the ball-bearing rings complete with full specifications and drawings, so that any carpenter can erect it. These rings are 72 inches in diameter, contain 175 one inch hardened steel balls, and weigh, complete, about 1,300 pounds.



"ELLIOTT'S" AUTOMOBILE TURNTABLE

LANSING WHEELBARROW CO.

Manufacturers of Automobile Turntables, etc.

LANSING, MICH.

BRANCH FACTORY
PARKIN, ARK.

STORES

CHICAGO, ILL., 175 East Lake Street
NEW YORK, N. Y., 102 North Moore Street
KANSAS CITY, MO., 923 Mulberry Street

MINNEAPOLIS, MINN., 125-127 First Avenue, South
PHILADELPHIA, PA., Willow and North American Streets
SAN FRANCISCO, CAL. 787-789 Folsom Street

PRODUCTS.

AUTOMOBILE TURNTABLES.



FIG. 1. THE "LANSING" AUTOMOBILE TURNTABLE IN POSITION IN THE FLOOR

It moves easily although loaded with the heaviest Automobile

DESCRIPTION.

The Turntable illustrated (Fig. 1) is made of three pieces of sheet steel and has a $2 \times 2 \times \frac{1}{4}$ -inch angle around the edge which is supported by eight ball-bearing rollers six inches in diameter, with $2\frac{3}{4}$ -inch faces. Eight diagonal braces $1\frac{1}{4}$ inch in size are secured to a steel pivot casting, as shown in Fig. 2.

A half-inch tube, closed at its upper end by a cap screw, is provided for lubricating the pivot. The table is ordinarily 12 feet 6 inches, and the pit in which it revolves is 12 feet 8 inches in diameter, but any size is made to order. The arrangement of the concrete foundation is also clearly shown (Fig. 2), but can be changed to suit conditions.

The wheels of the Turntable are turned and bored in a lathe, the edges of the rims are faced and the ends of the hubs also faced, so that the wheels run perfectly true. The axles of wheels are made of $\frac{3}{4}$ -inch round cold-rolled steel.

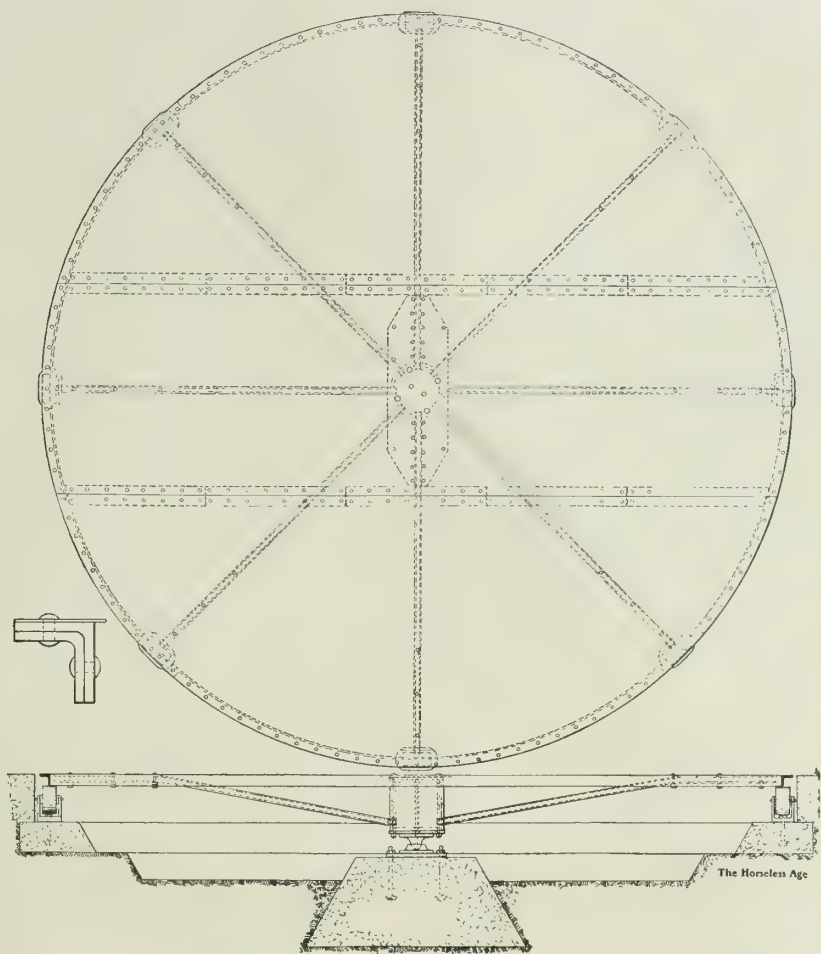


FIG. 2. PLAN AND SECTION OF THE "LANSING" AUTOMOBILE TURNTABLE

Ninety-five per cent of the load is carried upon the ball pivot which is below and exactly in the center of the table. This is set $\frac{5}{8}$ inch higher than the outside wheels, so that the table will have a slight tilt. Therefore the whole load, practically, is upon the pivot.

ADVANTAGES. Put a Turntable in your garage and you can *ride in* frontward. Turn the table around (it runs on ball bearings) and you are ready to *ride out* frontward. You never have to back your machine.

It saves time and trouble; avoids the risk of accidents due to driving out backward; removes the unpleasant chance of bowling some one over, or of running against the curb or into some other obstruction that might cause a more or less expensive smash-up.

BLUE-PRINTS. With every purchase of a "Lansing" Automobile Turntable a blue-print will be furnished from which any mason can construct the foundation upon which any one can place the turntable.

FOUNDATIONS. When a cement foundation is not practicable these turntables can be placed on any floor by the proper use of I-beams on which to rest them. Send for particulars.

S. F. BOWSER & COMPANY, INC.

MANUFACTURERS OF

Gasolene and Oil Storage Equipment

CABLE ADDRESS, "BOWTANK"

FORT WAYNE, IND.

REPRESENTATIVES IN ALL CITIES IN UNITED STATES AND CANADA AND CITY OF MEXICO, MEX.

BRANCH OFFICES

NEW YORK, N. Y., 50 Church Street
BOSTON, MASS., Oliver Building, 141 Milk Street
CHICAGO, ILL., 209-210 Fisher Building

PHILADELPHIA, PA., 1341 Arch Street
SAN FRANCISCO, CAL., 612 Howard Street
TORONTO, ONT., 66-68 Frazer Avenue

PRODUCTS.

OIL STORAGE SYSTEMS, GASOLENE STORAGE TANKS, SELF-MEASURING HAND, POWER and AUTOMATIC OIL and GASOLENE PUMPS, UNDERGROUND STORAGE TANKS, PORTABLE GASOLENE and LUBRICATING OIL TANKS, OIL STORAGE and DISTRIBUTING SYSTEMS for DRY CLEANING PLANTS, and SYSTEMS for STORING and HANDLING PAINT OILS.

EXPERIENCE.

In 1886 we began the manufacture and sale direct to the users, of steel tanks and pumps for handling gasolene and oils of every kind. We have had exceptional opportunities to study the nature of all liquids and the needs in equipment for handling them in a safe, economical and convenient manner. The result of this experience is the present Bowser Oil Storage System. The tanks are buried in the ground and the pumps may be located at any convenient point, where they deliver predetermined quantities without the use of funnels or measures.

ADAPTABILITY.

We have equipped buildings in most every line of industry, and have at our command a corps of capable engineers and salesmen who can present plans and estimates on any kind of a proposition which may confront the architect. Our systems particularly apply to the manufacturing plant, the garage, the wholesaler and retailer of oils and gasolene; also, the dry-cleaning and dyeing plants. In fact, in every building wherein oils are handled or stored our equipment may be used advantageously.

DESCRIPTION.

Our tanks are the standard in their class. They are made by the use of special machinery, and designed to meet the demands of modern engineering and the practical and physical conditions encountered. Our reputation will attest that tanks made in our plant are the best that can be manufactured. A rigid shop inspection guarantees a product of the highest grade and uniformity. The pumps are self-measuring, and are designed to meet the restrictions placed around the handling of oil by the Fire Boards and the Fire Underwriters. Our method of handling volatile and inflammable liquids is in use in every large city in the United States.

ADVANTAGES.

Proper storage of oils means first and most important, safety from fire and explosion. Second, a great saving as to waste, both from evaporation and the unavoidable losses where barrels, measures and funnels are used. Third, economy of time in handling. Fourth, convenience in having the oil delivered where it is needed. Fifth, economy of space, as a well regulated storage system cares for the oils in one tenth the floor space usually occupied.

PRICES.

The application is so varied that prices can not be quoted with any degree of satisfaction to the architect, but will be quoted promptly by local representative when the needs are understood.

SERVICES.

We submit plans and estimates to architects promptly, and furnish experienced men who will advise with them upon the requirements and lay out practical systems to take care of whatever situations confront them. We have offices or representatives in all large cities, who can serve the architect at an hour's notice—men who are fully informed as to the insurance and city ordinance conditions applicable to oil storage.

GUARANTEE.

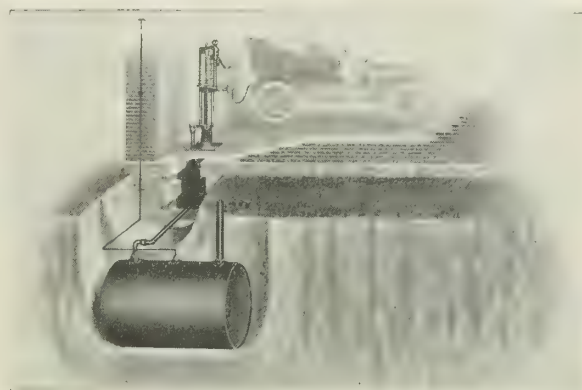
We install where desired, and we guarantee every outfit to be first-class in every respect and to perform properly the work for which it is recommended.

LITERATURE.

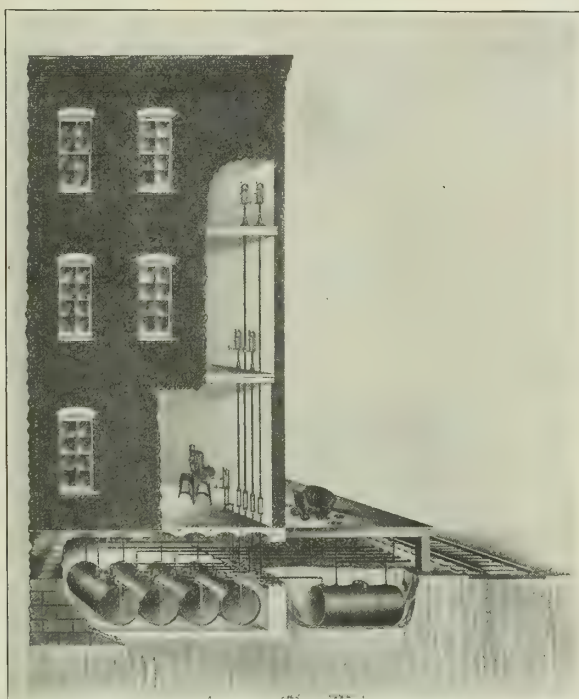
We have prepared special booklets devoted to separate lines, books of plan drawings, etc., any of which will be forwarded by mail upon application.

TANKS FOR
GARAGE USE.

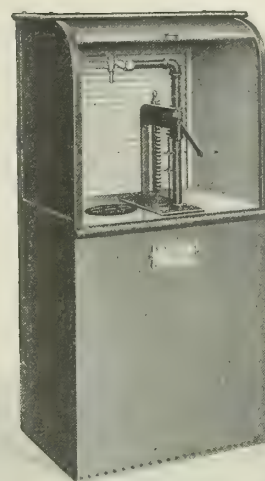
Cut. No. 41 shows our standard Long-Distance Outfit for the handling of gasoline in a garage. Tank is buried outside of building, pump is locked and stands at a point where the car can be filled direct by the use of a hose.



CUT NO. 41. LONG-DISTANCE OUTFIT FOR GARAGES



CUT NO. 803. MODEL OIL STORAGE SYSTEM



CUT NO. 52 B. STANDARD GARAGE CABINET

Cut No. 52 B shows our standard garage cabinet for lubricating oil. It is fireproof and dust-proof, with no waste or slop or oil-soaked floor. Fancy cabinets are furnished where desired, enclosing the pumps and finished to correspond with decoration of garage.

TANKS FOR
FACTORY USE.

Cut No. 803 shows an arrangement of Bowser tanks for factory use. The oils are buried outside, and the pumps may be stationed on any floor. Power pumps are used for the rapid handling of oils.

The tanks are filled from outside. All loss from evaporation, all dirt, danger and inconvenience are eliminated. The fire hazard is reduced to a minimum.

THE TOKHEIM MANUFACTURING COMPANY, INC.

Oil-Handling Equipments

MAIN OFFICE AND FACTORY

CEDAR RAPIDS, IOWA

CHICAGO AGENCY, GREAT NORTHERN BUILDING

PRODUCTS.

Manufacturers of "DOME" SELF-MEASURING PRICE-COMPUTING OIL PUMPS; OIL TANKS of all styles and sizes for all grades and kinds of Oils; SELF-MEASURING OIL-HANDLING EQUIPMENT for Factories and Railroads; also, a complete line of Outfits for the Grocery, Hardware Store, and for the general Retail Trade; OUTFITS for GASOLINE and LUBRICATING OILS for public and private Automobile Garages.

"DOME"
LONG-DISTANCE
AUTOMOBILE
GASOLINE
OUTFIT.

"Dome" Long Distance Outfit No. 4 is specially designed for auto garages. In the "Dome" Self-Measuring Price-Computing Pump with the three-way valve shown in Fig. 1, gasoline can be measured and discharged into the automobile tank at the rate of eight or ten gallons per minute. The pump can be changed by the turn of the lever handle to discharge through the dome or hose, the counter automatically registering the quantity used up to 9999 gallons and repeating. This is the ideal outfit which we would recommend for both public and private garage use.

"TOKHEIM"
LONG-DIS-
TANCE FAC-
TORY OUTFITS.

The "Tokheim" system of storing and handling volatile oils for factories provides a perfect method of storing any quantity, and gives the greatest possible measure of safety in handling these dangerous liquids. The steel storage tank, of any desired capacity, can be buried in the ground at any distance or angle from the building, and piping is then laid from the tank to pumps located throughout the factory building, wherever the oil is to be used. These pumps are guaranteed to draw the oil quickly and to deliver it rapidly to any floor of the building. By means of a unique device the pump and the entire line of piping are drained as soon as the pumping is finished, and the pumps are guaranteed never to lose their priming regardless of the distance between the pump and the storage tank. By means of this system oil is available at a moment's notice anywhere in the building, *but no oil is carried in storage in the building.* As will be noted from Fig. 2, each pump is provided with a self-priming chamber so that all of the usual pump troubles are done away with, no matter what the material pumped or how infrequently any single pump is used.

The Self-Priming Chamber, Fig. 3, also contains a strainer and a clean-out plug so that absolutely clean oil is always delivered.

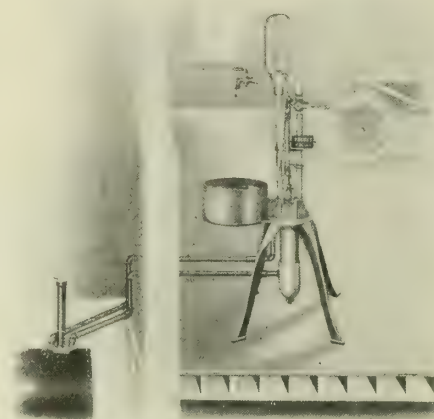


FIG. 1. "DOME" LONG-DISTANCE OUTFIT

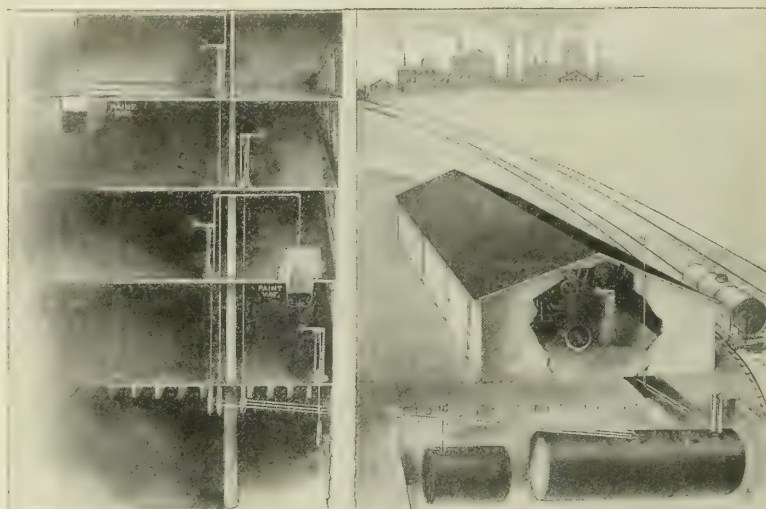


FIG. 2. "TOKHEIM" LONG-DISTANCE OIL-HANDLING FACTORY OUTFIT

LONG-DISTANCE SYSTEMS FOR PRIVATE GARAGES.

Long-Distance Outfit No. 25, Fig. 4, is a self-measuring pump with tank of any desired capacity. The pump is fitted with our patented primer and has the drain back and clean-out features. It can be furnished with counter.

Fig. 5 is our No. 26 Safety Outfit, which is a thoroughly reliable, guaranteed outfit, complying with every requirement of the National Board of Fire Underwriters. It has a direct lift pump, which is very easy and rapid in operation and which contains the exclusive "Tokheim" drainage feature through which the pump may also be used for siphoning gasoline from barrels into the underground storage tank, or for siphoning gasoline from the automobile reservoir back to the storage tank. With this outfit we furnish our underground storage tanks made from the finest quality galvanized tank steel. (65 gallon size), price \$35.00.



FIG. 3. Self-Priming Chamber

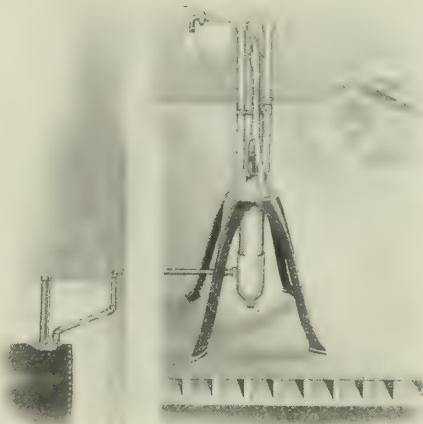


FIG. 4. Long-Distance Outfit No. 25

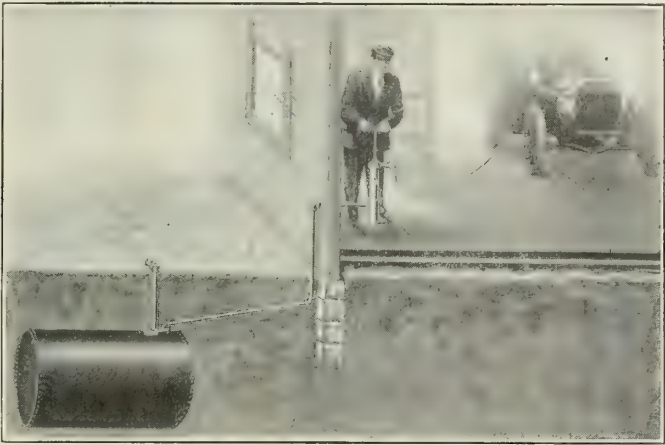


FIG. 5. Long-Distance Safety Outfit No. 26

SELF-MEASURING PUMPS

INSURANCE REQUIREMENTS.

All "Tokheim" Long-Distance Outfits are constructed so as to secure the measure of safety prescribed by the rules of the National Board of Fire Underwriters; they have been examined at the Underwriters' Laboratory and listed by the consulting Engineers of the National Board of Fire Underwriters. They are the only outfits on the market which comply with the important insurance requirements that the entire system of piping must drain back to the storage tank, and that pumps must be so arranged that the valves can be quickly and conveniently tripped in order to make the drainage effective.

OUTFITS FOR LUBRICATING OILS, MACHINE OILS, PAINT OILS, ETC.

We manufacture a complete line of Lubricating Oil Outfits, with pumps and tanks of any style desired; Roll-Top or Open-Cabinet Outfits; Basement and Underground Tank Outfits, and All-Steel First-Floor Cabinets. The pumps are self-measuring, discharging, at a single stroke, a quart, pint or half pint, or the measurement can be adjusted in an instant for odd quantities. Cabinets can be built and finished to match any style of woodwork from purchaser's specifications.

"TOKHEIM" UNDERGROUND TANKS.

For ten years we have made a specialty of Oil Tanks for underground storage, and we are now producing the finest line of tanks that can be made. They are specially designed to be buried in the ground, and all parts are absolutely rust-proof, the tanks being made from the finest quality of galvanized tank steel and finished with a special asphaltum rust-proof paint. All tanks are tested by heavy air pressure, are guaranteed absolutely oil and water tight, and are made in any desired capacity from sixty-five gallons to ten thousand gallons or larger.

GUARANTEE.

We guarantee all of our goods as represented and will make good any damages in transportation if receipted freight bill with railroad agent's notation is sent to us at once. We warrant every system to remain in good working order for five years from date of shipment.

INSTALLATION.

Instructions for installing are sent with each outfit so that any practical mechanic can set it up. Special oil-proof cement is furnished for all pipe joints.



FIG. 6. ROLL-TOP CABINET

STEEL PROTECTED CONCRETE CO.

"Wainwright" Galvanized Steel Corner Bar for Protecting Edges of Concrete Curbs, Steps, Columns, etc.

1618 Real Estate Trust Building
PHILADELPHIA, PA.

PRODUCTS.

We furnish, as required, the GALVANIZED STEEL CORNER BAR used with the "WAINWRIGHT" SYSTEM of STEEL PROTECTED CONCRETE CONSTRUCTION; also, the necessary FROGS to hold the bar in position during construction.

PATENTS.

"Wainwright" Patents, March 9, 1897; November 22, 1898; May 5, 1903; March 26, 1907; August 29, 1907.

DESCRIPTION.

The "Wainwright" Galvanized Steel Corner Bar (Fig. 1) is the most effective concrete edge protector offered to the contracting public, to protect from injury or breakage all exposed corners or edges of concrete curbs, steps, columns of concrete buildings or other buildings, or other concrete shapes requiring such protection. This bar is well galvanized, so it will not rust; has a solid head that insures resistance from the heaviest possible impact of wheels or other heavy bodies, and is held in place by a dovetailed web forming an anchorage extending its full length, not only anchoring but supporting the solid head every inch of its length.

This bar has been in public use for more than ten years as the main feature of the "Wainwright" Steel-Bound Concrete Curb (Fig. 2). Over two million feet are in use in more than one hundred and fifty cities in the United States. The dovetailed web anchors the bar at all points, resulting in great superiority over a corner protector anchored by bolts, wires, or rods at intervals, which allows buckling or expansion, causing ultimate loosening of the metal from the concrete.

ADVANTAGES.

The "Wainwright" System is ideal for sidewalks, curbs, and street pavements, and should be used wherever concrete is exposed to damage or breakage from contact with wagons, teams, or heavy packages of merchandise, machinery, or building stones in transit. Ordinary cement curbing and the cheaper grades of stone used require constant renewing. The "Wainwright" Steel-Bound Curb requires no resetting or repairs. Its alignment is perfect, and it will stay exactly as placed.

INSTALLMENT.

The bars are in 10-foot length and weigh about 3 pounds per foot. The frogs are made of stamped steel and weigh 5 ounces each, three frogs being required for each ten-foot bar. They are carried in stock for sale. Prices furnished on request. Our book of directions, accompanying each shipment, embodies complete instructions for architects and builders.

The "Wainwright" Corner Bar, used as illustrated (Fig. 3) in connection with columns and concrete buildings, will increase the load-bearing strength of such columns, and protect them from external injury.

REFERENCES.

The "Wainwright" System has been employed at the Bellevue-Stratford Hotel, Philadelphia; new stations of the Pennsylvania Railroad Co.; improvements connected with a dozen or more Railroad Companies; the new Bridge connecting New York and Brooklyn, and many other prominent undertakings.

The "Wainwright" Steel-Bound Concrete Curb is specified in connection with municipal improvements by many city engineers, by the United States Government in connection with public buildings, and by many well-known architects.

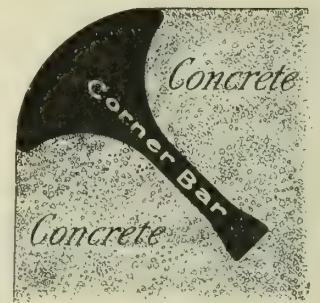


FIG. 1. CORNER BAR

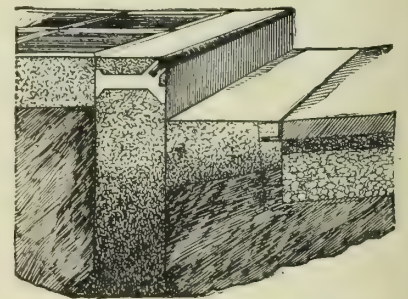


FIG. 2. WAINWRIGHT STEEL-BOUND CONCRETE CURB

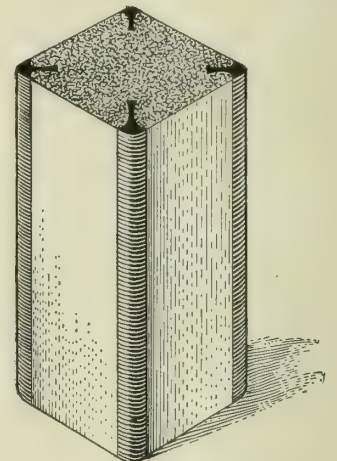


FIG. 3. STEEL-PROTECTED CONCRETE COLUMN



FIG. 4. NO. 1 CORNER BAR
(Patented)



FIG. 5. NO. 2 CORNER BAR
(Patented)

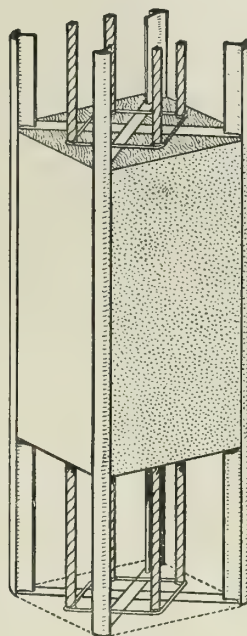


FIG. 6. SECTION CON-
CRETE COLUMN

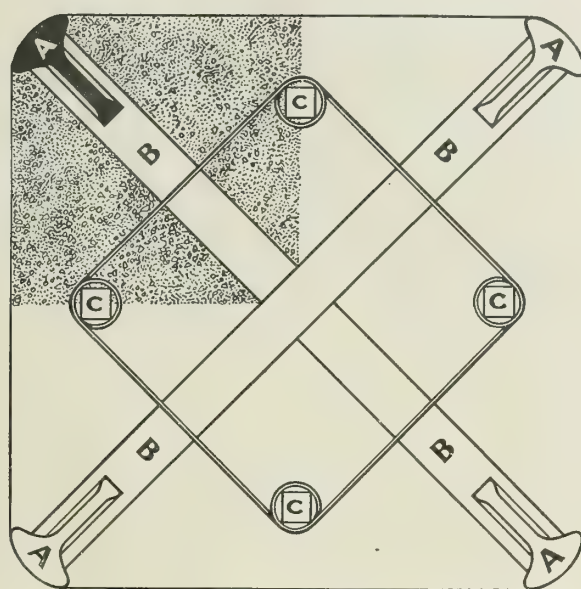


FIG. 7. DETAIL OF COLUMN CONSTRUCTION.
Showing Setting of Corner Bars and Reinforcing Rods

“WAIN-
WRIGHT”
GALVANIZED
STEEL
CORNER BAR.

The use of the “Wainwright” Galvanized Steel Corner Bar is strongly recommended as a means of strengthening as well as protecting from injury the corners of Concrete Columns in warehouses, manufacturing establishments, etc.

These bars may be used instead of or in combination with the ordinary steel rods now made a part of reinforced concrete construction. In either case they add to the strength and load bearing qualities of such columns.

Figs. 4 and 5 illustrate the No. 1 and No. 2 Bars respectively, and are full-sized sections of each bar, No. 1 Bar weighing 2.6 pounds per lineal foot; No. 2, 1.6 pounds. The lighter bar to be used where the No. 1 Bar would be considered unnecessarily heavy.

SETTING
CORNER BARS.

Fig. 7 illustrates the method of setting the Corner Bars, also the reinforcing rods for column construction. It consists of Corner Bars, A; Spreaders, B, to maintain the Corner Bars in proper position; and where additional reinforcement is desired (the same being marked C) they are held in position by a wire device. The Spreaders, made of stamped steel, about 1" wide and $\frac{3}{8}$ " thick, and of required length, when properly placed, accurately fix the position of the Corner Bar in the frames, and add greatly to the permanent strength of the column.

PROTECTED
CONCRETE
COLUMNS.

Fig. 6 shows a section of a Concrete Column with both ends exposed, showing the relation of the metal parts to each other, forming an extremely well bonded and protected construction. For columns of 12" or less in diameter, No. 2 Bar is recommended, but for columns of larger than 12", or for heavy use, No. 1 Bar will give better results. These bars are made of soft steel, well galvanized, and will not rust, improving the finished appearance of the column. We supply them in regular stock lengths of ten feet, and will furnish price on request, with directions for their use.

PROTECTED
CONCRETE
STEPS.

Concrete Steps protected at the outer edge by the “Wainwright” Galvanized Steel Corner Bar have advantages over any other form of step construction. They cost less to construct, can be renewed at moderate expense, and will stand more abuse and rough usage than those made of stone or other material.

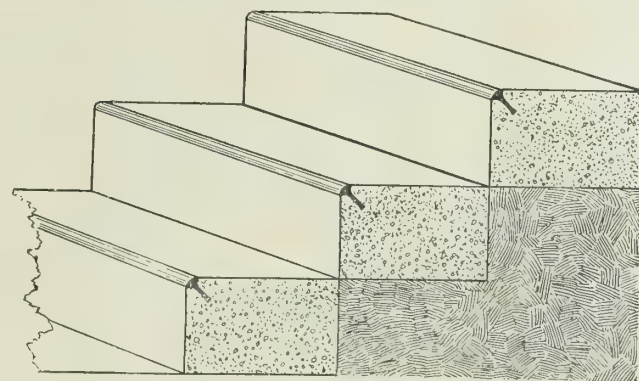


FIG. 8. “WAINWRIGHT” GALVANIZED STEEL CORNER
BAR APPLIED TO CONCRETE STEPS

LOUDEN MACHINERY COMPANY

Manufacturers of Barn Equipment

FAIRFIELD, IOWA

MAIN FACTORY
FAIRFIELD, IOWA

CANADIAN FACTORY
GUELPH, ONT.

ALBANY, N. Y.

BRANCH OFFICES
ST. PAUL, MINN.

FORT WAYNE, IND.

DISTRIBUTING HOUSES

KANSAS CITY, MO., HARBISON MANUFACTURING Co.
WINNIPEG, MANITOBA, LOUDEN HARDWARE SPECIALTY Co.
PORTLAND, ORE., BEALL & Co.
DENVER, COLO., PLATTNER IMPLEMENT Co.

SALT LAKE CITY, UTAH, (MURRAY STATION), MILLER-CAHOON Co.
STOCKTON, CAL., H. C. SHAW COMPANY
PHILADELPHIA, PA., STONE & DOWNEY

PRODUCTS.

COMPLETE BARN EQUIPMENTS, including HAY CARRIERS, HAY FORKS and SLINGS, DOOR HANGERS, MERCHANDISE, FEED and LITTER CARRIERS, COW STALLS and STANCHIONS.

HAY CARRIERS.

We have a complete line of Hay Carriers, with steel or wood tracks, for handling Forks or Slings. The accompanying illustration (Fig. 430) shows our "Louden Junior" Carrier for Fork use. This Carrier is fitted with our patent Swivel Iron Knot into which the end of the rope fastens and which permits twist and kinks to run out. It also has the wide flaring mouth to receive the fork pulley which never fails to register properly.

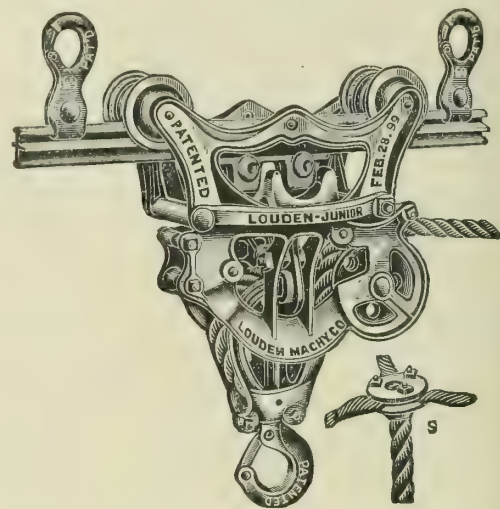


FIG. 430. "LOUDEN JUNIOR" CARRIER

HAY FORK.

Fig. A 351 shows our Six-Tine Balance Grapple Hay Fork. This fork is perfectly balanced, is easy to operate and will handle the largest or smallest load with equal precision. The fork is built of special quality fork steel. The tines are perfectly drawn on both ends. There are no holes in the tines except in the inner ends. The parts are all securely clamped together with bolts and can be adjusted readily. Standard Fork spreads, when open, 4 feet 10 inches. Tines go into hay 2 feet. Width of outside tines, 19 inches. Extra large forks spread, when open, 6 feet 7 inches. Width of outside tine, 25 inches.

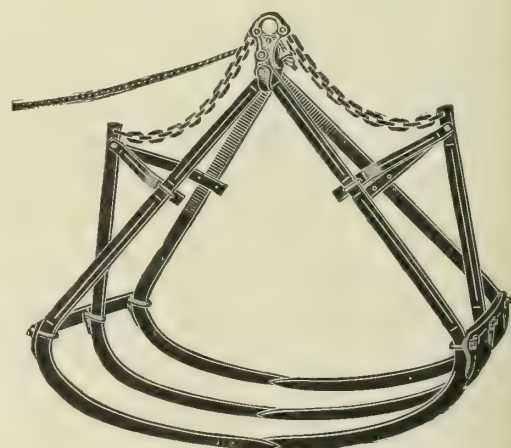


FIG. A351. SIX-TINE GRAPPLE HAY FORK

EQUIPMENT FOR 50-FOOT BARN

1 "Louden Junior" Hay Carrier	Fig. 430
50-ft. "Louden" Double-Beaded Steel Track.....	Fig. 571
24 "Louden" Steel Track Hangers	Fig. 498
24 "Louden" Rafter Brackets	Fig. 424
3 "Louden" High-Grade Pulleys	Fig. 467
2 "Louden" Floor Pulley Hooks	Fig. 389
2 "Louden" Rafter Pulley Hooks	Fig. 390
1 "Louden" Balance Grapple Fork, Six-Tine	Fig. 351

For longer or shorter building change number of feet of track and number of Hangers and Brackets. Other items remain the same.

BARN-DOOR
HANGERS.

In each set of our Double Tread Barn-Door Hangers there are four roller bearing rollers instead of two, making in reality two sets of hangers, a set on each side of the door fitted to run on opposite edges of an inverted T rail. This gives an absolute center draft instead of a side hitch, and the door can not jump off the track, be hooked off, or blown off. The track is flexibly hung to brackets secured to the wall. The door can be closely fitted and at the same time will not bind or run hard.

Fig. 453 is a cross-section view showing the Hanger secured to opposite sides of the door, consisting of the batten A and the boards B. It further shows the supporting brackets secured to the wall S by a small bolt N and a nail E. Also galvanized cover D secured to point of bracket by rivet or bolt H and to the wall by nail F.

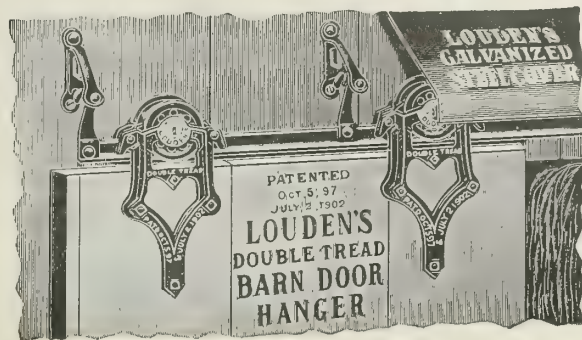
WAREHOUSE
DOOR
HANGERS.

For heavy doors such as are used for driveways or warehouses, specify "Louden Giant" Hangers built on same principle as the hanger above, except that they are heavier.

HIGH-LIFT
LITTER
CARRIER.

A strong, practical carrier for removing manure and litter from stables and dairy barns. Fitted with special worm hoist which relieves friction and gives ample power for lifting the loaded carrier. One pound on the chain lifts forty pounds in the box. Special electric weld chain operates over sprocket wheels to raise and lower the load. Lifting chain is carried on storage drum operated by means of a worm screw on the main shaft. The loaded box stands at any elevation and can not drop down and smash. No ratchets or levers to bother. The box is of heavy galvanized sheet steel, reinforced at top and ends by angle iron, the whole being securely riveted and soldered together, making it water-tight and very substantial. It is latched to hangers at both ends. Latches are connected and release simultaneously to let the box tip over and discharge its contents. It can be righted with fork or shovel without touching with the hands. Receptacle or box is forty-eight inches long, twenty-four inches wide and twenty-two inches deep.

The truck frame is of tubular steel and malleable iron riveted together. Trucks are swiveled to run on short curves. The wheels have special flanges which prevent binding on the track. Axles are of $\frac{3}{8}$ -inch tempered steel, bolted in full-sized sockets, insuring full strength and no weak shoulders. We build two and three way switches; crossing switches for points where two tracks cross at right angles, and special sections and devices for easy and quick removal of track over driveways, through doors, etc. Carriers and tracks are furnished in a number of different styles, permitting a variation in price.



"LOUDEN" BARN-DOOR HANGERS

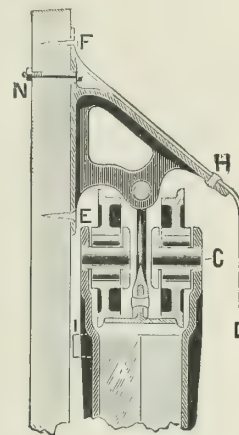


FIG. 453. BARN-DOOR HANGER



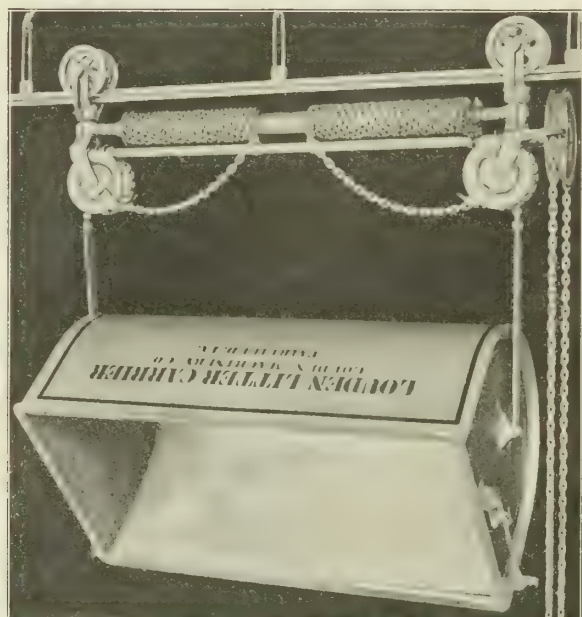
"LOUDEN" HIGH-LIFT CARRIER

FEED AND
ENSILAGE
CARRIERS.

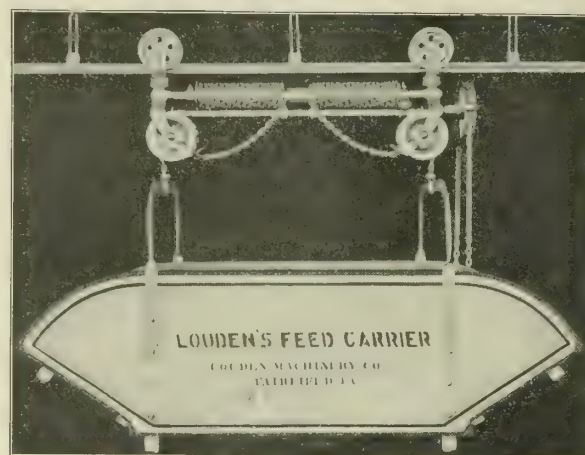
These are designed to run in feed alley so that operator can scoop the feed into mangers or boxes on either side. Standard size box is 28in. wide, 20 in. deep, and 4 ft. 10 in. long. They can be furnished in larger sizes, and made sloping at one end only if desired. Made with regular box straps with bottom tongued and grooved as a wagon box. Corners are bound with iron, upper edges having regular wagon-bed straps. Fitted with same hoisting device as the Litter Carrier, or with stationary truck, as desired.

MERCHAN-
DISE CARRIERS.

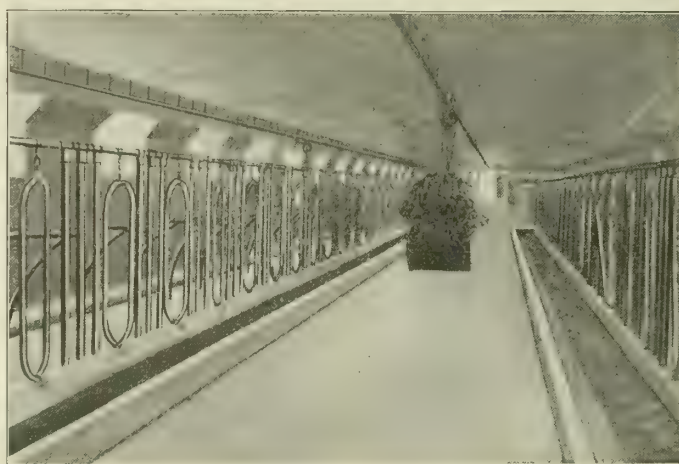
We can furnish complete overhead tracks and carriers for handling merchandise in warehouses, factories, store buildings, etc. Carriers are built with swiveled trucks to turn short curves and operate over our two and three way switches.



"LOUDEN" HIGH-LIFT CARRIER IN DUMPING POSITION



"LOUDEN" FEED CARRIER



"LOUDEN" CARRIER IN COW BARN



"LOUDEN" STALLS AND CARRIER IN COW BARN



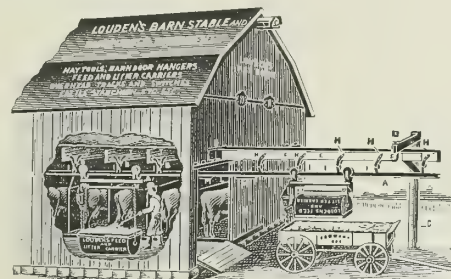
COW BARN SHOWING LOUDEN COW STALLS

COW STALLS.

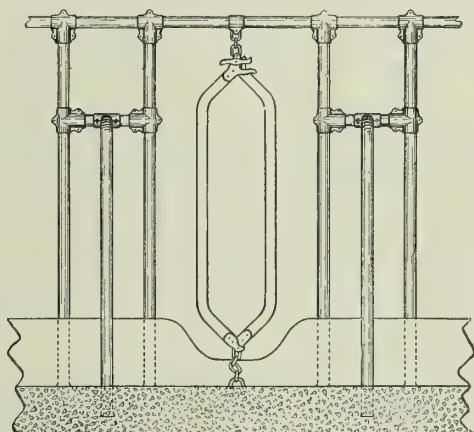
Our Sanitary Metal Stalls offer an installation as solid as an iron bridge and practically indestructible. They are made of $1\frac{1}{2}$ -inch steel pipe (two inch outside diameter) held together by strong malleable fittings which clamp the pipe securely by means of bolts. The fittings are made in tees and crosses. For cement floor, the lower ends of pipe are flared to give them a firm hold in the cement. For plank floor, flange is furnished which bolts firmly to lower end of pipe and is then fastened solidly to floor by means of lag screws. Where pipe fastens against posts, ceiling, or side wall, a lighter wall flange is furnished. We are prepared to build stalls in a number of styles or of special design. The stalls are finished in aluminum paint unless otherwise specified. On special orders we can furnish all metal parts heavily galvanized.

COW STANCHIONS.

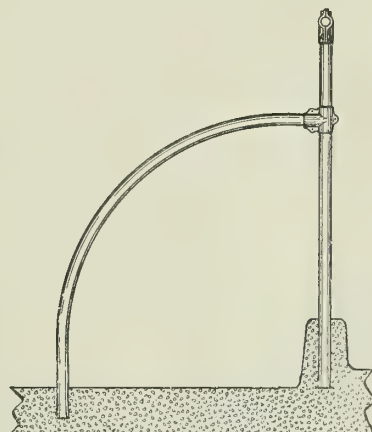
Our Cow Stanchions are made of one-inch steel tubing and the hinges and latches are of strong malleable iron. The stanchions are built for long service and perfect comfort for the cow. Measurements $3\frac{1}{2}$ feet by 7 inches inside. Special sizes for bulls and calves. We make fastenings for hanging stanchions in metal or wood supports above, and for cement or wood floor below.



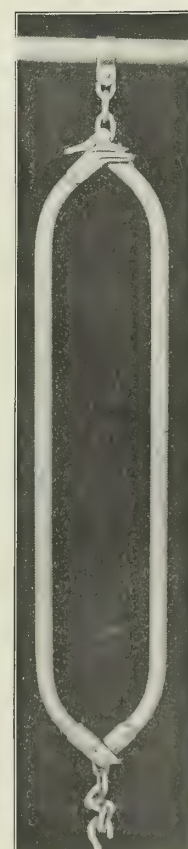
"LOUDEN" CARRIER



"LOUDEN" COW STALL



PARTITION FOR COW STALL



"LOUDEN" COW STANCHION

REFERENCES.

A few of the places where "Louden" Equipment is being used:

Briarcliffe Dairy Farms, Pine Plains, N. Y.
 I. L. Barrett, Mahopac Falls, N. Y.
 Meadowedge Dairy Farm, Cedarhurst, L. I., N. Y.
 Tiffany Farm Buildings, Oyster Bay, L. I., N. Y.
 S. L. & T. W. Stewart, Newburgh, N. Y.
 J. W. Truesdell, Katonah, N. Y.
 S. D. O'Dell, Chaffee, N. Y.
 M. A. Rice, Atlantic Highlands, N. J.
 J. Pierpont Morgan, Highland Falls, N. Y.
 Ohio State University Buildings, Columbus, Ohio
 State College of Agriculture, Cornell University, Ithaca, N. Y.

Michigan Agricultural College, Lansing, Mich.
 University of Illinois, Urbana, Ill.
 Iowa State College, Ames, Iowa
 Georgia State Sanitarium, Milledgeville, Ga.
 A. E. Gonzales, Columbia, S. C.
 O. W. Stoughton & Sons, Butler, Pa.
 I. C. Blandy, Greenwich, N. Y.
 Brightridge Dairy Co., Providence, R. I.
 Algernon T. Sweeney, Newark, N. J.
 Speedwell Farms, Lydonville, Vt.
 S. M. Clement, Buffalo, N. Y.

W. W. SCHOULER

Schouler's Patent Sanitary Stall Floor, Door Guide and Weather Strip
for Sliding Doors, etc.

45 Clinton Street

NEWARK, N. J.

TELEPHONE, 11872 NEWARK

DOCK
EAST NEWARK, N. J.

PRODUCTS.

"SCHOULER'S" PATENT SANITARY STALL FLOOR; "SCHOULER'S" PATENT DOOR GUIDE and WEATHER STRIP for Sliding Doors; CONCRETE and CEMENT SIDEWALKS and FLOORS for Stables, Barns, Factories, etc. STABLE FIXTURES, including DUPLEX GUTTER TRAP. We contract for the installation of our products where desired.

SANITARY STALL FLOOR.

This system is designed for use in connection with concrete or artificial stone floors. It consists of a series of wooden slats with spaces between, held in position by a patent slat holder. The spaces between the slats are wholly unobstructed by bolts or otherwise, thus giving a free passage for liquids. The slat holders consist of two iron bars embedded in the floor crosswise, at the head and foot of the stall, each having a row of hooks. These hooks point toward the head of the stall; the slats are fitted with a device on the under side, are placed on the hooks, drawn back and held firmly in place by a locking bar at the head of the stall. An open gutter can be used with a 10-foot stall if desired, but with a 9-foot stall a covered one is preferable. The details are shown in Fig. 1.

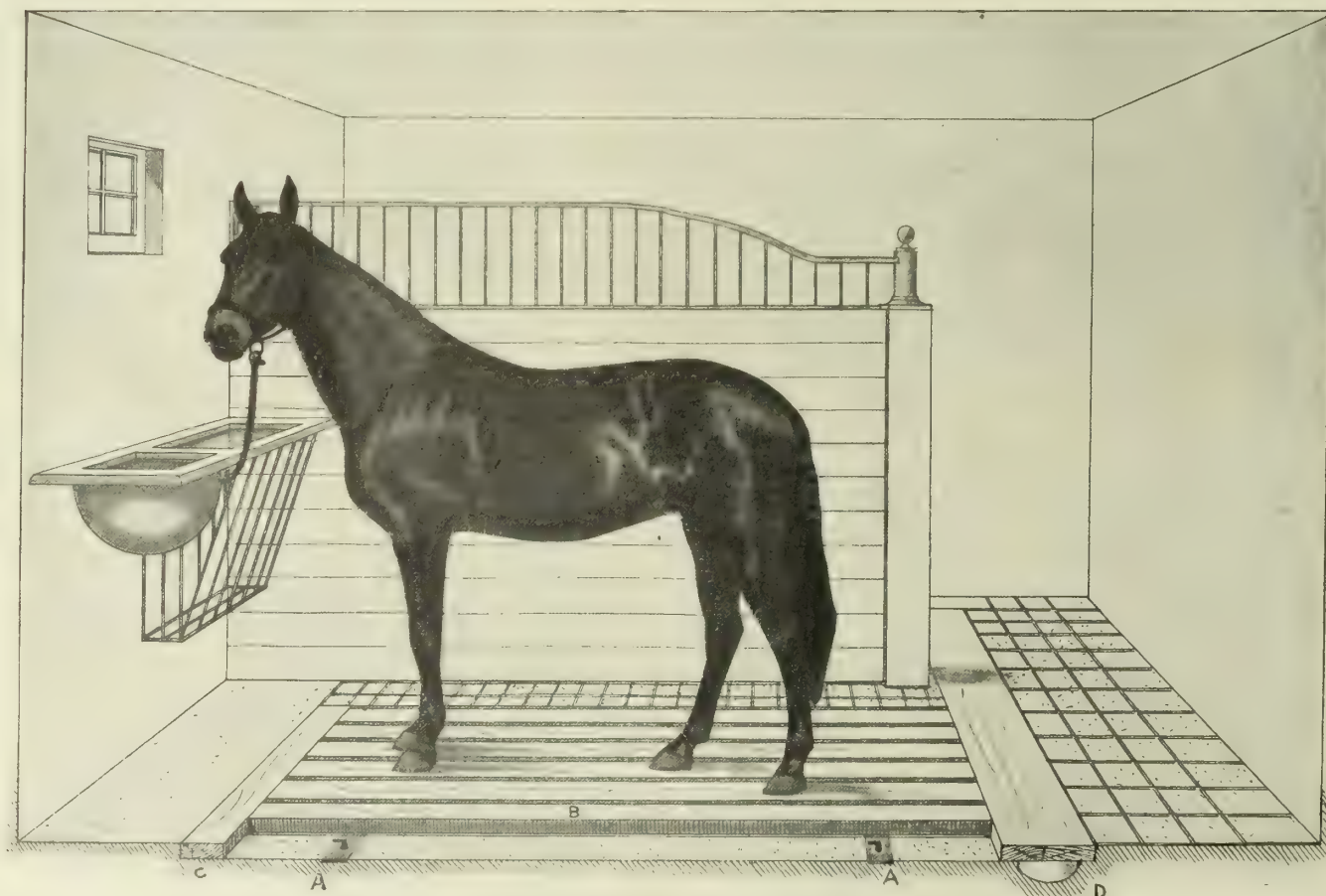


FIG. 1. "SCHOULER'S" PATENT SANITARY STALL FLOOR
A A, Slat Holders; B, Second Slat, the first being removed; C, Locking Bar; D, Gutter

Sanitary conditions are more completely assured by this system than by any other. Its economy is unchallenged, both in first cost and in maintenance. The slats being interchangeable, they may be so altered in position as to avoid undue wear on the center ones.

Price per set, f. o. b., Newark: For single stalls, \$10; for box stalls, \$20. These are standard sizes, 7 x 3 feet, and are kept in stock. Special sizes can be made to order in about ten days. Sets may be ordered direct or through local contractors. Yellow pine is used in regular sets; maple or spruce to order.

SLIDING-
DOOR GUIDE
AND WEATHER
STRIP.

This consists of a steel groove, embedded in the floor flush with the surface, in which slides a thin steel plate attached to the bottom of the door. The groove acts as a guide, and the door, sliding smoothly, is kept in place on the overhead track. The door may be hung clear of the sill, to avoid possible obstruction, without danger of wind, rain, snow or dust penetrating the building, as the steel plate acts as a weather strip and effectually closes the space (Fig. 2). The opening in the guide runs entirely through to the seepage bed below, thus carrying away all the water.

This device is invaluable in barns, stables, factories, freight stations, and wherever sliding doors are used. It is adapted to any size door, and in connection with flooring of concrete, asphalt, brick or wood it is the only successful appliance for the purpose. It can be installed by any competent workman.

Price, f. o. b., Newark, \$1.00 per lineal foot.

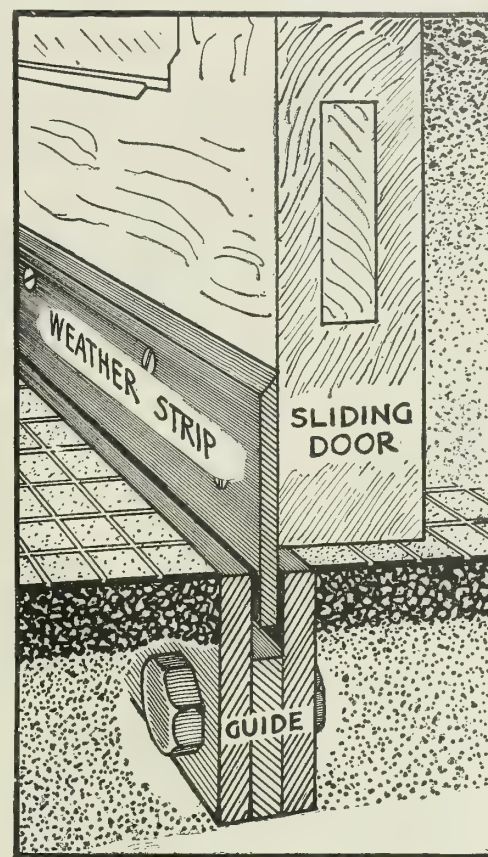


FIG. 2. END VIEW OF "SCHOULE'S" PATENT SLIDING-DOOR GUIDE AND WEATHER STRIP

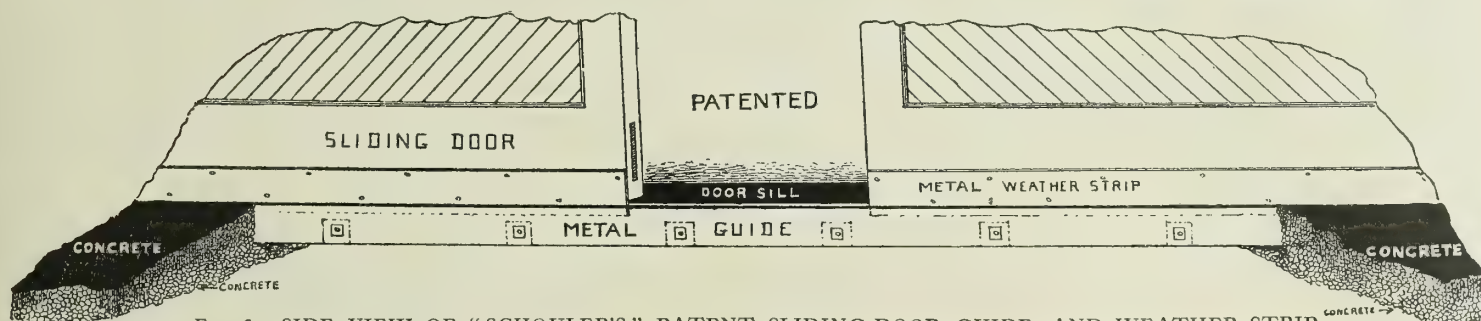


FIG. 3. SIDE VIEW OF "SCHOULE'S" PATENT SLIDING-DOOR GUIDE AND WEATHER STRIP

REFERENCES.

We refer to the following persons (and many others) who are using "Schouler's" patent devices:

OWNER	LOCATION	ARCHITECT
F. W. Vanderbilt	Hyde Park, N. Y.	Burnet & Hopkins, New York, N. Y.
R. Van Cortlandt	Mt. Kisco, N. Y.	Burnet & Hopkins, New York, N. Y.
R. C. Lounsbury	Bedford, N. Y.	Burnet & Hopkins, New York, N. Y.
Jas. E. Speyer	Ossining, N. Y.	Burnet & Hopkins, New York, N. Y.
J. C. Colgate	Bennington, Vt.	Burnet & Hopkins, New York, N. Y.
H. McK. Twombly	Madison, N. J.	Burnet & Hopkins, New York, N. Y.
Percy R. Pyne	Bernardsville, N. J.	Burnet & Hopkins, New York, N. Y.
U. S. Naval Academy	Annapolis, Md.	Burnet & Hopkins, New York, N. Y.
W. D. Guthrie	Locust Valley, L. I.	C. P. H. Gilbert, New York, N. Y.
C. G. Gates (private stable)	105 East 74th Street, N. Y.	Chas. A. Rich, New York, N. Y.
Acker, Merrill & Condit (200 stalls)	536 West 46th Street, N. Y.	Buchman & Fox, New York, N. Y.
Paul D. Cravath	Locust Valley, L. I.	Babb, Cook & Willard, New York, N. Y.
John F. Dryden	Bernardsville, N. J.	George B. Post, New York, N. Y.
Wm. H. Baldwin (the late residence of)	Locust Valley, L. I.	B. L. Gilbert, New York, N. Y.
Chas. Head	Manchester-by-the-Sea, Mass.	H. D. Hale, Boston, Mass.
N. Plainfield Fire Headquarters	N. Plainfield, N. J.	Chas. W. Smith, Plainfield, N. J.
Meadow Brook Stable	Newark, N. J.	T. C. Hughes, Newark, N. J.
Hugh Kinnard	Madison, N. J.	R. Bottelli, Newark, N. J.
Newark City Stables	Newark, N. J.	Thos. Cressy, Newark, N. J.

WATERTITE DRAIN COMPANY

Manufacturers of Stable Fittings

168 Duane Street

NEW YORK, N. Y.

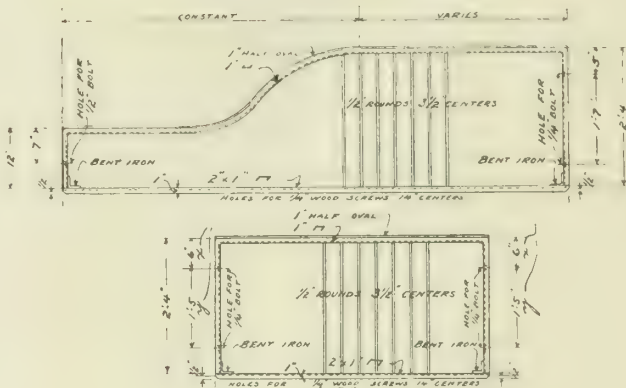
TELEPHONE, 2473 WORTH

PRODUCTS.

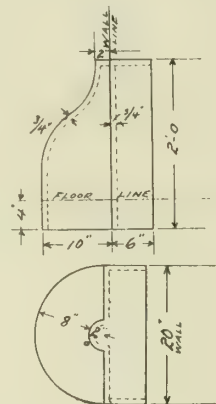
We manufacture a full line of STABLE FITTINGS, including MANGERS, STABLE FLOORS, HORSE-STALL FLOORS, "WATERTITE" WALL and FLOOR, PIPE SLEEVES, FLOOR PLATES, KICK PLATES for Horse-Stalls, BOX-STALL HINGES, WHEEL GUARDS, STALL GUARDS of steel and cast-iron, STALL POSTS fitted with piping according to our own designs; SCUPPERS, DOOR SILLS, and any other article required for fitting up a stable with modern appliances.

CO-OPERATIVE SERVICE.

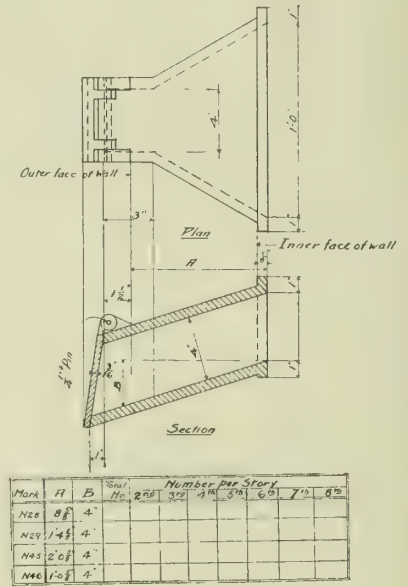
We are ready to advise or make suggestions, or to prepare a layout of a stable supplied with our fittings, wherever an architect may desire us to do so. Our long experience in manufacturing, added to the further important fact that we have developed this line ourselves, makes our advice very valuable.



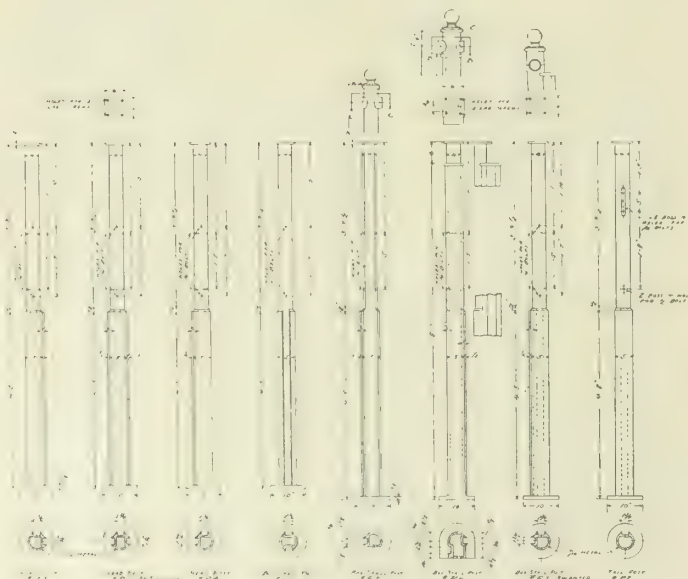
Stall Guard and Floor



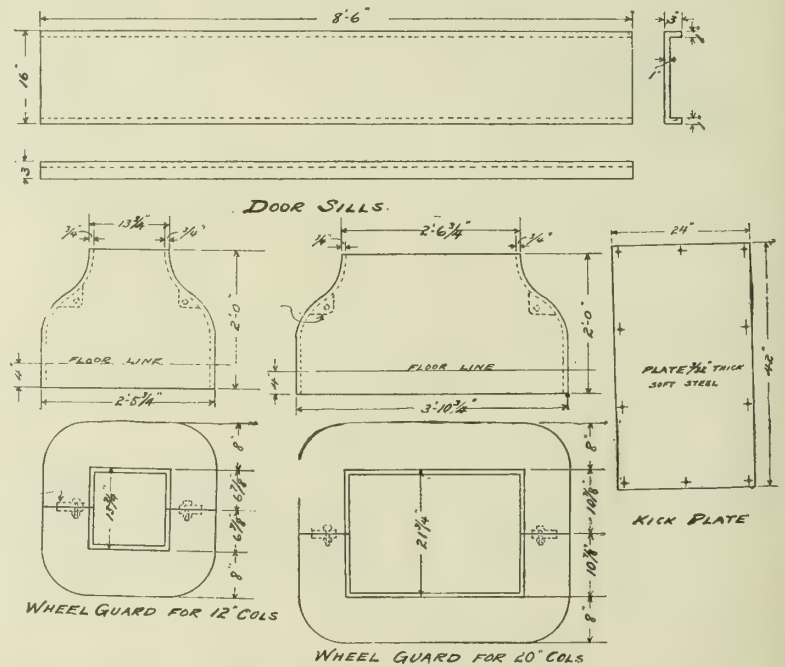
Wheel Guard for Doors



Scuppers



Head and Tail Stall Posts



DETAILS OF WATERTITE DRAIN COMPANY'S STABLE FITTINGS

FOSTER & GLIDDEN ENGINEERING CO.

Sanitary Engineers and Manufacturers of Vacuum Cleaning Apparatus

730 Main Street
BUFFALO, N. Y.

PRODUCTS
AND
SERVICES.

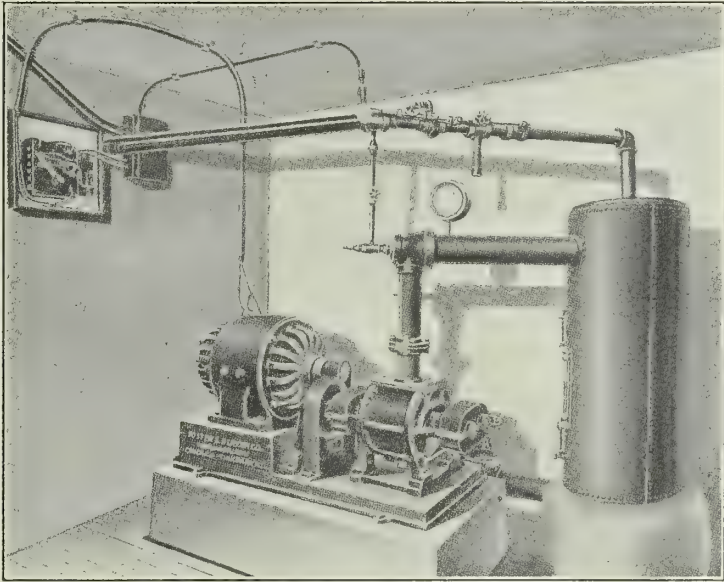
We are manufacturers and operators of the "KEYSTONE" VACUUM CLEANING SYSTEM, for the scientific cleaning by suction of Rugs, Carpets, Walls, and Upholsteries of all kinds.

THE "KEY-
STONE"
VACUUM
CLEANING
SYSTEM.

After fifteen years' experience as Sanitary Engineers, in order to meet and completely overcome the dirt problem and its resulting bad air, dusty, dirty environment, ill health, disease and death, we have placed on the market the "Keystone" Vacuum Cleaning System. All that is removable, that is unsanitary, is removed permanently by the "Keystone" System, and not displaced to settle elsewhere. Our Vacuum Dusters, Sweepers, and Scrubbers are built to last. They are quickly taken apart and cleaned and easily reassembled. Any one can operate them.

ADAPTABILITY.

We are prepared to install complete independent plants for office buildings, department stores, electrical plants, school buildings, fine residences, street-car barns, railroad shops, sanitariums, churches, hospitals, theaters, factories, hotels, clubs, etc. The portable plants are available for cleaning buildings of all kinds where a permanent plant is not advisable. Railroad stations with this System installed, working one or a dozen machines simultaneously, send their cars into commission with the sure knowledge that they are germ-free and dustless—a feature of equal importance to street-car systems and other public conveyances. Manufacturing plants operating delicate machinery, properly equipped with the "Keystone" Vacuum Cleaning System, with its certainty of dust and grit elimination, can figure in dollars and cents the saving effected by its use.



"KEYSTONE" VACUUM CLEANING PLANT

OUR ROTARY
PUMP.

We are pioneers in the application of the Rotary Pump for Vacuum Cleaning purposes. This pump has many advantages, one of which is that it will not clog up and stop up. No type of rotary pump can operate successfully without a water-cooling device. Our pump is amply provided with means to this end, fully covered by patents.

GUARANTEE.

We guarantee our Pump for a period of three years, agreeing to make any necessary repairs that are not caused by misuse or accident.

REFERENCES.

We gladly refer any interested parties to people using our System in almost any part of the United States.

AMERICAN AIR CLEANING COMPANY

MANUFACTURERS AND DISTRIBUTERS OF

The "Aero" Vacuum (Air Suction) Cleaning Systems

Enterprise Building
MILWAUKEE, WIS.

BRANCH OFFICES IN ALL PRINCIPAL CITIES

PRODUCTS.

SCIENTIFIC MECHANICAL VACUUM CLEANING PLANTS, both STATIONARY and PORTABLE, of Improved and Simplified Construction, including STEAM, ELECTRIC and GASOLINE OPERATED SYSTEMS; also, IMPROVED CLEANING TOOLS and "SMOOTH BORE" PIPE and CONDUIT FITTINGS, used in connection therewith. We manufacture only high-grade, scientifically correct machines, tools and appliances.

STEAM-JET ASPIRATOR SYSTEMS.

For buildings in which high-pressure steam (50 pounds and up) is available. Vacuum "on tap" supplied as dependable as the water, gas, steam-heating or electric light systems. Power is automatically cut off or turned on as required for service, thus closely proportioning power consumption to service performed. Most efficient and economical system in the world.

MOTOR-DRIVEN ROTARY PUMP SYSTEMS.

Where high-pressure steam is not available we supply our Standard Motor-Driven Rotary Pump Vacuum System, also automatically controlled, apportioning power-supply to work performed. Absolutely the highest grade and most efficient Motor-Driven Vacuum Cleaning System in the world.

UNIT SYSTEM.

These systems are built in units of one-, two-, three-, four-, five- and six-sweeper capacity, per unit. Systems requiring more than six sweepers working at one time are built up by coupling required units in parallel. This is the most economical method possible.

RESIDENCE EQUIPMENT SYSTEMS.

Our Standard Motor-Driven Rotary Pump type, built specially for fine residences and other small buildings, is the most nearly perfect, silent running, sanitary and efficient little machine ever built. It is the result of nearly ten years' practical experience on our part. It is artistically and mechanically perfect—a little gem. These stationary plants are "built-in-the-house" systems and should not be confused with the so-called lamp-socket portable machines.

SPECIAL PIPE FITTINGS.

This Company manufactures, under its own patents, a system of "Smooth Bore" pipe fittings and special hose couplings which obviate the likelihood of the system becoming clogged with tooth-picks, matches, pins, strings, and other matter. These are the only pipe fittings in the world designed especially for Vacuum Cleaning Systems.

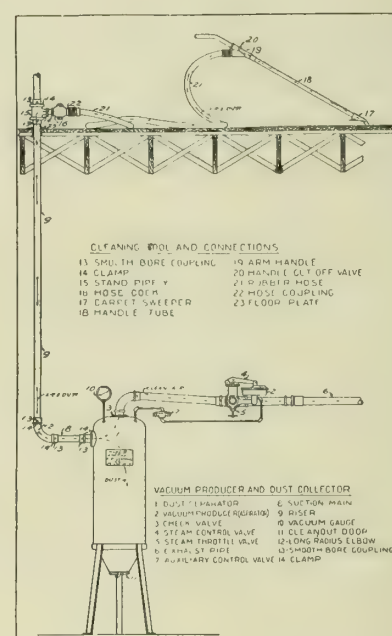


FIG. 1. GENERAL LAYOUT OF "AERO" STEAM-ASPIRATOR SYSTEM



FIG. 2. FIFTEEN-SWEEPER STEAM ASPIRATOR INSTALLATION

Showing manner of coupling units into batteries of any capacity

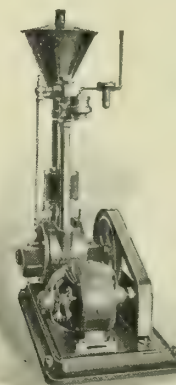


FIG. 3. COMPLETE, SILENT, MOTOR-DRIVEN, SELF-OILING, ROTARY PUMP INSTALLATION

For use where high-pressure steam is not available. One- to six-sweeper units may be coupled into batteries of any required capacity

CLEANING
TOOLS.

"Aero" Cleaning Tools are of special construction, devised to remove thoroughly all dust, dirt and grit from rugs, carpets, draperies, curtains, upholstery, bedding, wood and tile floors, walls and ceilings, each tool having its specific function in connection with the regular and extension handles.

SPECIAL
EQUIP-
MENTS.

We make a specialty of schoolhouse Vacuum Systems and have designed numerous special sweeping tools for this work. We also make railway coach cleaning equipment both portable and stationary, as well as seven different types of wagon outfits for house to house cleaning. We do not make Lamp Socket or other toy devices.

UTILITY.

By the use of our systems Vacuum may be kept "on tap," ready for instant use at any hour, day or night. Systems designed for buildings of all kinds, old or new.

SPECIFICA-
TIONS AND
LAYOUTS.
INSTALLA-
TIONS.
WIDESPREAD
USE.

Standard specifications furnished architects, free on application. Layouts for complete systems will be furnished, from architects' plans sent us for the purpose. No charge for this service.

Installations are superintended by our own experts, insuring most satisfactory results.

Our "Aero" Systems are in constant use in the most prominent buildings of all kinds in all parts of the country. For nearly ten years we have been building and installing these Standard Systems.



FIG. 4. SWEEPER IN USE
CLEANING UNDER
RADIATOR

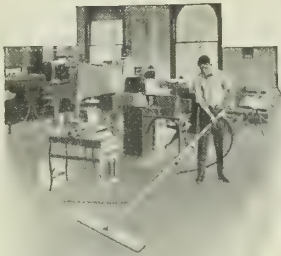


FIG. 5. SPECIAL FLOOR
SWEEPER
Collects and carries away dust
in one operation



FIG. 6. BRISTLE BROOM
TOOL IN OPERATION



FIG. 7. TYPES OF OUR
SPECIAL "SMOOTH
BORE" FITTINGS

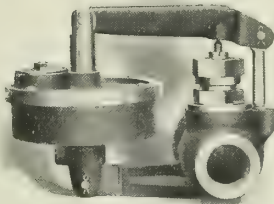


FIG. 8. AUTOMATIC POWER
CONTROL

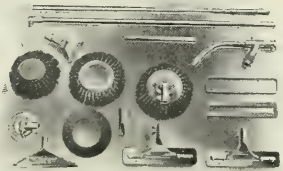


FIG. 9. CLEANING TOOLS
AND PARTS

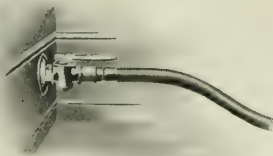


FIG. 10. VACUUM TAP IN
WALL OF ROOM



FIG. 11. DETACHABLE
CLEANING TOOL HAN-
DLE, WITH DISTANT
CONTROL VALVE

THE BLAISDELL MACHINERY COMPANY

MANUFACTURERS OF

Vacuum Cleaning Machinery

BRADFORD, PA.

BRANCH OFFICES

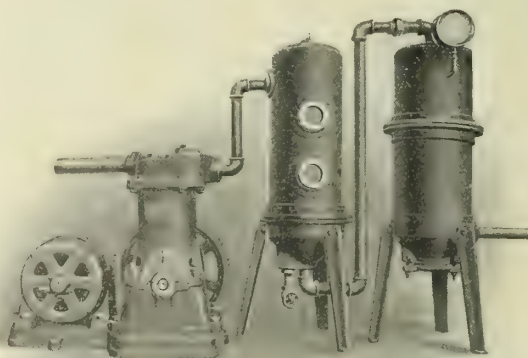
NEW YORK, N. Y.

BOSTON, MASS.

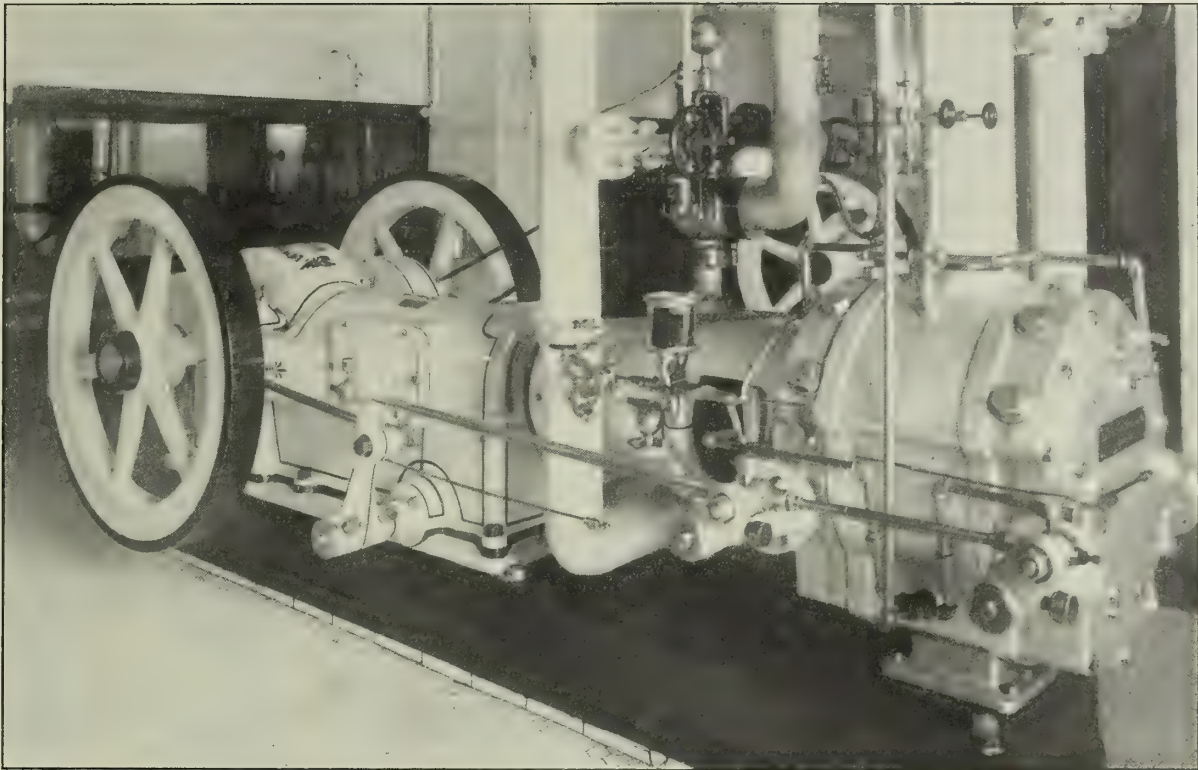
CHICAGO, ILL.

REPRESENTATIVES IN ALL LARGE CITIES

- PRODUCTS.** We manufacture and install VACUUM CLEANING APPARATUS complete, including all MACHINERY and APPURTENANCES required, except only the motor.
- FACILITIES.** We are the largest manufacturers of these equipments in the world. The installation of very large plants, where economy of operation and efficiency of construction are paramount to low first cost, is our specialty.
- ESTIMATES.** We submit estimates promptly, accompanied by complete installation plans. All our equipments are installed by ourselves.
- CO-OPERATIVE SERVICE.** The services of our Engineering Department are at your disposal. Illustrated bulletins sent on application.
- REFERENCES.** The inspection of any one of the many prominent installations made by us will be a revelation to prospective purchasers. We will cheerfully furnish a list of such installations and references.



TYPICAL INSTALLATION, ONE-SWEEPER, MOTOR-DRIVEN VACUUM PUMP



TYPICAL INSTALLATION, 20-SWEEPER PLANT, STEAM-DRIVEN VACUUM PUMP



APPLICATION OF VACUUM CLEANING APPARATUS

THE NATIONAL VACUUM CLEANING CO.

MANUFACTURERS OF

"20th Century" Cleaning Plants

26 Kenton Street

DAYTON, OHIO

PRODUCTS.

"20TH CENTURY" VACUUM CLEANING STATIONARY and PORTABLE PLANTS for Private Residences, Office Buildings, Hotels, Libraries, Schools, etc.

DESCRIPTION.

Type B Portable Plant is mounted on a truck $1\frac{1}{2} \times 2$ feet. Stands 24 inches high. Equipped with a $\frac{1}{2}$ horse-power electric motor and can be operated from lamp socket. Weight, 150 lbs. Maintains 6 inches of vacuum.

Type C Portable Plant is mounted on a truck 2×3 feet. Stands 40 inches high. Equipped with 2 horse-power electric motor. Operates from trunk line current. Weight, 300 lbs. Maintains 10 inches of vacuum.

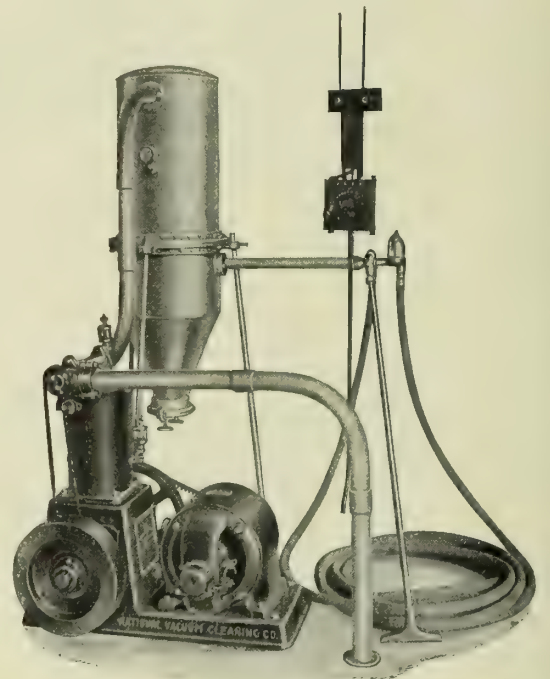
Type D Portable Plant is mounted on a truck 3×4 feet. Stands 40 inches high. Equipped with 4 horse-power single cylinder gasoline engine. For use where electricity is not available. Maintains 10 inches of vacuum.

Type E Stationary Plant consists of 1 horse-power electric motor, rotary vacuum pump and dust separator mounted on iron base ready for immediate installation. No foundation required. Occupies floor space of approximately 2×3 feet. Height 40 inches. Maintains 8 inches of vacuum.

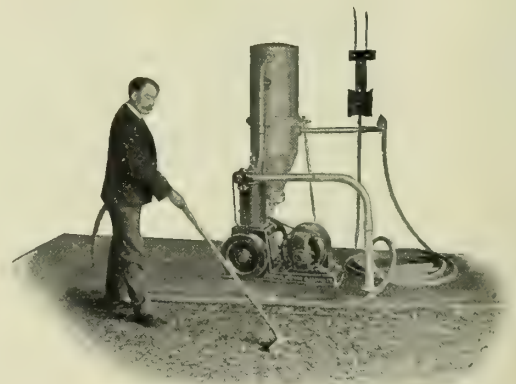
Type F Stationary Plant consists of $1\frac{1}{2}$ horse-power electric motor and vacuum pump of the piston type mounted on iron base. Dust separator stands on tripod. Occupies floor space approximately 2×3 feet for foundation, and tank is 12 inches in diameter. Maintains 10 inches of vacuum.

Type G Stationary Plant has vacuum pump of the piston type, mounted on iron base, with 3 horse-power electric motor. Dust separator stands on tripod. Complete plant occupies 5×5 feet of floor space. Maintains 12 to 15 inches vacuum.

The Piston Vacuum Pump used on Types F and G stationary pumps represents the latest improved construction in this class of machinery. It is considered by engineers to be the most efficient, entailing the minimum waste of power. The gearing is simple and the lubrication, so far as pos-



TYPE G "20TH CENTURY" STATIONARY CLEANING PLANT



"20TH CENTURY" CLEANING PLANT IN USE

sible, is automatic. The pump is noiseless and well balanced. It operates without vibration. The Dust Separator used on all "20th Century" Vacuum Cleaners is of the dry type, requiring no water, and being absolutely dry prevents the accumulation of wet, soggy mud.

ADVANTAGES.

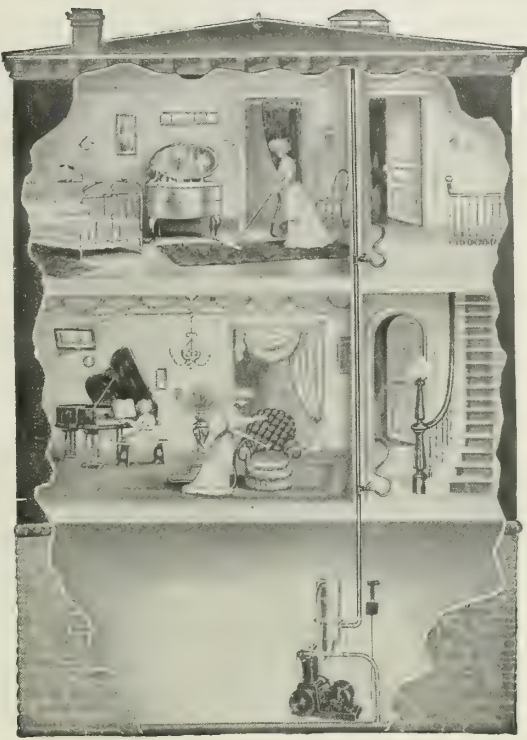
The important and salient advantage of the "20th Century" System is its simplicity of mechanism and method of operation. No more simple outfit could be constructed.

INSTALLATION.

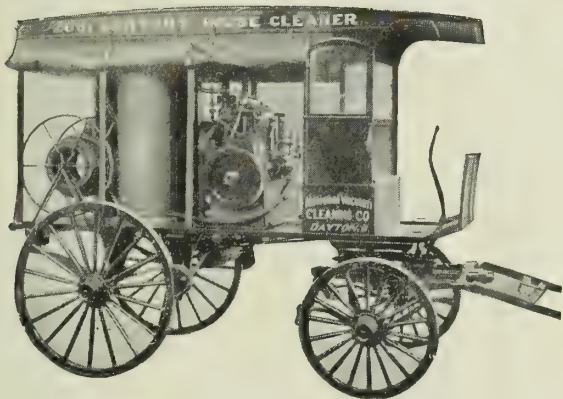
We furnish an engineer for the installation of stationary plants, when desired, without any charge for the service, the expense to purchaser alone being expenses of engineer from time of leaving Dayton to time of return. The plant can be installed by local steam-fitters or plumbers, but it is preferable to have the work done by engineers trained in this particular line of business. The cost would usually be less and the work more satisfactorily done.

PRICES.

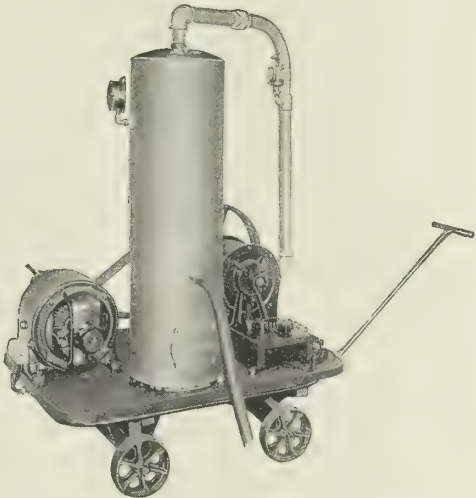
Type B, \$175.00; Type C, \$350.00; Type D, \$450.00; Type E, \$295.00; Type F, \$400.00; Type G, \$650.00, f. o. b. Dayton. Price on larger equipments furnished on request.



"20TH CENTURY" STATIONARY CLEANING PLANT INSTALLED IN A TWO-STORY RESIDENCE



"20TH CENTURY" HOUSE-CLEANING WAGON



TYPE C "20TH CENTURY" PORTABLE CLEANING PLANT

SPECIFICATION.

"'20th Century' Vacuum Cleaning System to be furnished by THE NATIONAL VACUUM CLEANING CO., Dayton, Ohio."

WAGONS.

Wagons are also furnished for professional use for cleaning from house to house. These are built in four types and range in price from \$900 to \$2,750. They are operated with a gasoline engine of high power and are efficient and durable. Detailed information cheerfully furnished.

PALM ENGINEERING COMPANY

MANUFACTURERS OF

Palm Sanitary Cleaning Machinery and Special Vacuum Pumps

34-36 Bates Street
DETROIT, MICH.

PRODUCTS.

PALM SANITARY CLEANING SYSTEMS in sizes suitable for permanent installation in all classes of buildings; PALM VACUUM PUMPS for special purposes requiring high vacuum combined with low power consumption and automatic operation.

DESCRIPTION OF CLEANING SYSTEM.

Stated briefly, some of the advantages of the Palm Sanitary Cleaning System are: Quietness of operation, economy in power consumption, simplicity, compactness, absence of dust strainers, oil lubrication or metallic contact in the cylinder or valves, light effective tools, and small light hose.

The system is designed for permanent installation in buildings of all sizes. No piping or fitting is required or recommended which can not be purchased in the open market without unnecessary expense. This system is so quiet in operation as to cause no annoyance whatever in any class of building, and on account of the compactness and simplicity of design it is perfectly suited for buildings where floor space is limited and where the services of an engineer are not available.

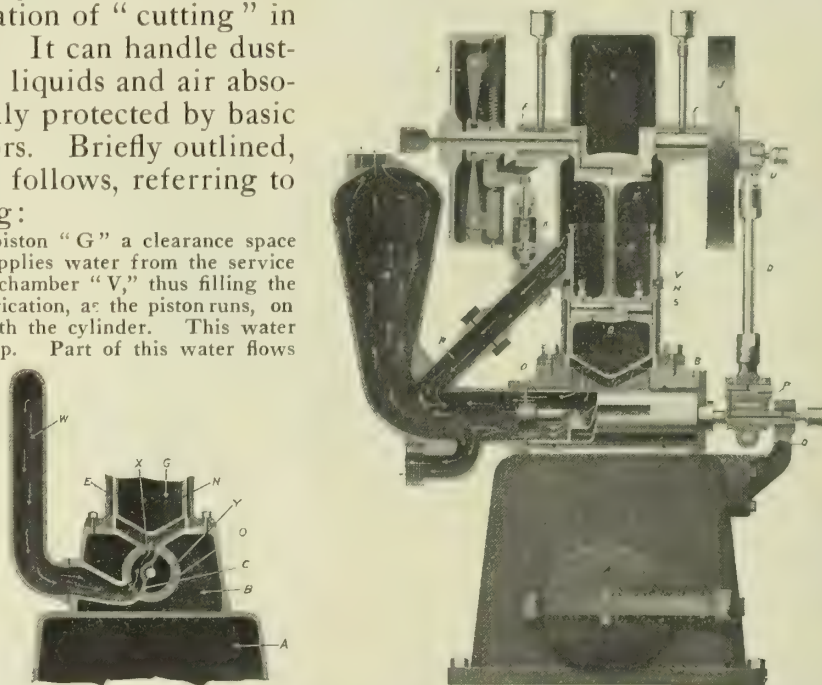
PALM PUMP.

This pump is especially designed for the work of handling dust-laden air, under the well-known Palm Patents, without the use of any dust strainers, water separators, or similar devices. The Palm Patents covering flowing water packing make possible the construction of this pump *with an efficiency of 95 per cent* while eliminating all piston rings, metallic contact or oil lubrication in the cylinder. The result is a saving of 50 per cent of the power required, and the entire elimination of "cutting" in the pump due to sand and grit. It can handle dust-laden air or any combination of liquids and air absolutely without injury. It is fully protected by basic patents and can have no imitators. Briefly outlined, the principle of this pump is as follows, referring to the sectional drawings adjoining:

Between the cylinder "E" and the piston "G" a clearance space is provided. The automatic valve "K" supplies water from the service pipes to this clearance through the reserve chamber "V," thus filling the clearance space and providing a perfect lubrication, as the piston runs, on a film of water without metallic contact with the cylinder. This water flows only during the operation of the pump. Part of this water flows upward, lubricating the upper part of the cylinder; the rest, flowing downward, lubricates the lower part of the cylinder and at the same time absolutely prevents dust or other foreign substances from coming in contact with the cylinder sides. On the down-stroke of the piston the air, water, and fine dust are all blown out together through the exhaust port "Y" in the valve "C," the dust and water passing to the sewer and the air going out by way of the exhaust pipe through "M."

VALVES.

The suction and discharge ports are combined in one cylindrical reciprocating valve mechanically operated from the crank shaft. This valve has no springs or other devices to get out of order, and is water-packed and water-washed in the same manner as the cylinder, thus doing away with the trouble of the accumulation of dust. The valve is positive and perfectly noiseless in operation.



END SECTION OF VALVE VERTICAL SECTION PALM VACUUM CLEANER

REFERENCE LETTERS TO SECTIONAL CUTS

A, Equalizing Chamber; B, Cylinder Head; C, Suction and Discharge Valve; D, Eccentric Rod; E, Cylinder; F, Main Bearings; G, Piston; H, Connecting Rod; I, Crank Shaft; J, Fly Wheel; K, Automatic Water Valve; L, Water Valve Governor; M, Exhaust Chamber; N, Cylinder Bushing; O, Valve Bushing; P, Valve Stem Crank; Q, Outboard Bearing; R, Overflow Pipe; S, Piston Pin; T, Crank Casing Cover; U, Upper Eccentric Rod End; V, Water Supply Chamber; W, Suction Pipe; X, Valve Suction Port; Y, Valve Exhaust Port.

TOOLS.

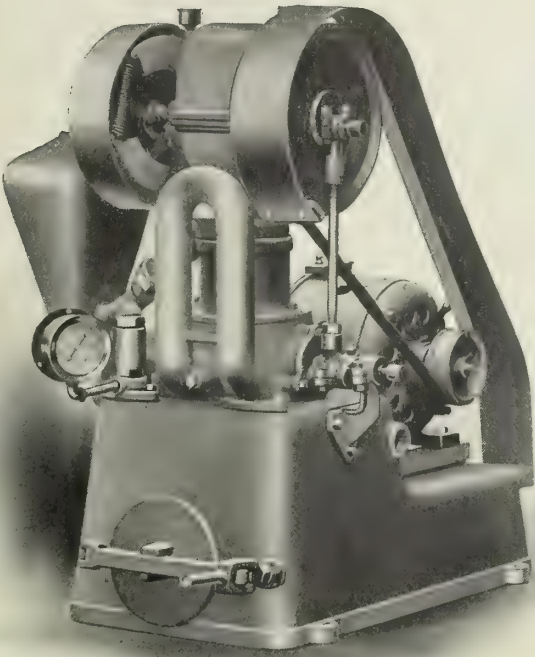
The Standard set of tools consists of an aluminum carpet tool, floor brush, dust brush, rubber nozzle for tufted upholstery and crevices, an aluminum tool for upholstered furniture, portières, mattresses, etc., and an aluminum general utility tool. In addition special tools are furnished for school work or for any case where special tools are required.

HOSE.

No hose larger than one inch in diameter is used with this system. Private house plants and similar equipments are supplied with 3/4-inch hose. This hose is especially light and convenient to handle.

CONVENIENCE

With this system there is nothing heavier than a single length of the light hose which has to be handled at one time, and one woman can do all of the work, including moving from one floor to another. It is especially adapted for use in connection with a simple system of remote control enabling the operator to start and stop the pump from as many points in the building as desired, by means of electric switches.



PALM VACUUM CLEANER; GENERAL VIEW

SUGGESTED SPECIFICATIONS.

The following points are submitted for the use of architects and engineers in drawing specifications for Sanitary Cleaning Systems and cover all of the modern and efficient systems.

General Description—The Sanitary Cleaning System shall consist of the Palm System or equal, capable of operating cleaning tools from any.....openings in the suction pipe lines at one time, and shall be capable of removing dust and dirt from the building in a thoroughly first-class and sanitary manner to the satisfaction of the architect.

The Pump—The pump shall be of the reciprocating or positive blow type and to be of such efficiency that the power consumption will not exceed 375 watts for each 10 cubic feet of atmospheric air drawn through the end of the hose. This test is to be made when the pump is operating.....lines of hose of 100 feet each and the test is to be based on the actual amount of air drawn through the hose entirely independent of the displacement of the pump.

Hose—The hose shall consist of the best quality of metallic hose, not exceeding one inch in inside diameter. All hose connections shall be of the slip-joint type.

Tools—Each set of tools shall include one carpet sweeper, one floor brush, one dust brush, one upholstered furniture, portière and mattress cleaner, one rubber nozzle for tufted upholstery and crevices, and such other special tools which contractor may submit. The sizes of all tools shall be specified in the proposal.

Wall Connections—The wall connections shall close automatically on the removal of the hose connections, and remain air-tight without other pressure than that of the vacuum.

Piping and Fittings—The piping shall consist of standard full-weight black iron pipe thoroughly inspected for obstructions and defects and thoroughly reamed at the ends. All sizes to be as shown on plans on file in this office. All fittings to be standard long-turn drainage fittings (recessed). All turns in the horizontal piping to be made with Y-branches, with one opening closed by a clean-out plug in line with the pipe nearest the pump. All fittings to which wall connections are to be attached to be left 7/8 inch back from the finished face of the baseboard or other surface on which the wall valve is to rest.

Wiring—Wiring, switches and electric appliances shall meet all requirements of the Fire Underwriters' and local regulations governing such installations for.....H.P. motors, and shall comply in detail with the wiring diagrams furnished by this office.

GUARANTEE.

We guarantee the machinery to be according to specifications and to be of first-class material and workmanship, complete in detail and of suitable design.

We guarantee the machinery against defects in material and workmanship (ordinary wear and tear excepted) for a period of one year, and agree to furnish parts to replace defects within that time, free of charge to the owner.

DATA AND PRICES OF THE PALM VACUUM CLEANER

No.	Capacity	Guaranteed maximum power consumption	Hose	Approximate shipping weight	Price, f. o. b. Works
E	1-line-hose	.7 kw.	50 ft. 3/4-in.	700 lbs.	\$350.00
F	1-line hose	1.5 kw.	100 ft. 1-in.	1,100 lbs.	525.00
G	2-line hose	3 kw.	200 ft. 1-in.	1,600 lbs.	850.00
H	3-line hose	4.5 kw.	300 ft. 1-in.	2,000 lbs.	1,100.00
GD	4-line hose	5 kw.	400 ft. 1-in.	2,900 lbs.	1,400.00
HD	6-line hose	7.5 kw.	600 ft. 1-in.	3,800 lbs.	1,800.00

The guaranteed power consumption is for the input of the motor, with the pump running at full capacity and rated speed.

VACUUM ENGINEERING COMPANY

MANUFACTURERS OF

“Rotrex” Vacuum Cleaning Systems

114 Liberty Street
NEW YORK, N. Y.

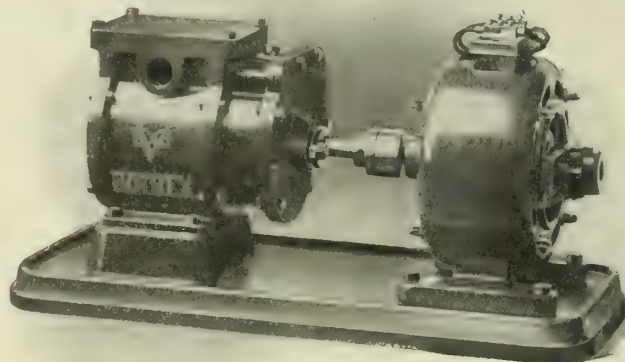
BRANCH OFFICES IN ALL PRINCIPAL CITIES

PRODUCTS.

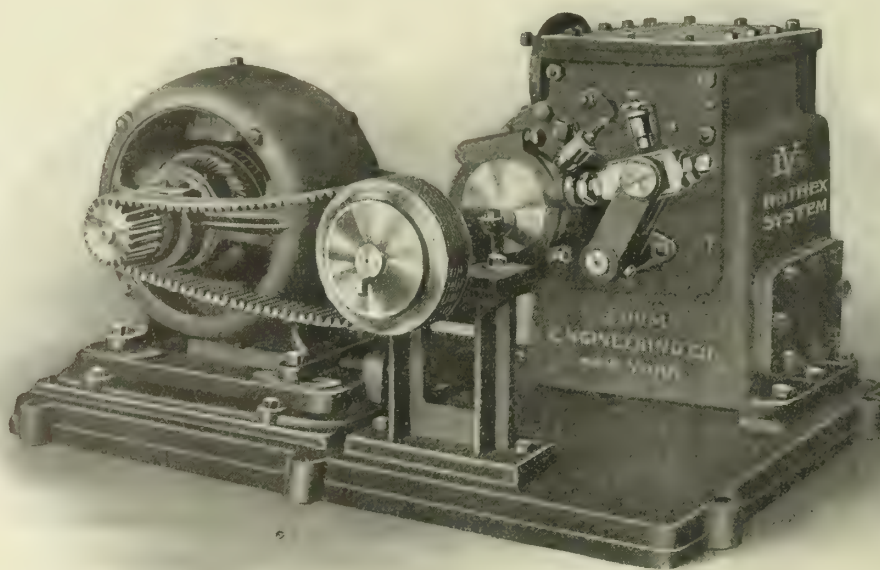
Complete VACUUM CLEANING SYSTEMS of all descriptions installed in hotels, hospitals, residences, churches, school buildings, theaters, office buildings, apartment houses, department stores, public buildings, etc.

DESCRIPTION.

The system consists of either a Rotary or a Reciprocating Pump, as may be preferred, with all necessary cleaning tools, hose, piping, etc. All dust and dirt, after being thoroughly dissolved, are carried through the pump direct to the sewer in the form of dirty water, thereby doing away with all separating tanks. The most efficient Vacuum Machine is one that will deliver the largest quantity of air under a given vacuum for the lowest consumption of power; this is accomplished with the “Rotrex” Pump, which consists of a Rotor within a cylinder, without sliding blades or other complicated parts. The Rotor runs on two long brass bearings, which are the only real wearing parts. The friction therefore is reduced to a minimum; this means a lower cost for operation.



(Patented)
DIRECT-CONNECTED “ROTREX” RESIDENCE PLANT
Floor space, 39 x 14 inches



(Patented)
CHAIN-DRIVEN “ROTREX” PLANT (ALL SIZES), EITHER ELECTRIC OR STEAM

ADVANTAGES.

Our principal claims for the "Rotrex" System are:

First, no sliding blades in pump. Second, no rubbing parts. Third, lower cost for operation. Fourth, less wearing parts. Fifth, discharges dirt direct to sewer. Sixth, no separating tanks. Seventh, requires less floor space. Eighth, requires no time emptying tanks. Ninth, no unsanitary emptying of tanks. Tenth, simplicity. Eleventh, no heating of pump. Twelfth, no oil used in pump, etc.

CO-OPERATIVE SERVICE.

We are at all times pleased to co-operate with architects and owners, and place at their disposal our experience in arranging Vacuum Cleaning and Scrubbing Installations to the best advantage.

SPECIFICATIONS FOR THE "RO-TREX" ELECTRICALLY OPERATED VACUUM CLEANING SYSTEM.

The following specifications will explain our System more fully, and may also be of assistance to architects, etc., in preparing their specifications:

These Specifications are intended to cover all labor and material to completely install ready for operation a Vacuum Cleaning System in for the purpose of removing dust from carpets, rugs, walls, floors, upholstery, etc.

General Description—The Vacuum Producing Apparatus will consist of a Rotary Vacuum Pump of the "Pratt-Rotrex" type (Patented) and Electric Motor mounted on a cast-iron base, with all the necessary attachments, hose and cleaning tools, and of sufficient capacity to operate sweepers at one time.

Vacuum Producer—The Vacuum Producer will be the "Rotrex" Patent Rotary Pump having a carefully balanced Rotor revolving within the cylinder, without sliding blades, or other complicated parts. The division between the suction and discharge within the cylinder is effected by the means of an oscillating arm operated from the exterior of the Pump, where it is at all times accessible.

The interior of the Pump will be so constructed as to allow a small clearance between the moving parts, thus eliminating both friction and wear. A small flow of water through the Pump produces a perfect seal between the suction and discharge, thus insuring a high volumetric efficiency. Owing to the absence of internal friction, practically the entire power is utilized in producing effective cleaning.

Bearings—All Bearings to be brass-lined, of ample dimensions and so designed as to be readily accessible.

Lubrication—A perfect system of Lubrication for all bearings will be provided and so arranged as to require a minimum of attention.

Motor—The Motor will be a General Electric or other approved type and capable of developing horse-power without undue heating or sparking and designed for current at volts, ... phase cycles.

The Motor will be of the open type, equipped with self-oiling bearings and installed so as to comply with the standard requirements of the American Institute of Electrical Engineers and the National Board of Fire Underwriters.

Starter—The necessary Starting Apparatus, switch and fuses will be furnished as required by the size and type of motor.

Base Plate—The pump and motor will be mounted upon a heavy cast-iron Base Plate, thus insuring an absolute alignment.

Saturation Chamber—The Saturation Chamber to be of ample capacity, and so designed as to produce perfect saturation of the dust, and fitted with a durable screen for the purpose of preventing large particles entering the pump. A removable cover will be provided so that the interior of the chamber can be readily inspected whenever necessary.

Automatic Control—A suitable and efficient Controlling Device is to be furnished for the purpose of automatically equalizing the vacuum and preventing undue waste of power when less than the total number of sweepers are in operation at one time.

* *Connections*—The Connections between the rheostat and the motor to be made by the VACUUM ENGINEERING COMPANY, also the necessary connections for the water supply and electric connections to within ten feet of the Vacuum Producer.

Piping—The VACUUM ENGINEERING COMPANY will furnish and install a system of Vacuum Piping, of suitable size to consist of risers and necessary horizontal piping to connect said risers with the Vacuum Producer.

All Vacuum Piping to be of iron; standard weight, and specially selected for smooth interior surface.

The ends of all Pipe to be reamed smooth after cutting; and fittings to be of the recessed type, and all right angle bends to be made by means of TYs and the unused branch fitted with clean-out plug. Where the conditions are such that TYs cannot be used, long-sweep bends are to be substituted.

All horizontal Pipe to be properly and securely suspended by means of standard pipe hangers, and risers to be securely braced and supported at frequent intervals.

Outlets—On each floor and connected to each riser, and in such other places as may be necessary, there is to be a suitable Outlet or hose connection. The total number of said Outlets to be

Cleaning Tools and Hose—The VACUUM ENGINEERING COMPANY will furnish complete sets of Cleaning Tools, each set to consist of:

1 12-inch Carpet Renovator; 1 Bare Floor Sweeper; 1 4-inch Rubber Tuft Cleaner; 1 12-inch Flat Wall Brush; 1 Round Wall Brush; 1 3-piece Extension Tube; 1 Observation Dust Glass; 100 feet of 1-inch Hose, specially constructed with continuous steel wire support and made as light and flexible as possible. This Hose will be furnished in either 25 or 50-foot lengths as desired, and with suitable couplings attached.

Instruction—Full Instruction regarding the care and operation of the apparatus will be furnished.

Guarantee—The VACUUM ENGINEERING COMPANY guarantees that there will be no extra wear or depreciation of the pump by reason of dirt being carried through same; also, that all material and workmanship will be of the best in its respective class, and that all the apparatus and equipment furnished will be free from any inherent mechanical defects.

WILLIAM GALLOWAY

Terra Cotta and Pottery
Thirty-Second and Walnut Streets
PHILADELPHIA, PA.

WALNUT STREET POTTERY
ESTABLISHED 1810

PRODUCTS.

ARCHITECTURAL TERRA COTTA; FURNITURE and POTTERY for GARDEN and INTERIOR DECORATION; FLOWER-POTS, VASES, PEDESTALS, URNS, FLOWER-BOXES, JARDINIERES, SUN-DIALS, BENCHES, TABLES, STATUARY, HERMES, FOUNTAINS, Etc.; GAS-LOGS; CHIMNEY CAPS, etc.



TERRA-COTTA BALUSTRADE
30 inches high

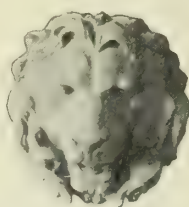


NO. 189. ANTIQUE TABLE (POMPEII)
Stone top, 39 inches x 63 inches

The execution of special designs from drawings forms an important branch of our work. Quotations will be furnished upon ornamental terra cotta of all kinds; special attention being given to balustrades and garden accessories, mantels, and other high-class work.

Our extensive collection of pottery and terra-cotta furniture can not be shown in the limited space. A fully illustrated catalogue will be sent upon request.

The "Galloway" chimney caps and gas-logs are also fully described in separate pamphlets.



FOUNTAIN HEAD

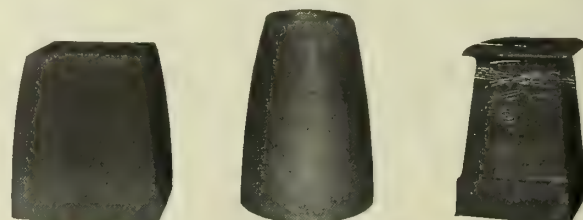


NO. 184. ANTIQUE FERNERY
Base 19 inches x 45 inches. Fitted with a removable Flower-Box



FLOWER-POT

The Medallion Design, furnished in three shapes and many sizes. Price, \$1.25 to \$45.00



CHIMNEY CAPS

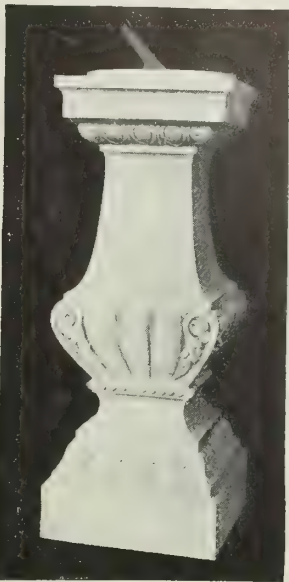
Our stock patterns comprise a variety of shapes and sizes that can be furnished in our "standard" dark red, or any of the various shades of terra cotta—gray, buff, etc.



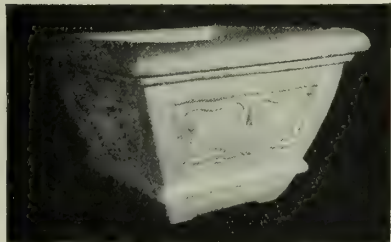
NO. 202. DORIC SUN-DIAL



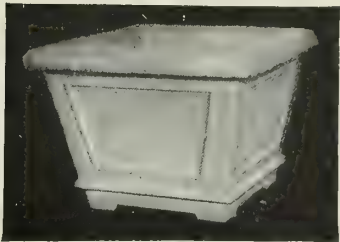
NO. 108. MORESQUE VASE
Copy of vase in Kew Gardens, London
NO. 212. PEDESTAL
Total height, 44 in.; width of vase, 40 in.



NO. 286. DIAL (36 in. high)



NO. 194. VASE (17 in. wide)



NO. 136. VASE (23 in. wide)



NO. 132. ANTIQUE (42 in. high)



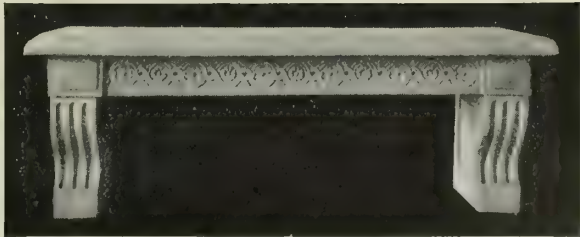
NO. 6. MERMAID FOUNTAIN
(4 feet high)



NO. 2. LOUIS XIV VASE (40 in. high)



NO. 179. VASE (22 in. wide)



NO. 175. BENCH (52 in. long)



NO. 226. VASE (24 in. wide)

HITCHINGS & CO.

Iron-Frame Greenhouses and Equipment

1170 Broadway

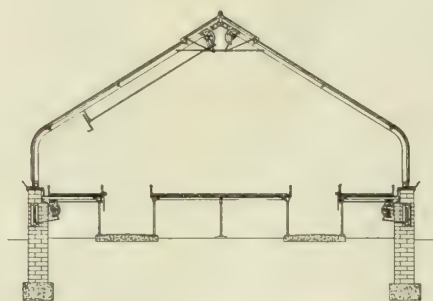
NEW YORK, N. Y.

TELEPHONE, 5420 MADISON SQUARE

FACTORY
ELIZABETH, N. J.

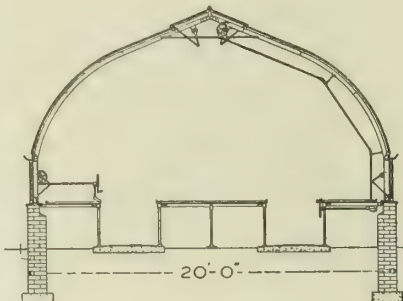
PRODUCTS.

GREENHOUSES for general purposes, for Palms, Orchids, Ferns, Roses; also, GRAPERIES, ORCHARD HOUSES, CONSERVATORIES, and SUN-PARLORS; HOT-WATER and STEAM-HEATING APPARATUS.



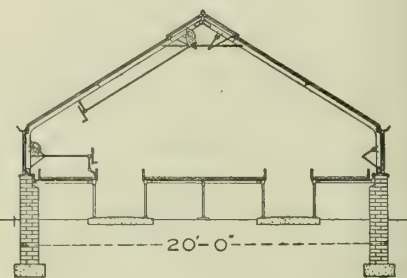
SECTION OF CURVED EAVE HOUSE

As adapted to our all-steel frame. With varied height sides it is suitable for all plants requiring a maximum of light



SECTION OF CURVILINEAR HOUSE WITH LOW SIDES

Used for general growing purposes or show houses



SECTION OF STRAIGHT-ROOF HOUSE FOR CUT FLOWERS, VEGETABLES, ETC.

DESCRIPTION.

Hitchings' All-Steel Frame Greenhouses are made either with the curved eave, having the gutter and sill combined, or the regular angle eave with the gutter at that point. The sills, the non-freezable gutters and roof bar brackets are cast-iron; the combined rafters and posts and the purlins are wrought steel.

All wooden portions are manufactured from air-dried Gulf Cypress.

Glass on curved eave houses is either 16 or 24 inches wide.

ADVANTAGES.

Adaptability to the architect's designs. Can be erected rapidly.

Extreme lightness of construction, reducing the shade to a minimum, making best possible growing houses. Great durability.

In Curvilinear Roofs the glazing bars are sawn from the solid wood to fit the curve. The glass is bent to the radius of the curve.

ILLUSTRATIONS.

Fig. 1 shows side detail curved eave. Cast-iron gutter and sill are combined. Steel rafters are bolted direct to sill. Roof bars are secured to gutter by cast-iron brackets. Curved roof bar is reinforced by a wrought steel strap running on the under side from the purlin to the sill. Ventilators are generally placed in the walls between the sill and ground line.

Fig. 2 shows side detail, gutter at eave. Steel rafters are bolted direct to cast-iron sill. Roof bars are secured to gutter by cast-iron brackets. Cast-iron gutters are bolted to the rafters, forming a part of the frame. Ventilating sash is hinged to the gutter.

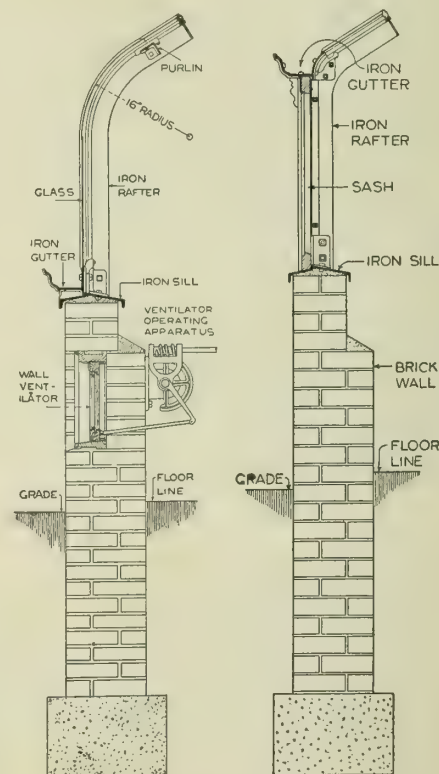


Fig. 1. With Curved Eave Fig. 2. With Gutter at Eave
SIDE-WALL DETAILS

ILLUSTRATIONS.

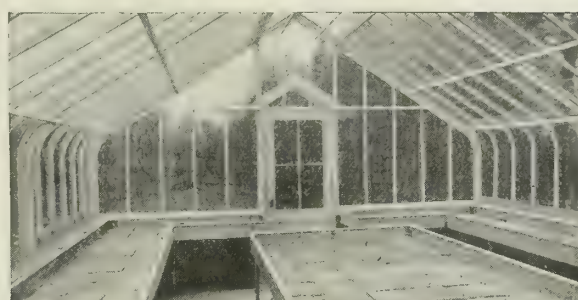
This illustration gives an idea of the extreme lightness of our curved eave house. With the gutter at the sill there is no shade line at the eave. The house can be made still lighter by using glass twenty-four inches instead of sixteen inches wide.



INTERIOR SIDE VIEW OF CURVED EAVE HOUSE



CURVED EAVE GABLE EXTERIOR



CURVED EAVE INTERIOR

Equipped with iron-frame, cypress-side and tile-bottom benches



PRACTICAL GROWING RANGE FOR CUT FLOWERS AND VEGETABLES

The high-sided house at rear for tall-stemmed plants like American Beauty roses



CURVILINEAR RANGE ERECTED FOR CYRUS H. CURTIS, WYNCOTE, PA.

LORD AND BURNHAM CO.

Greenhouse Designers and Manufacturers

IRVINGTON, N. Y.

NEW YORK, N. Y., 1133 Broadway

PHILADELPHIA, PA., 1215 Filbert Street

BOSTON, MASS., 819 Tremont Building

CHICAGO, ILL., The Rookery

PRODUCT.

Our SECTIONAL IRON-FRAME GREENHOUSE has been developed and perfected through our constant efforts to secure greater durability and to meet the demand of gardeners for more light.

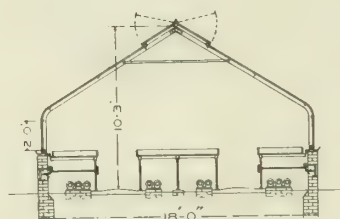


FIG. 1. Section A

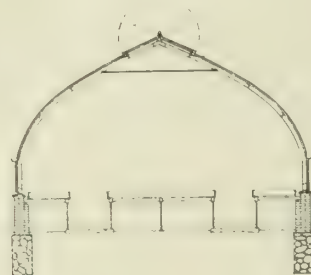


FIG. 2. Section B

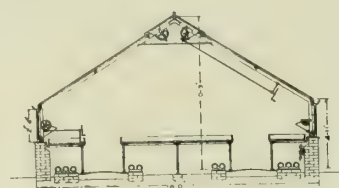


FIG. 3. Section C

DETAILS OF GREENHOUSE CONSTRUCTION

SECTIONAL
CONSTRUCTION.

One section is formed by setting up two spans of rafters, 8 feet 4 inches apart, at either end of two lengths of cast-iron sills. The cross framing between these two spans of rafters consists of the gutters at the eaves and purlins between the eaves and ridge. These latter are placed the right distance apart to carry the roof bars. Another section may be added by setting up one more span of rafters 8 feet 4 inches further along, with cross framing, and so on until you have the required number of sections for the length of the house.

STRENGTH.

The strength of this construction is in its steel-bar rafters placed thin edge to the light and framed between with steel angles for purlins, and in the method of securing the rafters to the sills at the joints, where two sections of sills meet, and to the gutters, in the same manner, so that the sections of sill and gutter on either side of each span of rafters are united to the rafters as if they were part of them, making the entire iron frame of rafters, sills, gutters and purlins as one piece.

MATERIALS.

All iron is of the highest grade; the wood used is clear Gulf cypress of best quality, thoroughly air-dried. This wood grows in the swamps of Florida and has proven to have no equal for withstanding the destructive conditions of constant moisture existing in greenhouses.

ILLUSTRATIONS.

Fig. 1 shows a curved eave, even-span, straight-roof Sectional Iron-Frame house, fitted with cast-iron sills, for masonry walls; two lines of ventilation at the ridge and two at the sides; galvanized-iron frame plant beds with tile bottoms; cement walks and the usual arrangement of heating pipes.

Fig. 2 shows a Curvilinear Roof. Aside from the location of the gutter at the eave, the construction is the same as for section A (Fig. 1). Plant tables having galvanized-iron frames and slate tops are placed around the sides, with cement walks and the customary heating pipe arrangement. Increasing height of sides makes a curvilinear palm house. Straight-roofed palm houses may be obtained in the same way.

Fig. 3, same as Fig. 1, except that the gutter is located at the eave in place of at the sill.

Fig. 4. Combination sill and gutter used on curved eave house.

Fig. 5 shows Cast-Iron Sills. They are secured to the rafters by brackets. They are cast with a rabbet which acts as a stop for the side sash, and flanges overhang the sides of the walls for weather protection.

Fig. 6 shows Cast-Iron Gutter. Cast in lengths of 8 feet 4 inches and in ample sizes. They are secured to the rafters by gutter brackets. The flange at the bottom of the gutter acts as a stop for the side sash, the flange at the top secures the glass, and the sash bars are fastened to it by special clasps. Sash are hinged directly to under side of gutter.

Figs. 7 and 8 show Sash-Bar Clasps. They are bolted to the gutters and screwed to the roof bars, forming a rigid fastening and carrying off the condensation, insuring a dry, lasting joint of wood to iron.

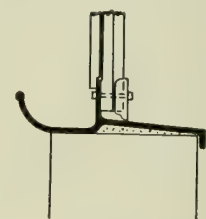
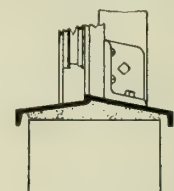
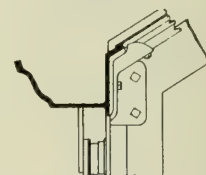
FIG. 4.
COMBINATION
SILL AND GUTTERFIG. 5. CAST-IRON
SILLSFIG. 6. CAST-IRON
GUTTERFIG. 7. SASH-BAR
CLASPFIG. 8. SASH-BAR
CLASP

Fig. 9 shows Purlins. They are secured to the rafters by iron brackets, and screwed to the sash bars.

Fig. 10 shows Rafter with Cap. The cap is grooved to fit over the rafter, forming an insulation from both heat and cold, and preserves a perfect alignment between rafter and sash bars.

Fig. 11 shows Sash Bars. The cypress bars are $\frac{15}{16} \times 1\frac{3}{4}$ inches, spaced to receive glass 16 inches wide, five bars between each pair of rafters. They have drip groove on each side to carry off condensation moisture. Curvilinear bars and rafter cap are cut from the solid to prevent springing.

Fig. 12 shows Bar used for Gable and Partition.

Fig. 13 shows Ridge and Ridge Bracket. The ridge is of cypress and in two pieces, tongued and grooved to fit. The lengths are joined by metal tongues. It is milled to receive vent sash. It is bolted to the rafters by the ridge bracket.

Fig. 14 shows Drip Header. It caps the purlin and forms a seat for vent sash. Made with gutter which discharges sash condensation on roof. Roof bars are fastened to it by sash-bar clasps.



FIG. 9. PURLINS

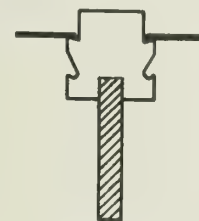


FIG. 10. RAFTER WITH CAP



FIG. 11. SASH BARS



FIG. 12. BAR USED FOR GABLE AND PARTITION

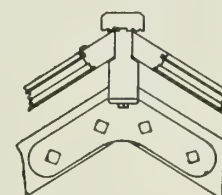


FIG. 13. RIDGE AND RIDGE BRACKET

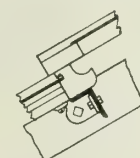


FIG. 14. DRIP HEADER

GLAZING.

All glass is bedded in putty and supported by wooden parts, which prevent breakage by expansion and contraction of metal.

REPAIRING.

Aside from the usual repainting, the matter of repairs is a minor one, for the small roof bars are fastened with iron clasps and it is a simple matter to unscrew, cut out the defective part and splice in a new piece.

ROOF LINE ACCENT.

As the rafter caps and pilasters, which are larger than the glazing bars, are united at the end of each section this point is accented, giving an effect of broad spacing throughout the entire roof and sides, not obtainable where the glazing bars are of one size and no rafters are used.

ERECTION.

This is the ideal greenhouse construction, so scientifically worked out that the labor of preparing materials and erecting is reduced to a minimum. It is not a house that has to be cut and fitted by hand, on the job, but the entire frame is passed through a line of machines in our factory, where it is cut, shaped, punched, fitted and primed, ready for immediate erection. When the materials are delivered to you it is merely a matter of bolting up the iron parts and fastening the screws. The expense of erecting is thus greatly reduced, practically equalizing the advance in cost of the iron-frame house over the wooden structure.

BENCHES AND TABLES.

Four kinds of construction are employed in our regular stock benches and tables:

BENCHES—(1) Indestructible all cast-iron; sides, bottoms and ends cast in separate pieces; legs of pipe. (2) Galvanized-iron frames with cypress bottoms and sides. (3) Galvanized-iron frames with tile bottoms and cypress sides. (4) All cypress.

TABLES—(1) Indestructible all cast-iron; sides, bottoms and ends cast in separate pieces; legs of pipe. (2) Galvanized-iron frames with $\frac{3}{4}$ -inch planed slate tops. (3) Galvanized-iron frames with cypress tops. (4) All cypress.

VENTILATION.

Ventilation sash are located at ridge and where required on the sides. They are in continuous runs and are opened by our patented Ventilating Machinery, with hand wheel placed in convenient location.

HEATING.

Coils of $3\frac{1}{2}$ -inch (I. D.) cast-iron pipes made up with caulked joints are generally located under the benches where they do not take up any growing space and are so arranged as to secure a free circulation of air around them. Their surfaces are so distributed as to give the desired temperature with sufficient control in each compartment to produce the best growing conditions.

"Burnham" Boilers are used (see "SWEET'S" INDEX, "Burnham" Boilers) with ample mains for carrying water to the coils.

The system is installed with sufficient grade to insure rapid circulation and even distribution. The coils are equipped with automatic air headers to prevent all air locks.



FIG. 15. A FIFTY-FOOT, TWO-COMPARTMENT, EVEN-SPAN HOUSE
ERECTED FOR HENRY YOUNG, JR.



FIG. 16. CURVILINEAR HOUSE ERECTED FOR R. V. LINDABURY,
BERNARDSVILLE, N. J.



FIG. 17. CURVILINEAR PALM HOUSE WITH HIPPED-ROOF AND STRAIGHT-ROOF GROWING HOUSES
The palm house is connected to residence conservatory by an underground passageway.



FIG. 18. PALM HOUSE
ON HON. WHITELOW
REID'S ESTATE
WHITE PLAINS, N. Y.

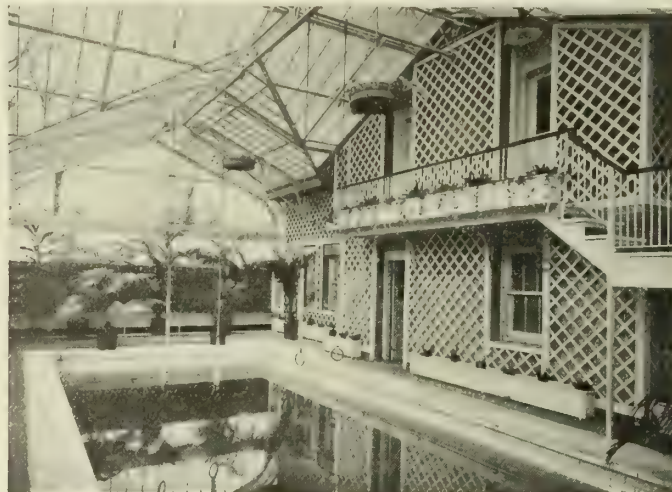


FIG. 19. GLASS ENCLOSED SWIMMING-POOL AND CONSERVATORY
CHARLES W. LEAVITT, JR., Architect



FIG. 20. GLASS-ROOFED
BRICK-COLUMN
ENTRANCE TO
SERVICE BUILDING
HON. WHITELOW
REID'S ESTATE



FIG. 21. LANTERN-TOP OCTAGON PALM HOUSE
WITH CURVILINEAR WING HOUSES FOR
CUT FLOWERS, ERECTED AT PITTSBURG, PA.



FIG. 22. PALM HOUSE ERECTED FOR PAYNE WHITNEY,
MANHASSET, L. I.
GUY LOWELL, Architect

CURVED
EAVE CON-
STRUCTION.

By combining the curved eave in a special way with our Sectional Iron Frame Construction we have secured an every way practical proposition, which puts it far in advance of any other curved eave greenhouse.



FIG. 23. THREE COMPARTMENT, CURVED EAVE HOUSE ERECTED AT HARTFORD, CONN.

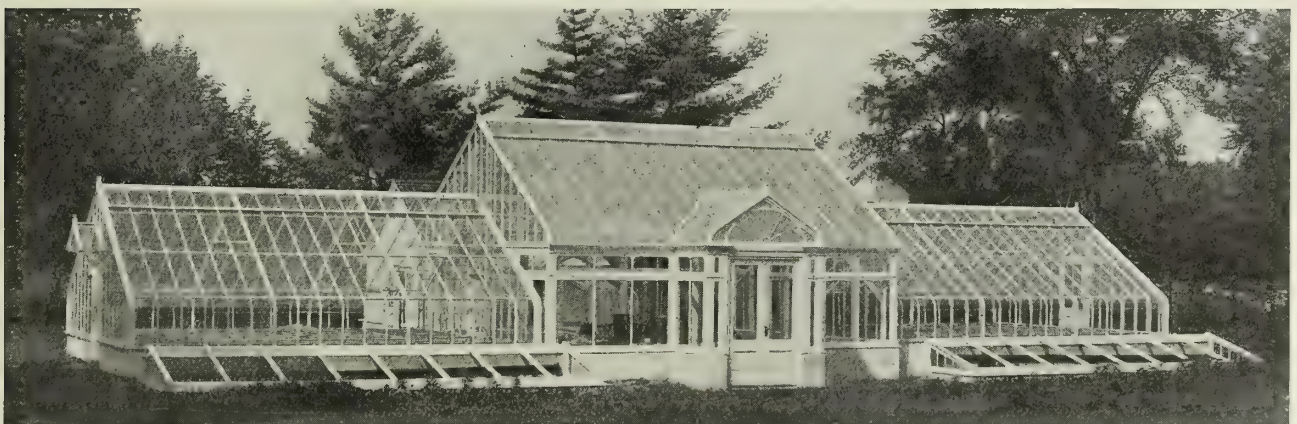


FIG. 24. A MODEL LITTLE RANGE OF CURVED EAVE HOUSES ERECTED AT BRIDGHAMPTON, L. I.



FIG. 25. REAR VIEW OF HOUSES ABOVE, SHOWING THE GLASS PASSAGE HOUSE CONNECTING THE PALM HOUSE AND WORKROOM

PIERSON U-BAR CO.

Builders of U-Bar Greenhouses

1 Madison Avenue

NEW YORK, N. Y.

TELEPHONE, 6302 GRAMERCY

PRODUCTS AND SERVICES.

We manufacture, erect and equip U-BAR GREENHOUSES. The equipment consists of VENTILATING APPARATUS, BENCHES, TABLES, COMPLETE HEATING PLANT, etc.

DESCRIPTION.

In the U-Bar Construction we encase the wooden sash-bar with a galvanized steel U-shaped bar, the combined members being no larger than the smallest wooden sash-bar used in other forms of construction.

Owing to their strength we are enabled to eliminate all the heavy iron rafters and many lateral supports, and to place the bars farther apart, permitting the use of glass twenty-four inches wide. By bending the bars at the eaves line and using curved glass at this point we eliminate all cumbersome gutters, plates, posts, and other shading members, resulting in a structure of extreme lightness and of great strength.

ADVANTAGES.

The steel covering of the wooden bars eliminates interior woodwork with its tendency to decay. The galvanizing of all steel members prevents rusting; the use of the wooden core-bar prevents injurious expansion and contraction of the structure and consequent glass breakage. All these features combine to produce a structure of wonderful durability and low cost of maintenance.

The extreme lightness of construction, the wide glass, the absence of all heavy shading members, assure unusual productiveness.

The curved eaves line, the aluminum finish of the interior, and the absolute simplicity of the construction produce a structure unmatched in attractiveness and adaptability.

U-BAR SIZES.

The three cuts on opposite page show the exact sizes of the U-Bar used in our various work.

THE CORE-BAR.

It is Red Gulf Cypress, free from sap and knots and is milled from thoroughly air-dried stock. All curved portions are cut from the solid block to prevent warping out of shape.

THE STEEL U-BAR.

It incases the lower part of the cypress core-bar, the latter being screwed to the U-Bar with screws placed alternately on either side at frequent intervals, thus securing the binding of the core-bar and U-Bar together.

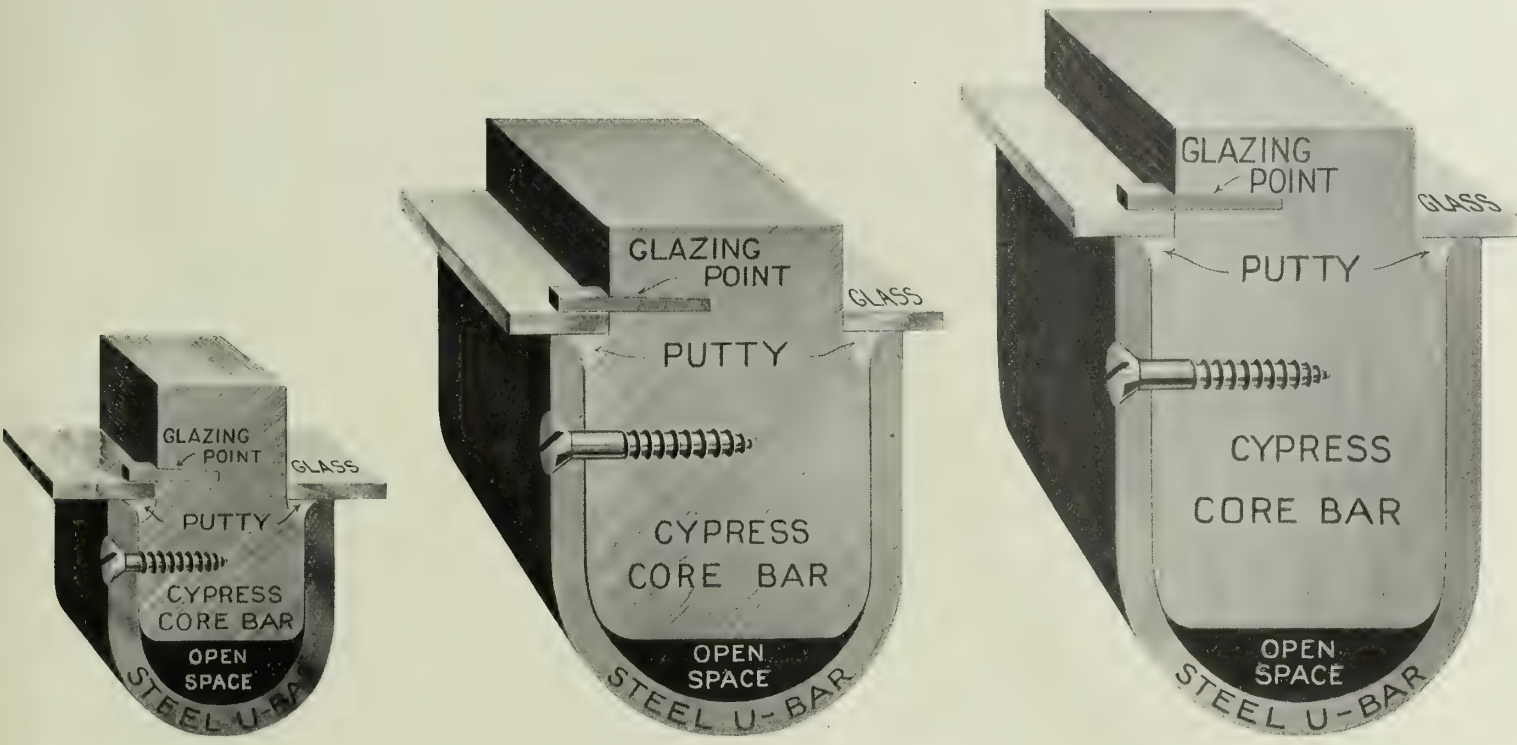
CORE-BAR DECAY PREVENTED.

Before encasing in the steel U-Bar the core-bar is treated to prevent its decay. After encasing and before the glass is set it is painted with white lead and oil; after the glass is set the exposed portion of the core-bar is again painted, thus giving it a thorough protection against the weather. The open space below the core-bar insures a circulation of air as an additional protection against its decay. The steel U-Bar fully protects the core-bar from the destructive conditions existing in the interior of greenhouses.



A U-BAR GREENHOUSE. RALEIGH C. GILDERSLEEVE, Architect

Note the clean-cut, graceful lines, the dissimilarity from the ordinary greenhouse



U-BAR NO. 1
This shows exact size of the U-Bar used in general work

U-BAR NO. 2
Exact size of bar used in palm houses and large structures

U-BAR NO. 3
Exact size of bar used in the largest palm houses, etc.

RUST PRE-VENTION.

To prevent all possibility of rusting, the steel U-Bar is heavily galvanized by the hot process after all shaping, drilling and fitting are done.

GLAZING METHOD.

The glass is bedded in putty and laid with lapped joints of about $\frac{1}{4}$ inch directly upon the edges of the steel U-Bar and is secured to the projecting core-bar with wedged-shaped zinc glazing nails. The core-bar provides the best-known medium for adhesion of the putty and fastening for the glass and makes possible the most satisfactory system of glazing.

EXPANSION AND CONTRACTION.

Another object of extending the core-bar above the steel U-Bar is to guard against exposing the metal surfaces of the U-Bar to the uneven outside temperature, thus preventing destructive expansion and contraction and consequent loosening of the putty bed, leakage, and breaking of glass.

ALUMINUM INTERIOR FINISH.

After the glazing is done and the squeezed-out putty is cut off from the inside and its exposed edges painted, the steel U-Bar is given a coat of aluminum, which makes a durable, bright attractive finish to which neither dirt nor mildew adheres nor moisture affects, thus eliminating the expense and annoyance of frequent interior painting.

CONDENSATION.

Drip grooves are not necessary to carry away the condensation, because in all weather what little condensation forms upon the exposed surfaces of the steel U-Bar follows down the bars until intercepted by the lateral supporting members, which also act as conductors to carry away this moisture. There is enough warmth transmitted through the steel U-Bars to the glass to always keep a strip of glass about $\frac{1}{4}$ inch wide, next the steel U-Bar, perfectly clean and dry in any weather, thereby doing away with any water reaching the U-Bars from the glass surfaces. The freedom from obstructing members on the inside of the house at the eaves allows all condensation to follow down uninterrupted to the sill, doing away entirely with the troublesome dripping always found in other forms of construction. The result of these features is that the U-Bar roof is the driest roof ever used for greenhouse purposes.

SNOW FREE ROOFS.

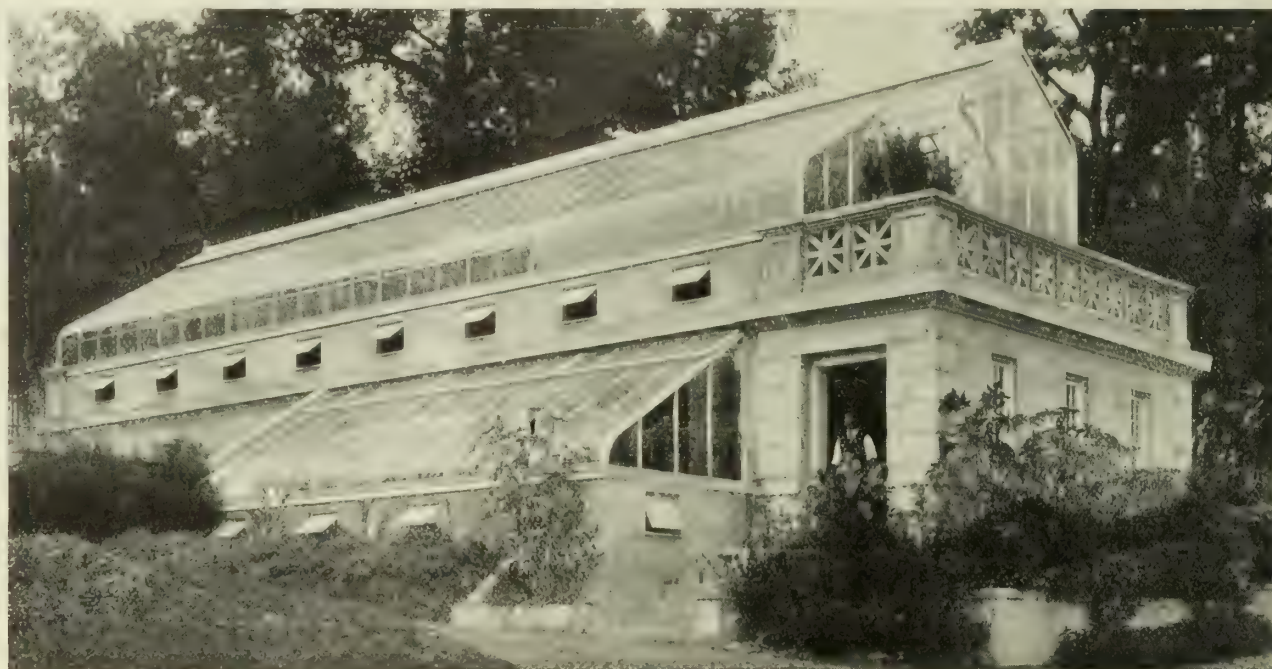
Because there are no obstructing members at the curved eaves snow does not stay on the roof, but slides off as fast as it falls, no matter how severe the conditions; therefore, there is no darkening of the house.

UNOBSTRUCTED VISION.

There being no lateral obstructing members at the eaves one obtains an unobstructed view of the contents of the house from outside and an unobstructed outlook from the inside of the house. These features add very greatly to the attractiveness of U-Bar houses.

ILLUSTRATIONS.

These cuts show several U-Bar Greenhouses, of different types and combinations, in their locations on private grounds. In every instance they are prominent features in the ground scheme and are closely associated with the residence.



GREENHOUSE ERECTED AT MONTCLAIR, N. J.

Le Brun, the architect, took advantage of the ornamental simplicity of the U-Bar construction and secured a result both unique and practical



INTERIOR OF A GREENHOUSE—PART SIDE, PART GABLE VIEW

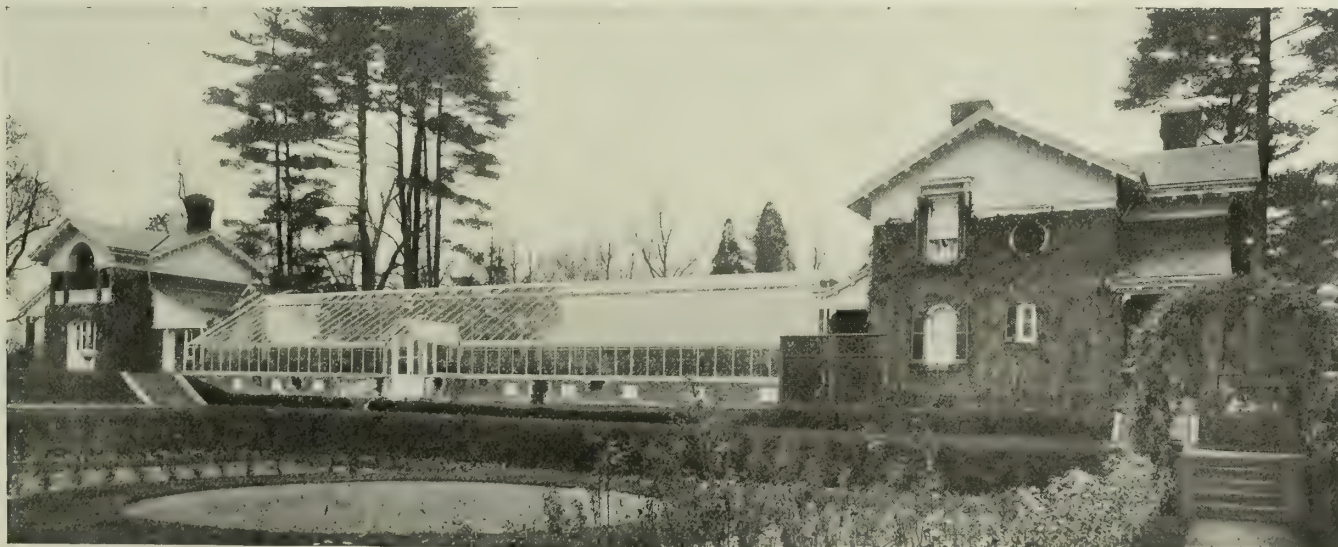
Lightness and simplicity are the ear-marks of the U-Bar construction. Looking out from the inside you get the full force of these superior products



CIRCULAR CURVILINEAR U-BAR PALM HOUSE, ERECTED FOR H. J. HEINZ, PITTSBURG, PA.
It is joined to the U-Bar wings by connecting passages, which arrangement serves both to accent the palm house and place the growing houses a sufficient distance away to be free from its shade



PART VIEW OF AN L-SHAPED RANGE, ERECTED, AT NEW HAVEN, CONN., FOR F. F. BREWSTER
ROBERT S. STEVENSON, Architect
Illustrates a successful departure from the conventional greenhouse treatment. Adaptability to design is a U-Bar superior point



ROSE HOUSE, ERECTED FOR F. W. VANDERBILT, AT HYDE PARK, N. Y.
Replaced a house of another construction which had been up but a few years

ASSISTING THE
ARCHITECT.

CO-OPERATING
WITH THE
ARCHITECT.

In our 72-page Catalogue are shown the complete structural details, with sections and such facts as will be of valuable assistance to the architect who wishes to draw up his own plans.

When you have a greenhouse subject in hand, it is our desire to co-operate with you, and by going over it together to give you the advantage of our knowledge and experience as greenhouse builders.

The simplicity and grace of the U-Bar Construction, with its light framing, wide glass, curved eaves, and other structural advantages, make it essentially the greenhouse for the architect.

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A permanent stain and finish in one coat which goes about twice as far as other products sold for the purpose; producing the old, velvety, mission effect on either hard or soft wood. Made in ten rich, velvety shades. Particularly recommended for use in halls, libraries, dining-rooms, dens, etc. Samples and large panels free upon request.

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A great time and labor saver. Permits a perfect job of refinishing. Its special solvents enable it to eat down through any number of old coats of hard paint, varnish, wax, shellac, or enamel, which at once assume the consistency of vaseline and may be wiped off with a cloth saturated with the Remover, benzine, or alcohol. Contains no acids or alkalis to injure the hands or clothing nor to raise the grain of the finest wood. Samples free.

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Many architects have found that the most satisfactory and uniform results are obtained by using "Ad-el-ite" Fillers and Stains. They are unequalled for transparency, brilliancy of color, durability, and strength.

AD-EL-ITE
TRADE-MARK



BRAND MARK.



"HYGIENIC" KALSOMINE



"AMYL-VERNIR" ENAMEL



"AD-EL-ITE" MISSION FINISH



"AD-EL-ITE" PAINT AND VARNISH REMOVER

Our Mahogany Stains are the most popular on the market. These materials are used in some of the most prominent buildings in the United States. We will be glad to send large sample panels for inspection. Any desired shade can be matched.

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A flat enamel specially prepared for decorating walls, ceilings, woodwork, etc. Produces a smooth, velvety finish. Applied with an ordinary flat brush in the ordinary way. May be applied over old paint with perfect results. Flows easily, works smoothly and any number of coats may be applied without danger of producing a glossy finish. Does not settle. Made in pure white, black, and colors. Unequaled at the price. Send for elaborate card.



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We have many grades of House Paint, prominent among which are the "Ad-el-ite," "Rubber," "Corundum," "National," "Bullion," and "Gutta Percha," each having particular merits, and manufactured upon a scientific basis. They are all prepared to meet the maximum point of utility and fill in the highest degree present requirements and conditions; the practical needs of painter, architect, and householder. Color books free.



" AD-EL-ITE "
HOUSE PAINT

" ASBES-
TINE "
SHINGLE
STAINS.

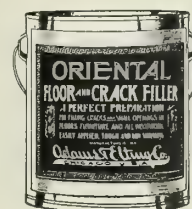
Our Shingle Stains form an impenetrable coating which prevents warping and cracking and material lengthens the life of the wood. They are rain, sun, and weather-proof. Made in eleven shades for the beautifying and preservation of wood, roofs, clapboards, etc. One gallon covers about 100 square feet, two coats, applied with a brush, or two and one half gallons will dip 1000 shingles three fourths of their length. Sample fans upon application.

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This is a paste preparation which brings out the natural grain of the wood, dries hard and will not hold the dust. It is unaffected by warm weather and makes the finest and easiest kind of a floor to keep clean. One pound will cover from 600 to 800 square feet.

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FILLER.

Economical and of perfect preparation for the filling of all cracks and crevices in floors or furniture and for smoothing rough or splintered places in woodwork of any kind. It is non-shrinkable and becomes hard as a rock, drying sufficiently in twenty-four hours to receive finishing coats, and if left over night it may be used the next day.



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FLOOR AND
CRACK FILLER

WAXELITE.

A perfect preserver and dressing for all floors. A hygienic, quick-drying article of approved value. It revives old dead floors and keeps new ones clean and bright; doubling the life of the wood and preserving the natural whiteness of maple.

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FILLER.

"Ad-el-ite Silex" Wood Filler is the result of years of experience and experimenting with the most carefully selected materials. Dries hard as stone and does not settle or shrink in the pores. For uniformity and transparency of color it is unequaled. It goes further than other fillers, and makes the best foundation for a perfect finish. Manufactured in a great variety of shades.



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We are manufacturers of everything known in Paint Specialties and Wood Finishing materials, and you will find anything covered by the "Ad-el-ite" trade-mark to be absolutely reliable. We shall consider it a privilege to furnish samples, finished wood panels and color cards, or any information desired.

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WHEELER'S WOOD FILLER (PASTE).

The correct principle of finishing all kinds of wood is to produce a perfectly smooth and elastic finish with as little varnish, wax or finishing material as possible.

To accomplish this result, the pores or grain of the wood should be filled with Wheeler's Wood Filler, thus properly preparing the foundation for the finish.

The laying of the foundation in wood finishing is a very important feature; it is relatively just as essential as properly laying the foundation for a house.

The object of using Wheeler's Wood Filler is to fill the pores of the wood in such a way that there will be a perfectly smooth, elastic, and transparent surface upon which the varnish or finish may be applied.



CAN OF WHEELER'S
WOOD FILLER

ADVANTAGES.

Wheeler's Wood Filler in the pores of the wood forms a hard, firmly fixed, unchangeable and transparent substance, which does not shrink, sweat, or absorb the varnish or finish. It works easily and dries hard to the bottom of the pores within a reasonable time.

Besides accomplishing these results, Wheeler's Wood Filler develops the full life and beauty of the wood; that is, does not obscure its figure.

It is acknowledged by all familiar with wood finishing that Wheeler's Wood Filler does produce the best results.

ECONOMY.

The question which interests many people, however, is, what does it cost to get these good results?

We have proven to the largest consumers of filler in the country that Wheeler's Wood Filler, in comparison with other wood fillers, is the most economical. Why? you ask.

(1) It covers more surface per pound.

(2) It thoroughly does its work as a wood filler, thus effecting a considerable saving in the amount of labor and finishing material required to produce a perfectly smooth finish.

CHARACTER- ISTICS.

The peculiar characteristics of Wheeler's Wood Filler consist principally in the use of siliceous material, made by our peculiar process from rock crystal quartz, as a base; and in our method of binding the particles of siliceous material in the pores of the wood.

BRIDGEPORT
STANDARD
LIQUID
FILLER.

For close-grained woods the Bridgeport Standard Liquid Wood Filler may be used. It has our pure rock crystal quartz base, and is a superior article for the purpose. Nothing but a paste filler, however, should be used when soft woods are used for floors.

STAINED
EFFECTS ON
WOOD.

It is possible to obtain on wood quite a variety of colors by simply using the principal shades of Wheeler's Paste Wood Filler; for instance, No. 1 for natural or transparent finish; No. 3 for light antique; No. 5 for dark antique; Golden Oak for golden-oak effects; Super D. L. Mahogany, Mahogany N, or No. 7 for mahogany; No. 10 for ebony.

BRIDGEPORT
STANDARD
(BREINIG'S)
STAINS.

Where very dark or strongly colored effects are desired, however, Bridgeport Standard (Breinig's) Stains should be used, which are made especially for the purpose, and are of the same high standard as Wheeler's Wood Filler. With these stains any effect on wood can be obtained.

BRIDGEPORT
STANDARD
PREPARED
WAX.

This wax works easily and dries well without a greasy result. Gives the work that velvet sheen or lustre now so much desired for certain classes of work. Put up in full net weight packages.

BRIDGEPORT
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VARNISH
REMOVER.
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CAPACITY.

Removes paint and varnish quickly and thoroughly, leaving the surface ready for re-finishing. Will not injure the hands nor affect the person using same.

Unequaled for stopping the suction and killing and preventing dampness or stains from coming through on brick, stone, or cement work; also a superior product for priming concrete work before painting.

One pound of Wheeler's Paste Filler will cover from 50 to 70 square feet; Bridgeport Standard Liquid Filler, about 600 square feet to the gallon; Bridgeport Standard Stain, 500 to 600 square feet to the gallon; Bridgeport Standard Prepared Wax, about 300 square feet to the pound; Bridgeport Standard Lithogen Primer, when properly thinned, about 2,000 square feet to the gallon. The amount of surface covered varies according to the nature of the wood.

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SERVICE AND
FINISHED
WOOD
SAMPLES.

"Modern Wood Finishing," an illustrated booklet, containing thirty-two accurate reproductions of finishes on various woods, will be sent free to any architect on request. Where desired, we will send finished samples on the woods themselves, or cheerfully give any information. We also make up special colors of stains and fillers, and would be pleased to have you bring your wood finishing troubles to us.

At our offices in New York, Chicago, Philadelphia, and Boston, also at the stores of our dealers and jobbers in all parts of the country, will be found a full line of finished samples, illustrating practical finishes which can be obtained with Bridgeport Standard Wood Finishing Products. These finishes are shown on the woods generally used in the building trade.

PRICES.

Full information regarding prices will be sent on application.

TESTI-
MONIALS.

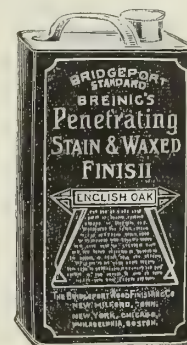
From an architect: "I have used 'Wheeler' Filler since my entrance into the profession over twenty years ago. I made an addition to my house, which was built sixteen years ago, and the trim in the new part looks no better than the finish which was obtained with 'Wheeler' Filler sixteen years ago."

From a manufacturer: "We found a great saving in time and labor by using 'Wheeler' Filler, and better results in every way."

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From a consumer: "I filled the woodwork in my own house eight years ago with 'Wheeler' Filler, and the wood is as smooth and clear to-day as when first finished."

From another consumer: "Just thirteen years ago I finished my house, using 'Wheeler' Filler. The entire woodwork is perfect to-day and looks as good as when put on."



CAN OF BRIDGE-
PORT STANDARD
(BREINIG'S) STAIN

THE BUTCHER POLISH CO.

Manufacturers of Floor Polish

356 Atlantic Avenue

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PRODUCTS. We are manufacturers of "BUTCHER'S" BOSTON FLOOR POLISH, "BUTCHER'S" LIQUID POLISH, and "BUTCHER'S" NO. 3 REVIVER, for floors, interior woodwork, and furniture; "BUTCHER'S" WEIGHTED FLOOR-FINISHING BRUSHES.

DESCRIPTION. "Butcher's" Boston Floor Polish is a perfectly transparent finish for floors, interior woodwork, and furniture.

It preserves the natural color and beauty of the wood, and as it is not brittle it will not scratch or deface like shellac or varnish, nor will it become soft and sticky like beeswax.

It has the reputation of being the best floor polish made and the only one without objectional features, and is especially adapted for hardwood floors, bowling alleys and linoleum carpets.

APPLICATION. To apply "Butcher's" Boston Floor Polish to floors or woodwork of oak, black walnut, mahogany or other open-grained woods, they should first be properly filled with some good wood filler, after which the surface should be cleaned with cloth or excelsior, and allowed to stand until the filling is dry and hard—twenty-four hours or more. After the filling is thoroughly dry put on a coat of the polish evenly with a cloth, and leave it to dry, which will take about half an hour. Polish with a long-handled, stiff brush (preferably one of our weighted ones), rubbing across the grain first and then with the grain; then place a piece of dry, soft cloth, felt or carpet under the brush to give the finishing gloss. New floors should be finished with the filler and one coat of "Butcher's" Boston Floor Polish as soon as they are laid, thus preventing the dust and dirt from getting into the grain of the wood. The second coat of polish should be applied just before the rooms are to be occupied.

COVERING CAPACITY. No. 1 Size of "Butcher's" Boston Floor Polish will cover 300 square feet of surface after it has been properly filled.

"BUTCHER'S" LIQUID POLISH. "Butcher's" Liquid Polish is used for repolishing floors or furniture. After the floors or other woodwork have been properly finished with "Butcher's" Boston Floor Polish, and require freshening up, dampen a cloth with "Butcher's" Liquid Polish, rub over the surface and polish at once by rubbing with a dry, soft cloth.

"BUTCHER'S" NO. 3 REVIVER. Floors of hard pine, maple, or other close-grained woods will not take a filler. For such floors apply a coat of "Butcher's" No. 3 Reviver, which will give a warm and even color to the wood. It should be left over night to dry and then treated with the Boston Floor Polish according to the directions given above.

To restore the color of the parts of the floor where the finish is worn off and the wood looks gray and bleached, dampen a cloth with the Reviver and rub over the defaced portions; let it remain ten or twelve hours to dry; then polish with "Butcher's" Boston Floor Polish according to directions.

For kitchen, store, and piazza floors that need to be washed often, lay on a thin coat of "Butcher's" No. 3 Reviver, with an ordinary varnish brush, or dampen a cloth and go over as directed above, rubbing off well before leaving to dry. Repeat when the wood begins to look gray and worn.

PRICES AND TERRITORY. "Butcher's" products are for sale in all the large cities, by dealers in Painters' Supplies. "Butcher's" Boston Floor Polish is put up in cans as follows: No. 1 Size, 60 cents; No. 2 Size, \$1.20; No. 4 Size, \$2.40; No. 8 Size, \$4.80.

"Butcher's" Liquid Polish and No. 3 Reviver are sold at 70 cts. per quart, or \$2.50 per gallon; other sizes in proportion.

Brushes, weighted, \$2.50; not weighted, \$1.

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Carter White Lead is widely distributed through jobbers, and can be purchased of dealers in every locality. Carter Lead is the only brand obtainable in every state and territory. Architects in New York, Chicago, Philadelphia, etc., may specify "Carter" to be used on a building in California or anywhere else, and the contractor can secure it.

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PRICES.

Prices are governed by the fluctuations of the metal market. Carter Lead is sold for about the same price as other standard brands.

SPECIFICA-
TIONS.

Before any paint is applied, woodwork to be thoroughly dry. Apply no paint when raining or snowing. All knots and sappy places to be varnished with best grain-alcohol shellac.

WHITE LEAD
FOR EXTERIOR.

Priming Coat to be a thin coat of Carter Strictly Pure White Lead, linseed oil and turpentine, properly brushed into the pores. All nail-holes and other defects in surface to be puttied thoroughly after priming coat is dry. *Second and Third Coats* to be Carter Pure White Lead, pure, well-settled linseed oil, pure turpentine and drier, mixed to proper consistency and colored to suit.

WHITE LEAD
FOR INTERIOR.

Surface to be put in proper condition for paint; all dust, dirt, loose paint, etc., removed; all knots and sappy places to be varnished with pure grain-alcohol shellac varnish. *Priming Coat* to be a thin coat of Carter White Lead (Coach and Car preferred), pure turpentine and white turpentine japan drier, properly mixed and thoroughly applied. Putty all nail-holes, cracks, and other defects with linseed-oil putty, composed of equal parts of Carter Lead and Whiting, after priming coat is thoroughly dry. *Second and Third Coats* (gloss finish, flat, egg-shell gloss—architect to specify finish desired). Paint to be Carter Lead (Coach and Car preferred), pure, well-settled, linseed oil, pure turpentine and pure turpentine white drier, colored to suit; paint to be well brushed out and enough time to elapse between coats to insure perfect drying.

A GOOD
PAINTER
IMPORTANT.

A practical painter is an important factor in carrying out architects' specifications. Do not let the contractor "farm" the painting work out to the lowest bidder. Seldom is the lowest bidder a practical painter. Usually he is what is known as a "dauber," and has had no practical experience with properly mixing and applying paint.

IMPORTANT
TO
ARCHITECTS.
GUARANTEE.

In order to insure the carrying out of your specifications we have stamped the name "CARTER" on the side of every keg. When the brand on the head is destroyed your superintendent can still identify the package. Carter White Lead is sold under the following guarantee which is printed on every package:

"This package contains 92 per cent carbonate of lead, 8 per cent pure linseed oil. The CARTER WHITE LEAD COMPANY will pay \$100 and cost of analysis for the detection of any adulteration in this or any other package bearing this brand." (Our Coach and Car Brand contains but 7 per cent linseed oil.)

USEFUL
INFORMA-
TION.

Every architect should have our booklet "Pure Paint," which we send free with a set of modern color schemes. It is invaluable.



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Inventors and Sole Manufacturers of CABOT'S “CREOSOTE” SHINGLE STAINS, SHEATHING, and DEADENING “QUILT,” “CONSERVO” WOOD PRESERVATIVE, WATERPROOF BRICK and CEMENT STAINS, and MORTAR COLORS.



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Lined with “Quilt” and stained with Cabot's
Shingle Stains
WILSON EYRE, Architect, Philadelphia, Pa.



RESIDENCE, SANTA MONICA
Stained with Cabot's Shingle Stains
MYRON HUNT & ELMER GREY, Architects,
Los Angeles, Cal.

CABOT'S
“CREOSOTE”
SHINGLE
STAINS.

The Cabot Stains are the original Creosote Stains invented by Samuel Cabot over twenty-five years ago, and the beauty and variety of their soft, artistic coloring effects have made the wide vogue of the shingled house possible. They have been used all over the world, and are acknowledged to be “the standard shingle stains.” They are beautiful, durable, preservative, and economical.

BEAUTIFUL COLORING EFFECTS—The colors are soft, deep and velvety, without gloss, and they are also clear and transparent, so that the wood is colored without being covered, and the beauty of the grain is brought out. As no two shingles are alike this insures a variety of light and shade which is far removed from the glassy monotony of paint.

DURABILITY GUARANTEED—The colors are guaranteed to be fast. The best pigments are used, and are ground in pure linseed oil in our own mills; and for a fixative they contain more pure linseed oil in proportion to the pigment than the best paint does.

TRADE
“CREOSOTE”
MARK

CABOT'S
"CREOSOTE"
SHINGLE
STAINS
CONTINUED.

WOOD PRESERVATION—The Stains are made mainly of specially refined Creosote, which thoroughly preserves the shingles against wet or dry rot, or injury by insects. The Creosote permeates the wood and tans it, so that it will remain sound until the shingle is worn out.

"Creosote is the best wood preservative known."—*Trautwein*.

"Wood treated with it is not subject to dry rot or other decay."—*Century Dictionary*.

"No process of wood preservation is better established than Creosoting."—*Am. Soc. C. E.*

ECONOMY—The Stains cost much less than paint, and are much cheaper to apply. Skilled labor is not necessary, as any intelligent workman or boy can do good work.

FOR
SHINGLES,
SIDINGS,
TRIMMINGS,
ETC.

Although originally invented for shingles, and used more for this purpose than for any other, the stains are now very largely used on all exterior wood-work. On rough lumber they give the same effect as on shingles, and on dressed lumber an extra coat is necessary to give equal depth of color, but the grain lines are more strikingly developed and the effects very handsome. The low cost and cheapness of application make it possible to build camps, bungalows, garages, etc., of the roughest lumber, and yet to get very beautiful results, and equally satisfactory results are obtained on half-timbering, pergolas, and exposed beams.



RESIDENCE
Shingles, Siding and Trimmings Stained
LOWELL A. LAMOREAUX, Architect,
Minneapolis, Minn.

CREOSOTE
BLEACHING
OIL.

This produces the "natural silver-gray effect." It tints the wood very slightly when first applied, merely masking the raw yellow tone of the new wood, but after a few months' exposure it bleaches the shingles to the beautiful, silken, silver gray that is seen on very old buildings at the seashore. It grows more beautiful with age, and never needs renewal, while the Creosote preserves the wood. *This is for use on new work only.*

IMITATIONS.

We invented shingle stains, advertised them, and made a market for them, in spite of great opposition from painters, paint makers and others whose profits or foggism were attacked. Yarns were spread abroad that the colors would not stand; that the creosote was poisonous; that its clean, wholesome, pungent smell was an "offensive odor"; that it would burn the skin, eat up the wood and paint pots and brushes, and also the nails, zinc flashings, and the metal gutters—all absolutely untrue and absolutely ineffective. People realized that we had moved forward—as one prominent architect expressed it—made "the first advance in exterior coloring in half a century." When success could no longer be denied, the opposition turned to imitation, and they have ever since imitated our colors, our numbers, our method of sampling, our illustrations, and have even copied whole phrases from our circulars.

"We never know how good a thing is until we see the imitations."—*Poor Richard, Jr.'s Philosophy*.

These imitation so-called stains are merely paints thinned with a cheapener. Every one of them contains (by analysis) over 50 per cent of kerosene, benzine or some other petroleum distillate, all worthless and dangerously inflammable—but cheap. They contain no wood preservative whatever.

APPLICATION
OF SHINGLE
STAINS.

The stains are sold ready for use, and no thinning or adulteration should be permitted. The shingles can be dipped before laying, or the stain can be applied with a brush after laying. Dipping more thoroughly preserves the shingles and prevents unstained wood from showing, if the shingles shrink after laying. Brush coating takes less stain but more



RESIDENCE
Stained with Cabot's Shingle Stains
CHARLES BARTON KEEN, Architect,
Philadelphia, Pa.

labor. The coloring effect is about the same in either case. If applied with a brush, two coats should always be used, because one is not a thorough job in any material. After dipping, a brush coat on the laid shingles is worth while, as it takes but little stain, covers any raw spots and adds to the durability.

STIRRING—The stains should be kept *thoroughly stirred*, and should be applied to dry wood to insure uniform and durable results.

DRY WOOD—Be sure that the shingles are dry. Nothing can stand on damp or wet wood. This is as true of stains as of paints or varnishes, but shingles are apt to be damp and workmen are apt to be careless about this important item.

COVERING CAPACITY.

One gallon to 100 square feet, two brush coats; $2\frac{1}{2}$ to $2\frac{3}{4}$ gallons to 1,000 shingles dipped two thirds; 3 gallons for dipping and afterwards brush-coating.

RE-STAINING—Stains can usually be renewed by one coat of the same color or, if a change is desired, by two coats, unless the change is too great.

SPECIFICATION FOR SHINGLE STAINS.

Specify "Cabot's 'Creosote' Shingle Stains, in original packages bearing Cabot's trade-mark. Color to be selected by architect or owner." State whether shingles are to be dipped or brush-coated, or both.

Samples on shingle cedar, showing all the regular colors, will be sent on request.

COLORS, SAMPLES.

Special stains can always be furnished to produce special effects.

Our litho water-color chart of combinations is free, or we will make special suggestions for color schemes when desired.

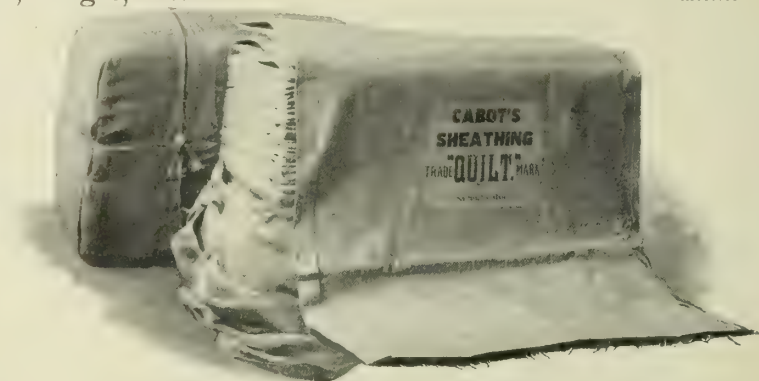
CABOT'S SHEATHING AND DEADENING "QUILT."

PURPOSES—For heat insulation in dwellings, cold stores, ice-houses, and all buildings where uniform temperature is desired, and for deadening sound in schoolhouses, flats, hotels, hospitals, lodges, etc.

"Quilt" is a scientific non-conductor of both heat and sound. It consists of a matting of cured eel-grass (*Zostera Marina*) stitched between two layers of tough manila paper. The long ribbon-like fibers of eel-grass cross each other at every angle, and form within each layer of "Quilt" innumerable minute cells of "dead" air, making a soft, elastic cushion which is a wonderfully effective non-conductor. It is put up in bales, each bale containing a quilt one yard wide and fifty-six yards long, over 500 square feet; which may be cut to any shape desired. Each bale is neatly wrapped in burlap and contains a package of tin caps for nailing.

WHY EEL-GRASS?—"Quilt" is made of eel-grass because that substance more perfectly meets the requirements than any other known. (1) It has a long, flat fiber, and when felted, as we use it, these ribbons form the successive air-spaces which give "Quilt" its chief power, and which would be impossible with a round fiber; (2) eel-grass is indestructible by decay,* and because of its saline origin and percentage of Iodine, is

TRADE
"QUILT"
MARK



CABOT'S SHEATHING AND DEADENING "QUILT,"
SHOWING METHOD OF PACKING



OLD PIERCE HOUSE
DORCHESTER, MASS.

Built about 1635

* The walls of the old Pierce House, Dorchester, Mass., were stuffed with eel-grass when the house was built, about 1635, and the grass is still in a perfect state of preservation. We have a sample of this 270-year-old eel-grass in our office, as here shown



*Eel-grass taken from the
Pierce House Dorchester in 1893
The house was built about 1635 and the eel-
grass has been distributed.* *Wm. Francis Pierce*
Oct. 10, 1893

FACSIMILE OF LABEL ON
BOTTLE SHOWN ABOVE

repellant to insects and vermin; (3) *it will not burn*, as it is composed, to a large extent, of silicon in place of the carbon of plants that grow in the air, and is therefore an efficient fire retardant; (4) it is very tough, and never loses its elasticity.

FOR DWELLINGS—"Quilt" is not a mere felt or paper, but is an exact imitation of the plumage of a bird—first a layer of matter and then a layer of air—making an almost perfect heat insulator, immensely superior to the thin, hard papers that are often used. One layer of single-ply "Quilt" is warmer than a coat of back-plastering, costs half as much and is permanent, while the plaster is not. The marvelous efficiency of "Quilt" is strikingly shown by the following letter and picture.

SAMUEL CABOT, Esq.,
141 Milk Street, Boston:

CANTON, MASS., Feb. 20, 1905.

Dear Sir—The little sun-house of which you have the photograph is lined with one layer of your double-ply "Quilt" on roof, ends and floor, and two layers on the back, with one layer of ordinary red paper over the "Quilt."

The result is most extraordinary, and thermometers placed inside and outside show a difference in temperature of from 60° to 100° F., depending upon the amount of sunshine and the outside temperature. I have several times seen the thermometer (which is so placed that the sun does not strike it) register 100° and over, while the outside temperature stood at zero or lower. This difference is due wholly to the sun and insulation, as there is no artificial heat whatever in the house.

(Signed) Yours truly,

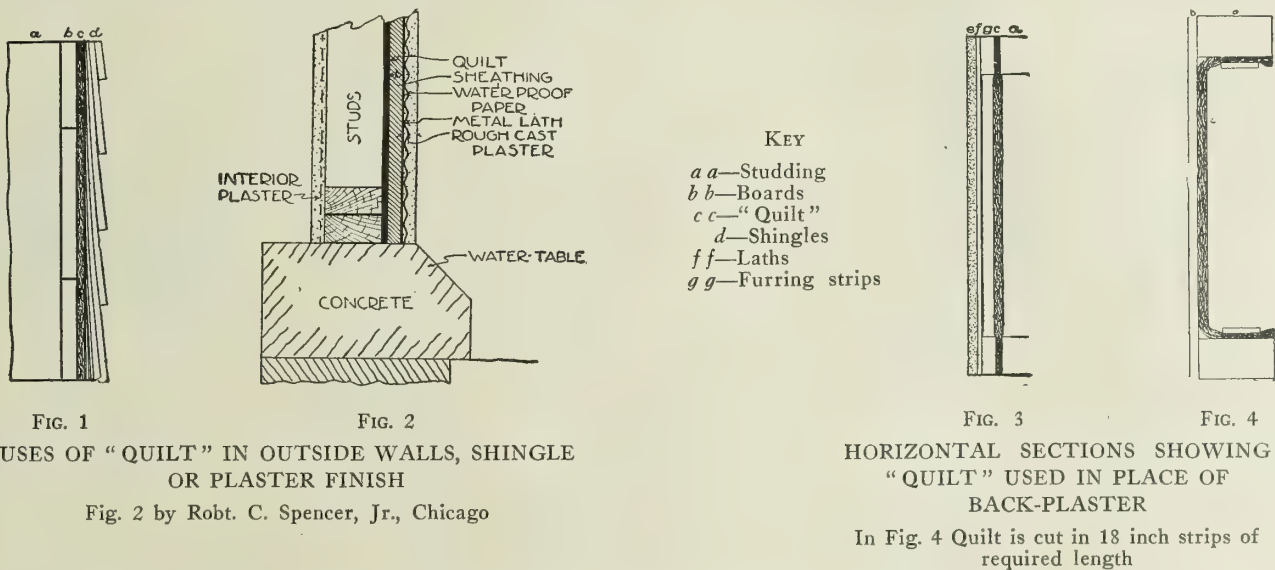
NETTIE F. FARWELL.



THE SUN-HOUSE

"Quilt" will pay for itself, in two average winters, in fuel saved, to say nothing of comfort and health. Artificial heat is the besetting household sin of this country. We build thin, draughty houses, and counteract their defects with heaters, living in an atmosphere of dry, unnatural heat and coal-gas. It is cheaper, more rational, and more healthful to build warm houses than to heat cold ones.

"Quilt" can be used in any way that any paper is used, and with better results. Its value does not depend upon any peculiar manipulation, but the following drawings illustrate a few methods which have proved satisfactory:



COLD-STORAGE
INSULATION.

SOUND
DEADENING.

The wonderful insulating power of "Quilt" makes it especially valuable for all kinds of cold-storage, brewery and ice-house insulation. It is the only insulator that "carries its own dead-air spaces," and has proved by test to be the most efficient, compact, economical and hygienic cold-storage insulator made. It has *all* of the cardinal requisites of a perfect insulator. Double-ply "Quilt" is used for this purpose. Full details furnished on application.

Sound is conducted in waves, and "Quilt" is the only deadener that has the power of breaking up and absorbing the sound-waves. They are lost in its elastic meshes and air-cells, and conduction is as nearly absolutely prevented as possible. Ordinary so-called deadening felts have almost none of this absorptive power, and are therefore of very low efficiency.

Various methods of application are suggested below, but the "Quilt" can be used in any way that construction or conditions require:

Figure 5 is a horizontal section showing the method of weaving "Quilt" through recessed or "staggered" studding, in frame construction, where the most effective result is desired with one layer.

This is the method (except that iron studs and metal lath were used instead of wood) used by Professor Norton in his tests. (See below.)

Figure 6 shows a very satisfactory method of deadening floors with "Quilt." The furring strips are not nailed, and the floor nails do not pass through the "Quilt." Thus the finish floor is "floated" on the cushion of "Quilt," and if properly laid, the result is as nearly perfect as possible. This method has been used a great many times, without difficulty and with the best results.

Fig. 7 shows the construction of a very thin and light fireproof partition deadened with "Quilt." This partition is much more sound-proof than the common terra-cotta partition, *although the latter weighs eight times as much, is twice as thick and much more expensive.* "Quilt" is fastened to the metal stud by the tongues, or wires, and metal lath and plaster laid directly over it.

DEADENING TESTS.

In 1902 Prof. C. L. Norton, of the Massachusetts Institute of Technology, made a series of elaborate and exhaustive tests for sound-deadening for the New England Conservatory of Music dormitories. Practically every room in the building was to be used as a music studio, and sound-proof partitions were indispensable. Six methods of deadening were used in the tests, and all of the other partitions were much thicker, heavier and more expensive than the "Quilt" partitions. These were probably the most complete tests that have ever been made, and Professor Norton stated in his report to the Trustees that—

"The efficiency of the Cabot 'Quilt' as a material for rendering the partition sound-proof is so clearly demonstrated in these tests that I recommend it for use in the partitions."

"Quilt" was accordingly used, and the results in the completed buildings have been perfectly satisfactory.

GRADES—There are three kinds of "Quilt," as follows:

Single-ply, which is most used for lining dwellings, etc., for warmth; double-ply, which is best and most economical for deadening, cold-storage insulation, etc.; and Asbestos Fireproof "Quilt," which is the double-ply "Quilt" enclosed in heavy asbestos paper, and is used for deadening or insulating and fireproofing. It is the only deadener that is fireproof and the only fireproofing that is an effective deadener.

Always specify Cabot's "Quilt," and state the grade required.

IMITATIONS.

The success of "Quilt" has brought imitations, as usual. The two in particular which have copied our material and our advertisements as closely as they dared, are made, one of cow-hair scraped from tanner's hides, and the other from waste flax or tow, in place of our eel-grass. Cow-hair is subject to nitrogenous decay with all its offensive accompaniments, and it attracts all kinds of insects and vermin, including moths, which destroy it. Tow is the most inflammable of all vegetable fibers, and makes a nest and harbor for insects and vermin.



F.G. 6

h h—Floor Timbers
i—First Flooring
c c—Quilt
g g—Furring strips, 1 x 3"
k—Finish Flooring

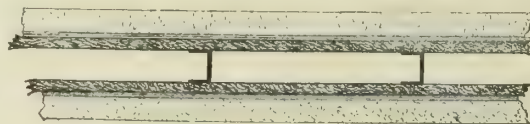


FIG. 7

METHODS OF SOUND DEADENING WITH "QUILT"



FIG. 5



DORMITORIES, N. E. CONSERVATORY OF MUSIC

E. T. BARKER, Architect, Boston, Mass.

PRICES AND WEIGHTS.

	Price	Weights
Single-ply "Quilt"	\$4.50 per bale of 500 square feet	95 lbs.
Double-ply "Quilt"	5.50 per bale of 500 square feet	140 lbs.
Asbestos "Quilt," Half bales only	5.00 per half bale of 250 square feet	95 lbs.
F. o. b. Boston. Agents and dealers add freight to point of delivery.		

"CONSERVO" WOOD PRESERVATIVE.

For preserving all kinds of woodwork from decay, worms and insects.

At a cost of two or three cents per stick "Conservo" will almost double the life of piles, posts, sills, bridge, mine, wharf and dam timbers and all kinds of planking. It is a creosote compound, the result of twenty-five years of experience and research, and is as perfect a preservative as can be made with the present knowledge of the subject. It gives a butternut-brown tone, and makes an excellent interior finish for stables, as it kills foul odors and prevents horses from "cribbing."

COVERING CAPACITY—One gallon covers about 200 square feet of dressed lumber with two coats. Apply with a brush, as heavily as possible, or dip the lumber before using.

Price, in barrels, 40 cents per gallon, f. o. b. Boston.



WATERPROOF CEMENT STAINS.

For waterproofing and coloring the exterior surfaces of cement stucco, block or concrete buildings.

The stains sink into the surface and give soft, deep coloring effects; and the waterproofing compound enters and seals the pores, making the surface permanently rain-proof. Being Stains they are transparent, and they color the surface without covering it, and thus preserve the natural texture. As they form no coating they can not crack, peel or chalk, as coating do. They are applied with a brush to the finished surface, and do not weaken the cement as mixed in colorings and waterproofings do.

Made in ten regular colors: Moss and Lichen Green, Light Fawn Red, Brown, Gray, Cream, Ivory, White, and Italian Pink; also, Colorless, but almost any shade can be produced.

One gallon covers from 150 to 300 square feet on the average surface, but especially rough or porous surfaces take more. Two coats should always be used.

Price, in barrels, \$1.00 per gallon, f. o. b. Boston.

WATERPROOF BRICK STAINS.

For coloring and waterproofing brickwork these stains are vastly superior to paint, from either the artistic or practical standpoint. For evening up off-colored and mismatched brick, or restoring the color of old, faded and discolored walls they are unequaled.

They sink into the pores, leaving the "matte" surface and texture of the brick unchanged, and they can not crack, peel off, or grow shabby, as any surface coating like paint does. They make the brickwork permanently rain-proof and the colors wear as long as any colors can, and are easily renewed. One gallon covers about 200 square feet, two coats, on the average brick.

Colors—Light and Dark Brick-Red, Terra Cotta, Brown, Cream, and White. Price, in barrels, \$1.00 per gallon, f. o. b. Boston.

GENERAL GUARANTEE.

We guarantee all our goods. Our reputation has been established by their excellence, and we stake that reputation upon everything that we make.

TESTIMONIALS.

Hundreds of testimonials can be furnished, if desired.

M. EWING FOX & CO.

MANUFACTURERS OF

Calcimines, Fresco Colors and Water Paints

136th Street and Rider Avenue

NEW YORK, N. Y.

WESTERN BRANCH

CHICAGO, ILL., 107 East Lake Street



PRODUCTS.

DECORATIVE, SANITARY and FIREPROOF COATINGS, PAINTS, COLORS and SIZES for Ceilings and Walls.

"MURALITE."

This is a superior decorative coating for plastered and sand-finished surfaces; similar to calcimine in character, but much more durable, artistic and sanitary. Very inexpensive. Made in white and tinted powder form, ready for use when simply mixed with water. Easy to apply, dries quickly with pleasant odor, shows no clouds nor brush marks, and produces beautiful, soft water-color effects. "Muralite" will not rub nor chip off, but may be washed off if necessary. One coat is generally sufficient, two always so. Suitable for all classes of work. Very popular among painters. Covering capacity—smooth hard-finished plaster about 75 square feet or rough sand-finished surface about 50 square feet to the pound, one coat. Price, 5 to 10 cents per pound, depending on quantity, etc.

"MURALITE FRESCO COLORS."

These are deep solid colors for decorating plastered and sand-finished surfaces. While similar in character to "Muralite Tints" they are much darker and only suitable for side walls, coves, stenciling and frescoing. Vary in price and cost considerably more than "Muralite Tints." Are really, however, the most inexpensive colors made for producing deep handsome flock-like effects. Furnished in powder form, ready for use when simply mixed with water. Cover perfectly with one coat, dry quickly, and will not rub nor chip off. May be removed with sponge and water if necessary. Particularly adapted for churches, theaters, libraries, halls, clubs, etc., and are the richest, most permanent and durable made. Covering capacity—smooth hard-finished plaster about 75 square feet, or rough sand-finished surfaces about 50 square feet to the pound, one coat. Price, 15 to 50 cents per pound, depending on quantity, etc.

"PERMANITE."

This is a genuine water-paint of the most approved type; it is not a calcimine, but an asbestine cement-like composition expressly made for whitening, coloring and fireproofing wood, brick, and cement surfaces such as walls and ceilings of factories, mills, warehouses, and stables. May also be used on open sheds and air shafts not particularly exposed to storms. "Permanite" is furnished in dry condensed powder form, ready for use when simply mixed with cold water. It is easy to apply, dries quickly with a flat finish and will not rub, chip, nor burn off. Possesses remarkable opacity and covering capacity; one coat is usually sufficient, two always so. Almost as cheap as whitewash and as durable as oil paint. Approved by National Board of Fire Underwriters. Covering capacity—rough surfaces about 25 square feet, and smooth ones about 35 square feet per pound, one coat. Price, 5 to 10 cents per pound, depending upon quantity, etc.

GENERAL INFORMATION.

All of above materials are made by us exclusively and are the best of their respective kinds. They have been tested, specified, and used by hundreds of the leading sanitary and fireproofing authorities, architects, superintendents of buildings, and painters, throughout the country, and are sold in all trade centers. Sample cards, prices, suggestions, and further information furnished upon request.

HOW TO USE.

All plastered and sand-finished surfaces should be free from dampness and properly "sized" before any of the "Muralite" products are applied. All brick and cement surfaces should be thoroughly dry and free from frost before "Permanite" is applied, and the latter should never be used when there is danger of freezing before drying, nor in damp places like vaults, cellars, refrigerating rooms, etc.

SAMUEL H. FRENCH & CO.

Manufacturers of Varnishes, Enamels and Paints

York Avenue, Fourth and Callowhill Streets

PHILADELPHIA, PA.

PAINT FACTORY
PHILADELPHIA, PA.

VARNISH FACTORY
CAMDEN, N. J.

PRODUCTS.

VARNISHES, WOOD DYES and STAINS, FLOOR WAX, FILLERS, ENAMELS, READY MIXED, SEMI-LIQUID and PASTE HOUSE PAINTS; METAL PROTECTIVE, OXIDE of IRON, ROOF, COPPER, TECHNICAL PAINTS and PAINTERS' SUPPLIES; MORTAR COLORS and CEMENT COLORS.

VARNISHES.

Extra Finishing Varnish—Finest for interiors. Can be rubbed to an antique finish.
Light Shade Coach Varnish—For highest grade interiors. Waterproof and elastic.
French's Elastic Finishes—Always satisfactory for interior and exterior gloss finish.
Monovar—The Universal Varnish for floors, window-seats, and exposed woodwork.
Made in "transparent" and in colors to imitate natural woods.

FILLERS.

French's Paste Filler—For open-grain wood; light, dark and all permanent shades in vogue. Transparent Liquid Wood Filler. French's Crack Filler conceals imperfections.

WOOD DYES.

French's Wood Dyes—Produce permanent natural effects. Write for specifications.

WHITE LEAD.

Buck White Lead—Manufactured unchanged since 1884. The unchallenged standard.

PAINTS AND METAL PROTECTIVE COATINGS.

French's Crown Paints—Ready-mixed, semi-liquid (semi-paste) and paste, in all colors.
Protox Paint—Ready for application on iron, steel and wood, 95 per cent pure amorphous oxide of iron. Natural colors: black, brown and maroon shades; also, bronze green. Resists gases. Will not blister, crack or peel.

Non-Corrosive Coating—Paste and liquid form. One color—dark lead. An opaque first or finishing coating ground in pure linseed oil. For bridges, tanks, submerged iron and all exposed iron, steel and wood. Particularly adapted for priming and finishing galvanized iron and for marine work.

MORTAR AND CEMENT COLORS.

Peerless Mortar Colors—Strong and permanent pulp coloring for all kinds of interior and exterior mortar.

French's Cement Colors—Dry, for concrete surfaces.

FRENCH'S DECORATIVE ENAMEL.

A durable medium-gloss Enamel in pure white and tints, for gloss or egg-shell gloss finish on interiors; also, for gloss finish on outside work. To be used over wood, plastered or metal surfaces. It is very opaque, works easily and flows readily to a smooth finish in the hands of an ordinary painter. Elastic and durable.

SPECIFICA- TION NOTES FOR USING DECORATIVE ENAMEL.

For Gloss Finish—Two coats of French's Decorative Enamel must be applied over two (or three) coats Enamel Under Coat (or white lead, adding 50 per cent of zinc for last under coat). Under coats must be flat. To secure a perfectly smooth surface each under coat must be rubbed lightly with 00 sandpaper.

For Egg-Shell Gloss or Rubbed Finish—Three enamel coats must be applied. French's Decorative Enamel dries overnight and sets hard in forty-eight hours at 70 degrees when applied over properly prepared surfaces. State clearly whether interior or exterior finish is desired. Designate "Egg-Shell Gloss" when wishing to avoid a distinct luster.

PRICES AND CO-OPERATIVE SERVICE.

Full co-operation with architects is maintained by advertisements in the leading Painters' Journals of this country; also, by prompt quotations and shipments.

NOTE—To save time and trouble write us, mentioning "SWEET'S" and name of headings in which you are interested. In response, detailed information, samples, color cards, etc., will be promptly mailed.

THE GLIDDEN VARNISH COMPANY

Makers of High-Grade Architectural Varnishes

MAIN OFFICE

CLEVELAND, OHIO

BRANCH OFFICES AND WAREHOUSES

NEW YORK, 47 Fulton Street
BOSTON, 58 Pearl Street

ST. LOUIS, 517 Franklin Avenue
CHICAGO, 718 Washington Boulevard

ATLANTA, 40 Madison Avenue

PRODUCTS.

Manufacturers of "MASTER PAINTERS'" INTERIOR, FLOOR, and EXTERIOR VARNISHES; ENAMELS; "SURFACENE"; COPPERPLATE FINISH; and other VARNISH SPECIALTIES for Residences and Buildings.

SPECIAL GREEN LABEL.

Glidden's "Green Label" Architectural Varnishes represent the highest standard of quality. They are manufactured with extreme care, and are given the proper aging. We have a corps of skilled workmen, the best that we are able to procure, and we claim to be the first manufacturers to place upon the market a full line of Varnishes with a Special Label to signify the highest quality of each particular brand of goods.

"M. P." DURABLE EXTERIOR VARNISH.

The most durable Varnish for exterior use on the market. It has extreme elasticity, and excellent body and flowing properties. For use in places of great exposure, such as cabins, spars and other parts of ships and yachts; and for finishing outside doors, window-sills and casings, vestibules, etc. List Price, \$4.00 per gallon.

"M. P." DURABLE INTERIOR VARNISH.

The highest grade manufactured for interior use. It is pale in color; has wonderful flowing and brushing properties, and is extremely elastic and durable. It may be rubbed and polished, or left bright. A perfect Varnish for finishing the very finest interior trim in residences and buildings of all kinds. List Price, \$3.00 per gallon.

GLIDDEN'S DULL RUBBING VARNISH.

Dull Rubbing is a long oil, hard gum Varnish, possessing great durability. It is not affected by alcoholic liquors, and does not mar or show finger marks. It is practically indestructible. List Price, \$3.00 per gallon.

"M. P." ELASTIC INTERIOR.

An excellent and reliable Varnish for finishing interior woodwork. Has full body; is elastic and easy flowing. It dries with a rich full gloss, and may be rubbed or polished. This is a grade we manufacture for medium-class work. List Price, \$2.00 per gallon.

"M. P." DURABLE FLOOR.

For finishing natural, grained or painted floors. It is very elastic, impervious to water, and withstands the hard usage to which floors are subjected. May be rubbed or polished, or left bright. List Price, \$2.50 per gallon.

"M. P." SURFACENE. (PIGMENT FIRST COATER.)

This is a surfacing or first-coat Varnish, to be used in place of shellac and so-called liquid wood fillers. It contains a transparent mineral pigment which, in combination with a hard gum varnish, seals the pores of the wood, thus making it possible to obtain a smooth surface for succeeding coats of varnish. List Price, \$1.75 per gallon.

GLIDDEN'S "M. P." FLAT WHITE.

A fine under-coating for white Enamel Work. The use of Glidden's "M. P." Flat White insures a very durable foundation for our White Enamels. It dries hard and tough, and nearly flat. The use of our "M. P." Flat White prevents the enamel finish from cracking and turning yellow. "M. P." Flat White covers well, works easily, and flows out with a smooth surface—only light sanding being necessary. "M. P." Flat White does not set quickly. It is a great labor and money saver for the painter. List Price, \$3.00 per gallon.

GLIDDEN'S
VELVET
WHITE ENAM-
EL. (EGG
SHELL
FINISH.)

Dries with the appearance of a dull, velvet finish, saving the expense of rubbing. The surface produced is waterproof and non-porous; resisting the action of repeated washing, alkalies, and atmospheric changes. It is intended for use on the finest interior trim, plaster, "Keene" cement, and metal work. It is particularly adapted for hospitals, sanitariums, and hotels. List price, \$5.00 per gallon.

GLIDDEN'S
SUPERIOR
WHITE ENAM-
EL. (GLOSS
FINISH.)

This enamel dries with a pure white, high-gloss finish, and retains its natural beauty through exposure and wear, and does not turn yellow with age. On account of its porcelain-like hardness, it is easily kept clean; and repeated washing, alkalies and atmospheric changes do not affect it. It is specially recommended for use on finest interior trim, plaster, "Keene" cement, and metal work, and for the finishing of fine residences and buildings. It rubs and polishes beautifully. List price, \$5.00 per gallon.

GLIDDEN'S
COPPER PLATE
FINISH.

An especially prepared liquid and pure copper-bronze powder put up in a patented double-compartment can. When mixed properly and applied to store fronts, down-spouts, radiators, etc., it produces instantly an impervious copper surface that will outwear any other finish applied on wood or metal surfaces exposed to extreme conditions. List price, \$2.50; size No. 5.

GLIDDEN'S
WATERPROOF
CONCRETE
FLOOR
DRESSING.

A water and oilproof preservative coating for inside cement and concrete surfaces in general. It seals the pores and prevents absorption of oil, grease, and disease germs, and also does away with the dust formation due to frictional wear. It produces a smooth, hard, finished surface which can be swept or washed the same as a tile floor. It is a sanitary coating for basement floors and walls, making the rooms where it is used brighter and lighter. It dries to walk on over night. List price, \$2.25 per gallon.

CO-OPERATIVE
SERVICE.

This Company maintains a Sample Finishing Department which is at the service of its patrons. Accurate and genuine samples of any finish desired will be prepared and forwarded on request.

BRIEF FORMS
OF SPECIFICA-
TION FOR
WOOD
FINISHING.

MATERIAL TO BE USED:

Filler—Glidden Varnish Company's "M. P." Surfacing. First coat on all close-grain woods that do not require paste filler.
Varnish—Glidden Varnish Company's "M. P." Durable Exterior for all outside work and inside window-sills, sash and bathrooms.

Glidden Varnish Company's "M. P." Durable Interior for all interior trim, except window-sills and sash.
Glidden Varnish Company's Dull Rubbing for all inside work where a dull rubbed finish is required.
Glidden Varnish Company's "M. P." Elastic Interior for all interior trim, except window-sills and sash. (This varnish is used where a medium-priced varnish is required.)
Glidden Varnish Company's "M. P." Durable Floor for floors.
Glidden Varnish Company's Velvet White Enamel for inside work where a velvet finish is required, without the necessity for rubbing.
Glidden Varnish Company's Superior White Enamel for interior work where a high-gloss enamel is required.
Glidden Varnish Company's Copper Plate Finish for store fronts, down-spouts, valleys, radiators, etc.

FINISH:

Oak, Mahogany, Ash, Walnut, Chestnut, Butternut and All Open-Grain Woods—To be filled thoroughly with the best silix paste filler. Care should be taken to have the filler toned to match the natural color of the wood, or the color desired by the owner or architect. Putty all nail holes with putty, colored to match the finish. Apply two or more coats of varnish, as designated. First and second coats of varnish, if three coats are used, to be sandpapered with 00 sandpaper. The third coat of varnish to be carefully rubbed with pumice-stone and water to a dead, even surface. Then oil and wipe off. Toning to be done where necessary.

White Wood, Birch, Cherry, Pine, Sycamore, Beech and All Close-Grain Woods—To be finished same as above, except that the paste filler be omitted, and "Surfacene" used for the first coat; then apply as directed above.

Floors—All open-grain wood floors to be properly filled with paste filler, and to be given three coats of "M. P." Durable Floor Varnish. Moss between coats, and the last coat to be rubbed lightly with oil and pumice-stone.

On close-grain woods, filler is omitted, and "M. P." Durable Floor Varnish applied as it comes from the can. No shellac or other undercoats of any kind to be allowed.

Enamel Work—Egg Shell Gloss Finish—Apply a coat of flat lead and then a thin coat of White Shellac; when properly sanded, to be followed by three or four coats of Glidden's "M. P." Flat White; then one or two coats of Velvet White Enamel may be applied, sanding between coats, and the last coat left in its natural velvet finish. No rubbing necessary.

High-Gloss Finish—For High-Gloss or Porcelain Finish use Superior White Enamel, with the same undercoating specifications as above. The last coat to be left bright, or to be rubbed or polished.

Owing to our improved process of treating our oils, we claim to have the most durable line of Architectural Varnishes on the market.

THE HASCALL PAINT COMPANY

MANUFACTURERS OF

Technical and House Paints, Varnishes, Ready Roofing, etc.

CLEVELAND, OHIO

PRODUCTS.

"THERMALITE," a Protective Paint in colors, for use on anything that needs painting whether wood, iron, steel or other metal, brick, stone, concrete, paper, cloth, etc.; ROOF PAINTS; "HASCALL'S" CARBON PAINT; "HASCALL'S" HOUSE PAINTS; VARNISHES; "THERMALITE" READY ROOFING.

TERRITORY.

We have developed a large foreign trade and are prepared to make prompt shipments not only to all points in the United States but also to all foreign countries.

"THERMALITE"
A PROTECTIVE
PAINT IN
COLORS.

This paint should be specified for use on all surfaces requiring protection from weather, water, heat, smoke, or acids.

Being made in all the standard colors it should also be specified where decorative effects are desired. It affords perfect protection to structural iron, steel cars, steam-pipes, either above or below ground, machinery, smoke-stacks, boiler fronts, locomotives, gas-tanks, pickle or vinegar vats, ice moulds, cellar walls, subways, vessel bottoms, decks, etc.

It decorates and protects houses, barns, roofs, factories, bridges, fences, trolley poles, etc

DESCRIPTION,
BASE.

"Thermalite" is a paint based on hydrocarbons that chemical analysis proves to be 99.9 per cent pure. This base is imperishable, being ground into microscopically fine particles which do not destroy the oil with which they are combined, but protect and preserve it from decay. In competition with white lead as a house paint it is incomparably more durable.

COMPOSITION.

The basic material is ground in pure linseed oil, producing a liquid that will not precipitate. The pigment and oil are chemically combined. To this liquid we add the best permanent colors and the necessary dryers. Nothing else is used. The paint contains absolutely no coal-tar, asphaltum, iron oxide, or other material of like nature. It is absolutely free from acids or other destructive elements.

ANTI-RUST.

Thus being of a strictly neutral composition and therefore chemically inactive to metal, "Thermalite" arrests as well as prevents corrosion. It destroys rust by amalgamating with it.

NON-POROUS.

It is entirely free from the microscopic pores which form in all ordinary paint when drying. It flows on like varnish, drying hard with an enamel-like surface, without pores, and really becomes part of the material itself, expanding and contracting with iron, tin, or other metal. It thus hermetically covers a surface, preventing moisture or other destructive agencies from reaching the material.

HIGH FIRE
TEST.

It has been thought by painters that a quick-drying, high fire test paint could not be elastic. With most iron paints the heat soon destroys the cohesiveness of the basic pigments, leaving it brittle and lifeless.

- ELASTIC. "Thermalite" is the exception, because the hydrocarbons which form its base are really mineral rubber, and the cohesiveness between the minute particles is so great that no heat under 800° Fahr. will destroy it.
- A TEST. A piece of metal coated with "Thermalite" may be held over a blaze until it has reached 800 degrees of heat, then it may be plunged into ice water, or some other cold substance, and the paint will not be injured or affected in any way. Its body, adhesiveness, elasticity, and gloss are exactly the same as before the test.
- ACID AND ALKALI PROOF. Such acids as muriatic, nitric, and sulphuric have practically no effect on "Thermalite." It resists the action of brine, and is absolutely proof against acetic acid, alkalies, caustic soda, etc.
- ODORLESS AND TASTELESS. "Thermalite," when dry, is absolutely odorless and tasteless. It is therefore suitable for use in many places where another paint would be impracticable.
- COVERING CAPACITY. On tin or metal "Thermalite" covers from 200 to 300 square feet to the gallon according to whether it is brushed out. On shingles, wood, felt, paper, brick, cement, etc., it covers about 150 square feet to the gallon.
- COLORS. The colors are maroon, red, green, brown, terra cotta, gray, slate color, and black.
- PRICES. On application we will quote prices to any point in the United States or Canada. Prices on foreign shipments are quoted f. o. b. New York, N. Y. or San Francisco, Cal.
- SPECIFICATIONS AND DIRECTIONS. We will send correct specifications for any kind of work. These are very simple, as "Thermalite" is easily spread and requires no special attention. Given a clean, dry surface well covered, the paint will do the rest.
- Information and prices on other products furnished upon application. Prompt and careful attention given all inquiries.

THE R. F. JOHNSTON PAINT CO.

224-228 Main Street

CINCINNATI, OHIO

PRODUCT.

JOHNSTON'S WASHABLE "DULL KOTE" PAINT.

JOHNSTON'S
WASHABLE
"DULL
KOTE"
PAINT.

A modern sanitary flat paint for interior painting, producing a smooth, velvety, flat finish.

Beautiful to look upon, restful to the eye, marvelous in wearing power, simple of application, remarkable in its covering capacity, economical and satisfying in every way, are the manifold attributes which are possessed and made possible in the use of Johnston's Washable "Dull Kote" Paint.

For decorating walls, ceilings, woodwork, etc., in public buildings, churches, theaters, office buildings and hotels, and for all interior work.

Surpassing all other finishes in beauty, durability and economy; also, producing beautiful effects not obtainable with any other material.

"Dull-Kote" Paint contains no lead or other poisonous pigments.

It flows freely and possesses the maximum covering power, both as to opacity and amount of surface it will cover; therefore it is more economical than enamel paints, oil or varnish paints.

"Dull-Kote" Paint takes care of itself, levels out and flats perfectly, remains elastic; therefore will not crack, peel, or flake off.

It can be applied over painted surfaces, wall-paper, kalsomine, frescoed walls, varnish and cement.

Its colors and tints are permanent and will not fade, as they are made from the best and most durable pigments.

"Dull Kote" Paint is neither a varnish nor an oil paint, but a perfect combination of both.

It has a finish that combines the soft restfulness of kalsomine or water paints with the sanitary and really washable qualities of oil, varnish, or enamel paint, without the disadvantage of showing laps or brush marks.



BUCKET OF
JOHNSTON'S "DULL-
KOTE" PAINT

LOOKS LIKE
KALSOMINE,
WASHES LIKE
TILE.

If it becomes stained or soiled it can be washed with soap and water, the same as any varnished or painted surface without in anyway diminishing the quality of the finish.

"Dull Kote" Paint is made in twenty beautiful tints and colors, White, Tinting White, Black, and Sealer or Surfacer.

It is put up in five-gallon kits, one gallon, half gallon, quart, and pint cans.

FURTHER
INFORMA-
TION.

The R. F. JOHNSTON PAINT CO. issue a handsomely illustrated Magazine, replete with information as concerns Interior Finishing of walls and ceilings, which they are anxious to send you. Please write for it on a postal card or otherwise.

Color card and color schemes free upon request.

SPECIFICATIONS FOR
THE USE OF
JOHNSTON'S
WASHABLE
"DULL
KOTE" PAINT.

The tables below give as nearly as possible the covering capacity of "Dull Kote" Paints and the number of coats required in finishing over the different surfaces.

Should an additional coat be required on some kind of walls the cost would stand in the same relation as if lead or other decorative paints were used, for it is a fact that "Dull Kote" Paints are equal or greater in covering power than any other similar finishes, as one coat of this Paint is equal in opacity to two coats of lead.

Over Plaster Wall Work (New), First—Fill up cracks and uneven places with plaster of paris, or crack and crevice filler. Allow it to dry thoroughly.

Second—Apply one coat of "Dull Kote" Sealer or any suitable size. Do not use gloss oil as it softens up under "Dull Kote" and causes the same to gloss in spots and it is also liable to crack and peel off.

If you can not get our Sealer, use a hard drying varnish reduced about one third with benzine. Allow this coat fully twenty-four hours to dry.

If any spots burn through, touch up these places with Sealer and allow it to dry before starting with "Dull Kote" Paint.

A small quantity of "Dull Kote" of shade to be used added to the Sealer or first coat, is an advantage.

Third—Apply "Dull Kote"; allow it to dry twenty-four hours.

Fourth—Apply second coat of "Dull Kote."

"Dull Kote" Paints will cover as follows on plaster walls over size: Smooth surface walls, from 500 to 600 square feet, one coat. Medium sand-finish walls, from 400 to 500 square feet, one coat. Rough sand-finish walls, from 300 to 400 square feet, one coat.

Over Old Painted Walls, First—Fill up cracks with plaster of paris or crack filler. Let it dry and size these spots with varnish size or Sealer.

Second—If wall is in good condition and no air cracks show, apply "Dull Kote" Paint of shade desired.

Third—If air cracks show, apply glue or varnish size.

Fourth—Apply finish coat of "Dull Kote" Paint.

You can figure about 500 square feet to the gallon on previously painted walls.

Over Metal Surfaces—Scrape off or remove all rust. Apply "Dull Kote" Paint direct to metal. One or two coats will cover perfectly. One gallon will cover between 500 to 600 square feet.

Over Burlap—Fill the burlap with a good oil paint and proceed the same as on plaster walls.

Over Kalsomine, First—Fill all cracks with plaster of paris or crack filler.

Second—Apply one coat of "Dull Kote" Sealer. Let it dry for twenty-four hours.

Third—Apply coat "Dull Kote" and allow to dry twenty-four hours.

Fourth—Apply second coat of "Dull Kote."

Over Concrete or Cement, First—Apply our Special Cement Sealer, to which add one pint of "Dull Kote" of shade to be used.

Second—Proceed the same as on plaster walls.

Over Composition Board—Fill up all joints with crack filler. Sand filler when dry to perfectly smooth surfaces. Apply "Dull Kote" Special Composition Board Sealer tinted to shade desired with "Dull Kote"; or size as on new plaster walls.

Apply two coats "Dull Kote," allowing fully twenty-four hours between coats to dry.

For Wood Work, First—Sand surface absolutely smooth.

Second—Apply "Dull Kote" Paint of shade desired, to which add one fourth gallon of raw linseed oil. Allow it to dry for twenty-four hours.

Third—Apply one or two coats of "Dull Kote" Paint without reducing.

Fourth—If gloss finish is desired add from one quart to one half gallon of enamel varnish or use an enamel of shade desired. The enamel should be of same shade as the "Dull Kote."

Fifth—For finest work use double-thick fitch-hair flowing brush.

Sixth—One gallon of "Dull Kote" will cover about 500 square feet, one coat, on woodwork.

"Dull Kote" Sealer—Will cover with one coat approximately as follows:

Smooth walls	600 to 700 square feet to the gallon
Medium sand-finish walls.....	500 to 600 square feet to the gallon
Rough sand-finish walls.....	400 to 500 square feet to the gallon
Over wall paper.....	400 to 500 square feet to the gallon

Thin "Dull Kote" Paints, if they are too thick, with pure turpentine or turpentine substitute.

THE LAWRENCE-McFADDEN COMPANY

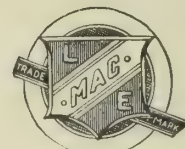
MANUFACTURERS AND IMPORTERS OF

Fillers, Stains, and Varnishes

1400-1402 Frankford Avenue
PHILADELPHIA, PA.

FACTORIES

N. E. CORNER FOURTH AND BRISTOL STREETS
1400-1402 FRANKFORD AVENUE



TRADE-MARK

PRODUCTS.

OIL, WATER and ACID STAINS of every description; HIGH-GRADE VARNISHES and JAPANS; LACQUERS; WAX POLISH; FURNITURE POLISH; WHITE ENAMEL and WHITE FLAT COATING; "GALVO-LAC" (for Galvanized Iron); HARDWOOD FILLERS; OILS.

STAINS.

Much depends upon the character of Stain used in producing the artistic effect desired in the finishing of a building. We have devoted years to the study and requirements of this department of our business, until we consider ourselves experts in producing the various finishes, such as Antwerp, Golden Oak, Weathered, Early English, Fumed, Silver Grey, Circassian Oak, Walnut, and various other fads too numerous to mention, as well as the Mahogany (both in Water and Oil) on Mahogany, Birch, Maple, Cypress, Gum Wood, etc. We shall be pleased to furnish finished panels of anything desired. We can match any color.

" FUMED OAK " STAIN.

For years the " Fumed Oak " effect was only produced by placing the work in an air-tight chamber with earthen vessels filled with aqua ammonia, 28 degrees, and allowing it to remain from twelve to thirty-six hours. It was then coated with linseed oil, shellacked and waxed, which treating takes three or four days time. With our " Fumed Oak " process it is possible to produce the same result exactly in one day.

The Stain is applied freely to the wood with a sponge or brush and is allowed to remain from three to four hours, when it is sandpapered and given one coat of white shellac or American Lacquer. It is then followed with one coat of wax or one coat of All-Dull Finish.

MAHOGANY OIL STAINS NOS. 1123, 1367, 1378.

We consider these three numbers our most popular and salable shades. Mahogany No. 1123 is a rich wine color; No. 1367 is slightly more on the brown, while No. 1378 is an orange brown cast.

MISSION STAINS.

Weathered Oak and Mission Stains are made in various shades. Write for samples.

VARNISHES.

It is a conceded fact that one of the first and most important facts in the manufacture of varnish is the treatment of oils.

We have given this considerable study and as a result are now treating oils with the greatest care, after which they are tanked and allowed to age and settle before entering into the manufacture of our varnishes.

After fusing with the gums and the complete product is finished they are again tanked and allowed to remain from two to six months before being shipped to our customers. Thus satisfactory and lasting results are assured.

ALL-DULL
FINISH AND
FLAT ALL
VARNISH.
LACQUERS.

These are for use where an egg-shell or dull finish is desired without the expense of rubbing. One coat over any varnish will give a perfectly flat effect.

Our Lacquers are made on Banana Liquid Lines where a perfectly flat and dead finish is desired. They are especially adapted to weathered oak and mission work.

FURNITURE
POLISH.

This is for producing a polish on work after the same has been rubbed with pumice-stone and water and is for use only on high-grade work.

"LEWIS' "
RUBBING AND
POLISHING
COMPOUND.
WHITE
ENAMELS.

This is for use on a cheaper class of work, where it is desired to produce a rubbed and polished effect simply by rubbing, and not by first rubbing with pumice-stone and water.

Our No. 1 White Enamel is high grade and adaptable where a rubbed finish is desired. Our No. 2 White Enamel is a Gloss Enamel. Our White Flat Enamel is for use where the egg-shell or dull finish is desired, without the expense of rubbing with pumice-stone and water.

WHITE FLAT
COATING.

This is for use as under coats on White Enamel Work. It dries absolutely flat, lying close together. It requires but little sanding and has great covering properties, making a good foundation for enamels of any character.

"GALVO-
LAC."

This we guarantee to wear two years on galvanized iron without peeling, blistering or flaking off. It is made in nine colors. Will cover with one coat.

"Galvo-Lac" is absolutely the paint for galvanized iron; blistering and peeling will then be something of the past.

LIQUID
FILLER.

We manufacture a Liquid Filler which is a combination of pigments, varnishes and japans, and will absolutely bear out the varnish and prevent absorption. At the same time it will not shrink. It is absolutely transparent and shows no cloud whatever over any shade of wood.

HARDWOOD
FILLERS.

All our Fillers are made from a strictly pure mineral and silex base, pure linseed oil, and a high grade of Japan Driers, made on special lines after twenty-five years' experience and in our own factory. They are especially adapted to the work in hand. They fill perfectly, dry thoroughly, wipe easily and will not shrink.

Our Wonder Mahogany Filler Stain is, without exception, the greatest achievement of the age in the line of wood finishing. It stains and fills in the one operation. However, it is only for use on either solid or veneered Mahogany—Birch, Maple, Poplar, etc., requiring a stain.

CO-OPERATIVE
SERVICE.

We will render every assistance to the architect in specifying, either by personal interview or by submitting any number of finished samples, and furnishing him with specific information and printed matter regarding any of our products.

TERRITORY.

We can supply our goods economically throughout the United States and can export them to a certain extent. Orders of any size filled on short notice.

ESTABLISHED 1862

THE LOWE BROTHERS COMPANY

Paints, Varnishes, Enamels, Stains, Japans

450-452 East Third Street

DAYTON, OHIO

BRANCHES

NEW YORK, N. Y., 73 Beekman Street
 BOSTON, MASS., 21-25 Farnsworth Street
 CHICAGO, ILL., 28-30-32 South Peoria Street
 KANSAS CITY, MO., 1215 West 9th Street

FACTORIES AND STOREHOUSES

450-452 East Third Street
 40-52 Wayne Avenue
 2-22 Crane Street
 Corner Crane and Front Streets

PRODUCTS.

We manufacture PAINT, VARNISH, ENAMEL, STAIN, and METAL PRESERVATIVES and PROTECTIVES for every requirement of architect, builder and engineer, including "HIGH STANDARD" LIQUID PAINT, MARINE PAINT, "LINDURO" and "VERNICOL" ENAMEL WHITE, INTERIOR ENAMELS, OIL and VARNISH STAINS, METAL PRESERVATIVE COATINGS, METAL PROTECTIVE COATINGS, "LITTLE BLUE FLAG" VARNISH, TECHNICAL PAINTS, and others mentioned below.

GENERAL INFORMATION.

Our catalogues cover details fully, explaining uses and giving colors in a way that can not be reproduced here.

LOWE BROTHERS "High Standard" paint and varnish products have been known for a third of a century for their uniform excellence, and may be found in all the leading cities.

LOWE BROTHERS metal coatings are used by leading railroads and construction companies as standards for bridges, steel structures, cars, etc. They have been tried under most difficult conditions with uniformly complete success.

SPECIAL QUALITIES.

Every architect and builder requires five things of a paint:

- (1) That it shall work properly under the brush.
- (2) That it shall dry fast enough.
- (3) That it shall wear well.
- (4) That it shall cover or hide the surface.
- (5) That it shall exclude moisture from the surface underneath.

Some paints have one or more of these qualities, but LOWE BROTHERS "High Standard" paint is made to supply them all. It is the result of many years of scientific research into qualities and characteristics of woods and other surfaces to which paint and varnish are applied, as well as study of materials for best meeting conditions.

COST.

LOWE BROTHERS "High Standard" products are sold by dealers in all parts of the country at standard prices. Because of the care in the selection of materials and the special method of manufacture, these products have unusual spreading and covering power, as well as durability and excellence of wear. These qualities make them the most economical of paint and varnish products.

They are put up in sealed packages only.

SUGGESTIONS FOR SPECIFICATIONS.

FOR EXTERIORS OF BUILDINGS:

- "High Standard" Liquid Paint—Sixty colors, highest class, for all coats. Special colors when desired.
 Porch Floor Paint—Eight colors, durable, practical.
 Flat Brick Colors—Three colors: Reds and Milwaukee brick.
 "Linduro" Exterior Enamel—Very high grade, durable, economical. Nothing better in Europe or

America. Price less than imported enamels.

Standard Metallic Paint—Two colors. Good grade for roofs, barns and outbuildings.

Standard Barn and Roof Paint—Four colors. High grade, durable, economical.



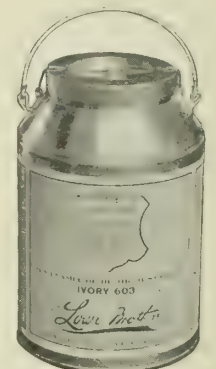
TRADE-MARK



"LITTLE BLUE FLAG" VARNISH



"HIGH STANDARD" LIQUID PAINT



"LINDURO" EXTERIOR ENAMEL

VARNISH FOR PORCHES, DOORS AND EXPOSED SURFACES:

"Little Blue Flag" Spar—The very best for salt air, spray, and severe usage.

"Little Blue Flag" Elastic General Purpose—Very durable, for all outside and inside uses.

FOR INTERIOR WOODWORK—ENAMELS AND PAINTS:

"Linduro," an Interior Enamel—The highest quality for finest work. May be rubbed and polished. Surpasses imported enamels in results.

"Vernicol" Enamel White—Very high grade Enamel for gloss or rubbed finish. Very white and durable.

Interior Enamel Colors—Sixteen colors. Medium price, durable. Especially for bedrooms, hospitals, kitchens, public buildings, etc.

"Mellotone"—See "For Walls."

FOR INTERIOR WOODWORK—STAINS:

Oil Stain—Eight colors, reproducing various woods. Will not raise the grain.

"Vernicol" Varnish Stain—Seven colors and clear. Completes stain and varnish with one application. Very economical.

Prepared Wood Filler—Paste form. For open-grained woods. Light, dark and golden oak. Other colors as desired.

FOR INTERIOR WOODWORK—NATURAL:

Transparent Varnish Primer—A liquid filler for close-grained woods. Remarkably good. Saves one coat of varnish.

"Little Blue Flag" Varnishes—All high quality. Medium prices.

Elastic General Purpose—Very pale. To be used where great durability is desired.

Elastic Interior—Medium drying. Very pale. High gloss. Water resisting.

Quick Action House No. 64—Hard drying. Pale color and good luster.

Inside Rubbing Varnish—Quick, hard drying. Takes beautiful finish.

Crystal Finish—Extremely pale. For use over light woods or white enamel.

FOR FLOORS:

Prepared Wood Filler—Paste form. For hard woods. Light, dark, and golden oak. Other colors as desired.

Transparent Varnish Primer—For soft woods where natural color is desired. Less expensive than good varnish and saves one coat.

"Little Blue Flag" Durable Floor Varnish—Pale, hard drying, very tough. May be used on hard or soft wood. Medium price.

Oil Stain—Where stain effect and varnish finish are desired.

"Vernicol" Floor and Varnish Stain—Stain and varnish at one application. Very durable.

Hard Drying Floor and Deck Paint—A varnish paint giving fine, hard, glossy finish.

FOR WALLS:

"Mellotone"—Interior flat colors. Four tints, eight positive colors, black and white. A durable, practical, economical flat liquid paint for walls, steel ceilings, woodwork, etc. Easily used, washable, sanitary.

Interior Enamel Colors—For hard enamel surfaces, particularly for hospitals, public buildings, kitchens, etc.

Distemper Colors—For fresco work. Colors as desired.

FOR BATHROOMS, KITCHENS, AND SEVERE EXPOSURE:

"Linduro"—The highest grade enamel—very durable.

"Vernicol" Enamel White—Very high grade, high gloss.

Interior Enamel Colors—Sixteen colors, durable, easily cleaned.

"Little Blue Flag" Varnish—

Spar—Very durable.

Elastic General Purpose.

Durable Floor.

FOR IRON AND METAL SURFACES:

Aluminum Paint—For steam and gas fixtures, radiators, etc.

Carriage Gloss—Eight colors. For heated surfaces, fences, etc., where high gloss is desired. Will stand high degree of heat.

"High Standard" Flat Black—For ornamental iron. (See also "Metal Surfaces" below.)

FOR METAL SURFACES, IRON AND STEEL CONSTRUCTION, BOATS, ETC.:

Red Lead Metal Preservative—A special red lead preservative paint of highest character. Ready for use. Does not settle in the can. Two colors. For first coating on exposed surfaces, or both coatings on steel structures. A remarkably good product, the standard for large structures. (See Descriptive Booklet.)

Metal Protective Paint—Three colors. For top coats over Red Lead Metal Preservative, or may be used alone.

Black Metal Coating, No. 1407—A scientifically prepared final coating, very durable, elastic, setting quickly, easily applied.

Carbon Paint—Four colors. A paint of great durability and toughness, for ill-ventilated places with moisture and gases.

Graphite Paint—Liquid or paste form. Made of best quality graphite. Highest grade. For bridges, tin and steel roofs, etc.

Standard Metallic Paint—Two colors. For roofs, bridges, etc. Medium price.

NUMBER OF COATS.

In view of the extreme thinness of a film of paint or varnish, the manufacturers recommend that not less than three coats be specified for all new work.

For wood surfaces the first or priming coat of paint should be of white or a light tint of "High Standard," thinned with $\frac{1}{2}$ gallon of raw linseed oil to one gallon of paint. In no case should a primer be allowed to be made from ochre or mineral, or with slow-drying oils. The second coat should be of same color as finishing coat, reduced with $\frac{1}{2}$ pint spirits of turpentine to each gallon of paint. For third coat the paint should be used as it comes from the container.

For interior enamels the under-coats, of whatever number, should be built up of "High Standard" Flat White or similar product, the last two coats being of the enamel.

For metal surfaces use Red Lead Metal Preservative, or similar metal coating, for first coats, the selected kind for the last. (See "Hints to Architects.")

For concrete surfaces specify as in the covering of wood. Complete forms for specifications will be found in "High Standard Paint Specifications," sent on application.

PUBLICATIONS AND CO-OPERATION.

"High Standard Paint Specifications" (a book of forms), "Hints to Architects," "Metal Preservative and Protective Coatings," General Catalogue, Marine Catalogue, and other valuable pamphlets, together with handsome color cards, giving details of the best methods of usage, are especially prepared for architects, mechanical engineers, and builders. They may be secured upon application.

"Hints on Painting Structural Steel"—a recognized authority on this important subject by Mr. Houston Lowe—will be sent to any architect or engineer upon request.

Specimens of wood finished with Paints, Enamels, Stains or Varnishes may be found at any LOWE BROTHERS agency, and special ones will be sent when required.

JOHN LUCAS COMPANY

MANUFACTURERS OF

Paints, Colors, Enamels and Varnishes

Race and Fourth Streets
PHILADELPHIA, PA.

FACTORIES
GIBBSBORO, N. J. CHICAGO, ILL.

BRANCH OFFICES
NEW YORK, N. Y.

CHICAGO, ILL.

BOSTON, MASS.

PRODUCTS.

TINTED GLOSS READY-MIXED PAINTS; LUCAS ENAMEL PAINTS; LUCAS OIL STAINS; LUCAS VARNISHES; VISCOLITE EXTERIOR FINISH; VISCOLITE INTERIOR FINISH; VISCOLITE FLOOR FINISH; VISCOLITE SEAT FINISH; VISCOLITE SURFAS-KOT, a perfect shellac substitute for surfacing (not suitable for floors, stairways, etc.); LU-FLAT-KOT WALL FINISH; LUCAS C. P. OIL COLORS, and a full line of PAINTS, ENAMELS, STAINS and VARNISHES.

DESCRIPTION AND USES.— EXTERIOR AND INTERIOR PAINTING. ENAMELING.

Tinted Gloss Ready-Mixed Paints are made on scientific principles, embodying maximum strength of coating, elasticity, tenacity, penetrating qualities, permanence of color and gloss and extreme durability. They can be used for all kinds of exterior and interior painting.

Lucas Enamel Paints are of extreme brilliancy, beauty and permanence of tints and colors, do not discolor from gases, atmospheric influences, or the effects of time, nor are they affected by steam or vapors. They can be used for all interior and exterior decorations on wood, plaster, metal or on fabrics. The Lucas White Enamel has a well-deserved National reputation for extreme whiteness, beauty of effect and perfect working qualities. It does not turn yellow.

WOOD STAINING.

Lucas Oil Stains are free from every objection to which acid, spirit, or alcohol stains are subject. They do not raise the grain of the wood and the colors are permanent. The use of Lucas Oil Stains is simple and always satisfactory, as they do not show laps, regardless of the kind of work or method of application. They can be manipulated by wiping off with rags or waste to produce light or dark effects as may be desired, according to the character of the wood or the work to be matched. They dry flat, and may be finished with shellac and wax or with wax alone, or they may be worked up to any gloss effect desired, with varnishes, in the usual manner.

VARNISHING.

Lucas Viscolite Varnishes are suitable for all kinds of architectural work. They have brilliant gloss or lustre and perfect drying and working qualities. All Viscolite Varnishes can be rubbed and polished in the usual manner and time. They do not spot from moisture or dampness nor do they mar white. While moderate in price, they are equal in color and durability to any varnish product.

Viscolite Exterior Finish, for outside uses of every description.

Viscolite Interior Finish, for interior trim, wainscoting, etc.

Viscolite Floor Finish, exclusively for floors.

Viscolite Seat Finish, for chairs, table-tops, window-seats, church pews, porch furniture, swings, etc.

SURFACING.

Viscolite Surfas-Kot is a quick-drying, light-colored, flat-drying surfacer for all grades of work with the exception of floors and stairways. It holds up finishing coats perfectly and is an excellent substitute for shellac, producing more durable results at about half the cost.

LU-FLAT-KOT WALL FINISH.

The only perfect flatting material produced. The only flat finish that is absolutely flat and yet permanent, that can be washed, scrubbed or even scoured, if necessary, without injury. Lu-Flat-Kot produces absolutely perfect results on any kind of a surface in three coats, without preliminary sizing or priming coats. Leading decorators admit that it has never been equaled for easy working properties.

It can be applied without stippling, or it can be used for stippling, frescoing, stenciling, blending or relief work.

It can be applied successfully on moist or damp surfaces.

Lu-Flat-Kot is entirely free from glue, paste, casein, or other deleterious substances which are subject to decay; it contains no white lead or other poisonous material, and is therefore absolutely hygienic and sanitary and particularly adapted for use in hospitals and public buildings.

All other so-called flat wall paints possess a dull gloss when compared with the dead flatness of Lu-Flat-Kot.

Expert chemists' tests as well as results in actual service prove all our claims for Lu-Flat-Kot Wall Finish.

COLORS OF LU-FLAT- KOT.

DIRECTIONS
FOR THE USE
OF LU-FLAT-
KOT ON
WOOD,
METAL,
CEMENT,
CONCRETE,
BRICK-WORK,
STONE,
PLASTER AND
FABRIC.

Lu-Flat-Kot is furnished in white, sixteen tints, and in seven solid colors of permanent clearness and richness.

FLAT FINISH—For interior use on wood, metal, stone, brick, fabric, or on concrete or cement floors, or surfaces, two or three successive flat coats produce a durable, uniform flat finish, free from all spots or streaks. To each 100 pounds of Lu-Flat-Kot, which comes only in paste form, add $3\frac{1}{2}$ to 4 gallons of turpentine; this makes from $8\frac{1}{2}$ to 9 gallons of flat finish ready for use. Plastered walls should first receive one coat mixed with $\frac{1}{2}$ raw linseed oil, $\frac{1}{2}$ turpentine and sufficient drier, and then one or two flat coats, as the work may require.

EGG-SHELL FINISH—To each 100 lbs. of Lu-Flat-Kot add 2 gallons of raw linseed oil, 2 gallons of pure turpentine, and 1 pint of good Japan drier. This makes 9 gallons ready to use. Three successive coats of this mixture produce a beautiful egg-shell gloss finish.

DAMP WALLS OR SURFACES—Can be finished only with successive flat coats. Neither oil nor Japan can be used in mixtures for such surfaces. Before applying, wipe the surface as dry as possible.

ENAMEL PRIMER—On wood, plaster, or other porous surfaces apply two coats mixed the same as for Egg-Shell Gloss Finish.

On metal or other non-porous surfaces apply two coats of Lu-Flat-Kot mixed for Flat Finish.

GRAINING GROUND—Lu-Flat-Kot is a perfect ground for graining purposes if thinned according to the directions for Flat Finish.

RELIEF AND EMBOSSED WORK—Use a mixture of one third each of Lu-Flat-Kot, whiting, and plaster of Paris.

TINTING WHITE LU-FLAT-KOT—Colors ground in oil may be used for making light or delicate tints without interfering with the flat effect. For darker shades and colors, use the stronger, solid Lu-Flat-Kot colors. Intermixing or combining colors will produce many intermediate and original tints and colors.

CAUTION.

Cement and concrete surfaces frequently contain moisture at all times. We do not claim that Lu-Flat-Kot will waterproof concrete or cement. It is a decorative material and will minimize the absorption of water to the greatest possible extent, because it is a coating that will stay on, and that is unaffected by the moisture which it permits to enter and leave the structure. After considerable study, chemical research and thorough tests, we have manufactured a "sealing" material which, when applied to damp surfaces of all kinds, perpetually closes the pores and absolutely prevents moisture escaping from the surface it protects, or penetrating from the atmosphere. Lu-Flat-Kot applied over such a preliminary coating makes a finish of æsthetic beauty and of perfect damp and moisture resisting qualities.

CO-OPERATIVE SERVICE.

We will send our booklet, "Wall Wisdom," showing sample colors, and giving full directions for the use of Lu-Flat-Kot to any address upon request.

REFERENCES.

Bellevue-Stratford Hotel, Philadelphia, Pa.
Pennsylvania Railroad Co., Philadelphia, Pa.
United Gas Improvement Co., Philadelphia, Pa.
Burlington County Hospital for Insane, New Lisbon, N. J.
Deaconess Home, Philadelphia, Pa.
Hilton Hotel, Beloit, Wis.
Texas Baptist Memorial Sanitarium, Dallas, Tex.

Polyclinic Hospital, Philadelphia, Pa.
Builders' Exchange, Philadelphia, Pa.
St. James Church, Philadelphia, Pa.
Philadelphia and Camden Ferry Co., Philadelphia, Pa.
Hospital for Insane, Blackwood, N. J.
Davies County Court House, Gallatin, Mo.

KEYSTONE VARNISH COMPANY

MANUFACTURERS OF

Washable Keystona Flat Finish for Walls and Ceilings

71-79 Otsego Street

BROOKLYN, N. Y.

PRODUCTS.

KEYSTONA FLAT FINISH; NO. 100 WHITE ENAMEL; FLAT ENAMEL WHITE.

KEYSTONA
TRADE-MARK

KEYSTONA FLAT FINISH FOR WALLS AND CEILINGS.

Keystona Flat Finish for Walls and Ceilings gives a sanitary velvet finish, as permanent as lead and oil, but eliminating all danger of lead poisoning. It is made to match the draperies of any room in color, and imparts just as flat and soft a finish as calcimine, yet can be washed with soap and water.

Keystona is a scientific combination of certain parts of paint and varnish. It contains neither water, glue nor caseine, and, unlike white lead and wall paper, has a permanent sanitary influence. It dries almost magically, without a blemish or "flash," to a rich, subdued flat finish that is restful to the eye and appealing to a refined taste. Then, if desired, it can be frescoed, picked out in gold, embellished in relief, or otherwise.

Keystona is thoroughly washable, opaque, non-absorbent, unfading, ornate, and proof against fire, dampness and germs. Two coats effectually prevent disfigurement from the unsightly tracing of air cracks; it "kills" wall stains as nothing else will, and positively does not change behind picture or furniture.

SPECIFICATIONS.

All the walls and ceilings must be given a priming coat of the following mixture: 10 lbs. white lead, broken up in one gallon of raw linseed oil and one pint of drier, one gallon of Keystona No. 2 and $\frac{1}{2}$ gallon of Keystona Sealing Varnish, tinted with colors in oil to about color of finish; then finish with two coats of Keystona of tints to suit the architects or owner.

COVERING CAPACITY.

One gallon of the above priming coat will cover an average of 1,200 square feet.

One gallon of Keystona second coat will cover an average of 700 square feet, and a third coat will cover an average of 700 square feet. A painter can cover one third more surface than with lead and oil in a given time. It is the cheapest and best wall finish known. One coat of above priming coat and one coat of Keystona cost about the same as calcimine.

USES.

Keystona is incomparable for interior use upon the walls and woodwork of office and public buildings, hotels, schools, hospitals, sanitariums and homes; also, for priming woodwork, steel ceilings, steel wainscoting and sidewalls, wall-paper or calcimine. For enamel primer and under coats for graining, two coats cut down with fine sandpaper will be found superior to any other coating.

COLORS, SIZES AND PRICES.

Keystona is sold ready for use, in white and tints. Used as a base you can make any required shade by tinting it with the ordinary color in oil.

Price, white, \$1.80; colors, \$2.00 per gallon.

WHERE USED.

Keystona is being used extensively in every city throughout the country. Write us and we will send references from your section and further information.

MOLLER & SCHUMANN COMPANY

MANUFACTURERS OF

Varnishes, Enamels, Fillers and Japans

BROOKLYN, N. Y.

NEW YORK, N. Y.

CHICAGO, ILL.

PRODUCTS.

VARNISHES, including our "HILO" MARINE SPAR, "HILO" CABINET FINISH, "HILO" FLOOR FINISH, "HILO" INTERIOR SPAR, "HILO" FLAT FINISH, and "HILO" PRIMING COATER (Liquid Filler). "M & S Co" INTERIOR WHITE ENAMEL, "M & S Co" INTERIOR EGG-SHELL ENAMEL, and "M & S Co" WOOD FILLER.



DESCRIPTION.

Our products are made with every consideration of detail as to color, body, drying and working qualities; and they are not only the most desirable varnishes for wood finishing, but all *dry hard* and are durable.



MARINE SPAR.

Marine Spar is a Varnish intended for the highest grade of exterior work. It resists the most trying atmospheric conditions, and is invaluable for use on yachts, outside doors, store fronts, and window casings. It is extremely pale, free-flowing and lustrous. Price, \$4.00 per gallon.

Specify—On open-grain woods use "M & S Co" Paste Wood Filler, and apply three coats of "Hilo" Marine Spar Varnish. On close-grain woods use three coats of "Hilo" Marine Spar Varnish. For best work rub down with pumice-stone and water before applying last coat.

CABINET FINISH.

Cabinet Finish is for use in finishing the finest interior woodwork and cabinet trim. It preserves the natural beauty of the wood indefinitely, dries hard in thirty-six hours, and may be rubbed and polished. Price, \$2.50 per gallon.

Specify—On open-grain woods use "M & S Co" Paste Wood Filler, and apply one coat of "Hilo" Priming Coater and two coats of "Hilo" Cabinet Finish Varnish. On close-grain woods use one coat of "Hilo" Priming Coater and two coats of "Hilo" Cabinet Finish Varnish.

INTERIOR SPAR.

An exceptionally fine finish for use on all kinds of interior work. Produces a high lustrous finish, and is very durable, has good free working qualities, dries hard overnight, and can be rubbed. Price \$2.00 per gallon.

Specify—On open-grain woods use "M & S Co" Paste Wood Filler, and apply one coat of "Hilo" Priming Coater and two coats of "Hilo" Interior Spar Varnish. On close-grain woods use one coat of "Hilo" Priming Coater and two coats of "Hilo" Interior Spar Varnish.

FLOOR FINISH.

For finishing natural wood or painted floors, it surpasses all other floor finishes in free working, elasticity, durability and toughness. Under favorable conditions it dries hard overnight and it will not scratch or mar white. Price, \$2.50 per gallon.

Specify—On open-grain woods use "M & S Co" Paste Wood Filler, and two coats of "Hilo" Floor Finish. On close-grained wood use two coats of "Hilo" Floor Finish. No liquid Filler should be used on floors.

FLAT FINISH.

For use on all woodwork, over stain or varnish, to produce a rubbed or mission finish. It is waterproof and durable and contains no wax. Price, \$2.50 per gallon.

PRIMING COATER.

A liquid Wood Filler, consisting of a hard pigment finely ground in a quick-drying elastic varnish. Dries overnight, and makes a perfect foundation for succeeding coats of our "Hilo" Varnishes. Price, \$1.50 per gallon.

PASTE WOOD FILLER.

A permanent, non-shrinking Filler for use on open-grain woods. It is finely ground in linseed oil, japans and turpentine. To prepare, mix eight pounds to one gallon of benzine or turpentine. Price, 12 cents per pound.

INTERIOR WHITE ENAMEL. INTERIOR EGG-SHELL ENAMEL.

A superior White Finish for all interior work, and of a pure white color. It dries hard, with a high, full luster. Price, \$4.00 per gallon.

Is the same as above, except that it dries with a dull luster, similar to a rubbed finish.

Specify—For finishing, two coats of "M & S Co" Enamel should be applied over two coats of paint.

MURPHY VARNISH COMPANY

MAIN OFFICE
NEWARK, N. J.

SALES OFFICES
NEWARK, N. J., Chestnut and McWhorter Streets
BOSTON, MASS., 80 Batterymarch Street
CLEVELAND, OHIO, 731-733 St. Clair Avenue, N. W.

ST. LOUIS MO., 300 South Fourth Street
CHICAGO, ILL., 50 West Twenty-Second Street

FACTORIES
NEWARK, N. J., AND CHICAGO, ILL.

PRODUCTS.

We manufacture the following line of goods more particularly for Building Work: TRANSPARENT WOOD FINISH, INTERIOR, \$3.00 per gallon; "NOGLOSS" VARNISH, INTERIOR, \$3.00 per gallon; TRANSPARENT WOOD FINISH, EXTERIOR, \$4.00 per gallon; FINEST PALE MAPLE VARNISH, \$5.00 per gallon; FINEST PALE MAHOGANY VARNISH, \$4.00 per gallon; CIRCASSIAN WALNUT VARNISH, \$5.00 per gallon; FINEST WHITE ENAMEL VARNISH, \$4.00 per gallon.

BEST HARD CHURCH OAK VARNISH, \$3.00 per gallon; MARINE VARNISH, INTERIOR, \$3.00 per gallon; MARINE VARNISH, EXTERIOR, \$4.00 per gallon; SPAR VARNISH, INTERIOR, \$2.25 per gallon; SPAR VARNISH, EXTERIOR, \$3.00 per gallon; "SHELLACQUER," \$2.00 per gallon; PASTE FILLERS and LIQUID FILLERS; CYPRESS SEALER; TRANSPARENT FLOOR VARNISH, \$3.00 per gallon; VELVET FLOOR FINISH, \$3.00 per gallon.

ENAMEL UNDERCOATING, \$2.50 per gallon; WHITE ENAMEL FINISH, \$4.00 per gallon; SEMI-GLOSS WHITE ENAMEL, \$3.50 per gallon; FLAT WHITE ENAMEL, \$3.50 per gallon; SNOW-WHITE ENAMEL, \$4.00 per gallon; FINEST COLORS in JAPAN and OIL.

A superior line of NATURAL WOOD STAINS for SPECIAL EFFECTS, and FILLER to be used in connection with them. Made on order only.

FACTS AS TO QUALITY AND COST.

There is a great difference in the quality of varnishes. One kind makes a right finish; another makes a wrong finish. The right finish is worth its cost, while the wrong finish fails in its purpose and costs more in the end.

The best is therefore the most economical, even if the job is a plain one. In no other line is this truer than with varnishes and paints. When you have found out the best materials, next obtain an intelligent, honest painter to put them on. The additional outlay is but a trifle of the total cost.

TRANSPARENT WOOD FINISH AND FLOOR VARNISH.

The varnish of highest quality for housework is the MURPHY VARNISH COMPANY'S Transparent Wood Finish (Interior and Exterior) and Transparent Floor Varnish, as well as the other varieties mentioned in the Products Column.

SPECIAL NOTE TO ARCHITECTS.

These varnishes are sold only in sealed and registered cans.

It is your privilege to say what varnish shall be used. If you specify one definite kind and inform the varnish maker, he will relieve you of the worry of watching the painter. We will supply printed postal cards for notifying us of such specifications.

GRATIFYING PROGRESS.

A poor class of work in wood finishing used to be the general rule and is still all too prevalent. We note, however, that with the general progress in building work, improvement has also reached the important department of wood finishing and painters' work.

We flatter ourselves that the introduction of the Murphy Line of Varnishes, Enamels and Colors, by producing the beautiful and durable results for which these materials are known, has contributed not a little to the creating of this demand for a higher quality of work. In view of this progress it is unnecessary to dilate upon the great satisfaction resulting to owner and architect from the handsomely finished woodwork of a house. It is the final touch that gives to everything its proper value and setting.

TRANSPARENT FLOOR VARNISH.

The great popularity of our Floor Varnish is due to the fact that it is specially made for floor work. It is the most durable varnish we know for floors.

NATURAL
WOOD
STAINS.

Our Natural Wood Stains supply the means for imitating the effects of age and particular climate upon sundry varieties of wood, or for producing beautiful soft colors on the cheaper woods. These stains can be applied with large brushes rapidly and do not require to be wiped off like oil-stains, which advantage cheapens their use.

ENAMELS
AND COLORS.

Murphy Enamels are genuine zinc and varnish Enamels. They are not to be compared with the make-believe white paint enamels on the market. Very pale varnishes and the finest zinc-white procurable go into their composition, hence they produce a beautiful and lasting finish. Made in several varieties for securing effects of different character.

Our Fine Colors in Japan and in Oil are of the same high qualities which have made our varnishes famous. Nothing has been left undone to produce the best; we economize nowhere. Our colors may be as confidently depended on as our varnishes.

SUGGESTED
FORMS OF
SPECIFICA-
TION FOR
WOOD
FINISHING.

The following forms incorporated in architects' specifications will insure satisfactory results:

MATERIALS TO BE USED

Stains—Murphy Varnish Company's Wood Stains (to order).
Filler—Murphy Varnish Company's Mineral Paste Filler, for open-grained woods.
Murphy Varnish Company's Liquid Fillers and Cypress Sealer, for close-grained woods.
Shellacquer—Murphy Varnish Company's White or Orange Shellacquer.
Murphy Varnish Company's Transparent Wood Finish, Interior, for all inside work, except sash and window sills, or "Nogloss" Varnish for flat effect.
Murphy Varnish Company's Transparent Wood Finish, Exterior, for all outside work, inside sash and window sills.
Murphy Varnish Company's Transparent Floor Varnishes for floors, as specified.
Murphy Varnish Company's Special Varnishes, for use on finest inside work where specifically stated.
White Enamels—Murphy Varnish Company's Enamel Undercoating and White Enamel Finishes.
Colors—Murphy Varnish Company's Colors in Japan or Oil, as required.
Material to be delivered on premises in sealed tin cans and opened only in the presence of the inspector of the work.
Only such material as is specified for use allowed on the premises, and all to be used as delivered without thinning or other manipulation.
The right is reserved to take samples of any material being used.

INSIDE WORK

Mahogany, Oak, White Mahogany, Walnut, Ash, Butternut, and all Open-Grained Woods—To be properly filled with Murphy Varnish Company's Paste Filler. Care to be taken to have filler toned to match the natural color of the wood or the color desired by owner or architect. After the filler the work is to receive one coat of Shellacquer (except on floors, and in bathrooms and laundries) and three coats of varnish as designated above. Shellacquer coat and first and second coats of varnish to be sandpapered with 00 sandpaper; the third coat of varnish to be carefully rubbed with pumice-stone and water to a dead and even surface (finisher to use rubbing felt), then oiled and thoroughly wiped. Toning to be done where required. If a gloss finish is desired, omit rubbing on the last coat.

NOTE—The above directions are for a first-class finish. A satisfactory surface at less cost can be obtained by omitting either the coat of Shellacquer or one coat of varnish, except on Cypress, where one coat of Cypress Sealer should be used, followed by three coats of Transparent Wood Finish, Interior.

Pine, Maple, Whitewood, Cherry, Birch, Sycamore, Beech, Holly, and all Close-Grained Woods—To be finished same as above, except that the filler be omitted.

Cypress—To be finished same as other close-grained woods, except that one coat of Murphy Varnish Company's Cypress Sealer is to be used in place of the one coat of Shellacquer.

Bathrooms and Laundries—To be treated same as above omitting the coat of Shellacquer and rubbing the last coat of varnish lightly with pumice and oil, or flowing it on for a gloss finish, as desired.

Floors—All open-grained hardwood floors to be properly filled with Murphy Varnish Company's Paste Filler, and to receive three coats of Transparent Floor Varnish, the last coat to be rubbed lightly with oil and pumice-stone, or to be Velvet Floor Finish, not rubbed, as will be directed.

Pine, Maple, Cherry, and all other close-grained woods used for floors to be finished precisely as above, except that filler is to be omitted.

White or Tinted Enamel Work—First give the wood a coat of White Shellacquer; lightly sandpaper when dry and follow with two coats of Murphy Enamel Undercoating, and four coats of any of the Finishing Enamels desired; the last coat to be rubbed down to a fine surface with either pumice-stone and water or rottenstone and water, or flowed on for a gloss or flat effect, according to the enamel used for the last two coats. Instead of the coat of shellacquer a good practice is to give the trim a coat of pure white-lead paint at the mill, for protection. For tinting use Murphy Japan Colors.

OUTSIDE WORK

All outside work not calling for painting is to be stained in color as will be directed, and filled and finished with three coats of Transparent Wood Finish, Exterior. Rub lightly between coats, the last one to be flowed on, gloss finish.

NOTE—A cheaper and quite durable finish can be obtained with our Spar Varnishes.

GENERAL DIRECTIONS

All inside trim before leaving the mill must receive on the back a coat of best quality pure red-lead paint.

The surface of all woods must be sandpapered smoothly and properly cleaned before finishing is commenced. Between all coats use 00 sandpaper.

No Shellacquer to be used on outside work, inside sash, window sills, floors, bathtubs or other surfaces exposed to great dampness.

Care must be taken to have premises properly heated and free from dampness and dust, to secure the best results.

ARCHITECTS'
PORTFOLIO.

We issue a handy, neatly bound portfolio full of valuable information for architects, fully covering the scope and use of our various materials. We will send it to you gratis.

SPECIFICA-
TION BLANKS.

If requested, we will furnish correctly worded specification blanks without charge, which cover every variety of woodwork.

BENJAMIN MOORE & COMPANY

MANUFACTURERS OF

Muresco, Pure Colors and Paints

BROOKLYN, N. Y.

CHICAGO, ILL.

CLEVELAND, OHIO

TORONTO, CAN.

PRODUCTS.

"MURESCO," "MOORAMEL," VARNISH, COLORS in OIL, WHITE LEAD, TINTED LEAD, WHITE ZINC, READY-MIXED HOUSE PAINTS, HIGH-GLOSS ENAMEL, DECORATORS' ENAMEL, SPECIAL BATHTUB ENAMEL, LIQUID and PASTE WOOD FILLERS, ROOF PAINTS, FLOOR PAINTS, VARNISH and SHINGLE STAINS, and "NUWITE" FLAT PAINT.

"MURESCO."

"Muresco" is acknowledged by the leading architects, master painters and decorators to be the best interior finish for walls and ceilings of any description. Under ordinary conditions one coat is sufficient, although others can be applied, consequently it is not only economical for plain work, but possesses the merits necessary for the finest decorations. "Muresco" is absolutely sanitary. It is made in white, sixteen tints, and in sixteen colors, and is put up in barrels, half barrels, hundred-pound kegs, and five-pound packages. "Muresco" is used very extensively for finishing and decorating the walls and ceilings of hotels, office buildings, theaters, hospitals, public schools, private residences, libraries, etc. During the year 1907 over 18,000,000 pounds of "Muresco" were sold.



TRADE-MARK

"MOORAMEL."

After a long series of extended experiments, we are now prepared to offer, for the approval of the master decorators and architects, "Mooramel," a pure white, slow-setting, easy-working, perfect-flowing enamel, which, without doubt, is the most serviceable of any foreign or domestic high-grade product, and we venture the assertion that a trial or comparative demonstration will prove to complete satisfaction the superiority of "Mooramel" over other marketable goods of its class.

"Mooramel" is pure white, because the pigment used is of the highest and whitest grade, ground to an impalpable fineness.

Two other features, most important to every enamel, present in only a very few, but salient points of "Mooramel," are that it sets very slow like a pure oil paint and flows like a high-grade architectural varnish.

In "Mooramel" we have realized the ideal working and flowing enamel of the master painter's mind. We have long appreciated the weakness of enamel paints in that the majority of such products are complained of concerning "quick-setting," "pulling," showing "laps and brush marks" and the inability to wash with soap and water a finished surface without an after effect of fogging and cracking. All of these aforesaid disadvantages are entirely eradicated by the use of "Mooramel," which, on account of its extremely elastic propensities, can be depended upon for outside as well as inside use. Exposure will detract from "Mooramel" less than from any other like product that may be used for any interior or exterior work, in consequence of which its use is invaluable for hospitals, schools, public buildings and hotels, as well as private dwellings; in fact, in all places where the woodwork and walls requiring an enamel finish are subjected to washing and constant change of atmospheric conditions.

"NUWITE" FLAT PAINT.

"Nuwite" Flat Paint is a durable flat oil paint, for walls, woodwork, and all classes of interior painting and decorating. It is washable, non-changeable, sanitary, and non-poisonous. Two coats of "Nuwite" equal in density three coats of any other known pigment.

VARNISHES.

"Moore's Impervo" brand of architectural varnishes can be used with great satisfaction in all instances where a high-grade varnish is needed or specified.

"Impervo" Floor and Interior Finishes will be found unequaled where durability and elasticity are required.

OTHER PRODUCTS.

While we are undoubtedly the largest manufacturers of Wall Finish in the country our facilities for producing anything else in the paint lines are second to none, consequently we are in a position to meet all competition as to quality, price, and service.



MOORE'S VARNISH CAN

NATIONAL LEAD COMPANY

Paint Materials

NEW YORK

BOSTON

BUFFALO

CHICAGO

CINCINNATI

CLEVELAND

ST. LOUIS

PHILADELPHIA (John T. Lewis & Bros. Co.)

PITTSBURGH (National Lead & Oil Co.)

PRODUCTS.

PAINT MATERIALS for Iron, Steel, Galvanized Iron, Metal Roofs, Concrete, Wood and general House Painting; WHITE LEAD, RED LEAD, LINSEED OIL.

Also LEAD PIPE and other BUILDING MATERIALS as described elsewhere in this Catalogue, for which see our name in General Index.

PAINTING METALLIC SURFACES.

It is of the utmost importance in painting metals to have a solid, coherent coating for the undercoats, no matter what the decorative finish may be, and no paint produces this solid, coherent coating so well as Pure Red Lead. For reasons, comparisons, testimonials, and other information helpful to those unfamiliar with the subject, write us at any of our branch addresses above. Red Lead paint gives a maximum of durability and working qualities when mixed as follows:

HOW TO USE RED LEAD

STEEL AND IRON WORK.

Before Erection—Before it leaves the shops all steel and iron work shall be thoroughly cleaned of all mill scale, dirt, rust and oil, and shall receive one (1) coat of red lead paint mixed according to formula below. Surfaces which will be inaccessible after structure is erected shall receive two (2) coats of this paint before erection.

FORMULA { NATIONAL LEAD Co.'s pure red lead.....30 to 33 lbs.
Pure raw linseed oil.....1 gallon

These ingredients shall be thoroughly mixed not longer than twenty-four hours before being used.

After Erection—All structural iron work shall be cleaned after erection and all abrasions in first coat of paint brushed clean with a stiff brush and repainted. All surfaces shall then receive one (1) additional coat of red lead paint prepared according to above formula.

All pipes, including automatic sprinklers, steam and hot-water radiators, conducting pipes and interior exposed structural metal work shall receive two (2) coats as above. Fire-escapes, smoke-stacks, gutters, down-spouts, and all other exterior metal work shall receive three (3) coats of above with one (1) pound of pure lampblack, ground in oil, added to every 28 pounds of red lead used in the third (3d) coat.

Subsequent coats on exposed metal work shall be of NATIONAL LEAD Co.'s strictly pure white lead and linseed oil, tinted according to the color scheme employed in the building.

Paint shall not be applied until paint previously applied is thoroughly dry.

No painting shall be done in wet or freezing weather.

METAL ROOFS, CORNICES, ETC.

New Work—All new metal, tin, galvanized iron, iron or steel, used for roofing, cornices, valleys, gutters, down-spouts, iron railings, gratings, etc., shall be painted according to the following specifications:

Before Painting—All surfaces shall be carefully cleaned by scrubbing with sand, soap and water, and thoroughly dried before paint is applied. Only when this is done will the paint adhere properly to the metal. This is very important.

FORMULA { NATIONAL LEAD Co.'s pure dry red lead.....30 pounds
Pure boiled linseed oil..... $\frac{1}{3}$ gallon
Pure raw linseed oil..... $\frac{2}{3}$ gallon
Pure lampblack ground in oil.....4 ounces

Mixing—The materials must be thoroughly mixed before application. The mixture shall be of uniform consistency and stirred frequently while in use.

Application—All surfaces shall receive two uniform coats, as above. When necessary to follow color-scheme, finishing coats of NATIONAL LEAD Co.'s pure white lead and linseed oil, tinted to suit, shall be applied over these coats. Each coat shall dry thoroughly before the next coat is applied. Paint on under side of roofing shall dry hard before roofing is laid.

Old Work—Metal surfaces not new shall be thoroughly cleaned with wire brush, removing all loose paint and particles, and then painted as above.

PAINTING CONCRETE.

The painting of concrete presents no greater difficulties than wood or brick, provided the alkali in the cement has been killed. This can be done by allowing the cement to age for a year, or it can be artificially done by washing the surface of the concrete with carbonic acid water or with a solution of zinc sulphate in water. When dry, paint the same as brick.

PRINTED FORMS FURNISHED.

To any architect who desires we will supply printed specifications, legal cap size, containing full directions for the proper use of Red Lead in the painting of metals, and White Lead in the painting of wood, concrete, brick, etc.

SPECIFICATIONS.

Architects who are doing work for a community unfamiliar to them may be assured of securing the guaranteed product of NATIONAL LEAD COMPANY if they will specify as follows: "NATIONAL LEAD COMPANY'S Pure White Lead (Dutch Boy Painter, trade-mark)." Or in case of protective coatings for metal, specify: "NATIONAL LEAD COMPANY'S Pure Red Lead."



EUGENE E. NICE

MANUFACTURER OF

Varnishes, Wood Fillers, Japans, Paints, Stains, Enamels and Colors

PHILADELPHIA, PA.

OFFICES AND WAREHOUSES
272-274 SO. SECOND STREET
201-203-205-207 SPRUCE STREET



TRADE-MARK

FACTORY AND VARNISH WORKS
BROAD AND BIGLER STREETS

PRODUCTS.

Manufacturer of VARNISHES, HARD OIL FINISH, FLOOR FINISH, WOOD FILLERS, JAPANS, MIXED PAINTS, ENAMELS, COLORS, SHINGLE STAINS, WHITE LEADS.

WOOD
FILLERS.

The choice of a wood filler is most important, because a handsome, durable finish depends largely upon the preparation of the surface for the varnish. Close-grained woods should have one coat of "Nice" Liquid Filler, and hard, open-grained woods one coat of "Nice" Paste Filler, rubbed off, in each case followed by a coat of varnish or hard oil. The result will be a first-class finish.

If, however, the very best finish is desired, as where three-coat work is specified, then an extra coat of "Nice" Liquid Filler in each case, finished with one coat of varnish, produces a handsomer and more durable finish than two coats of varnish over the one coat of filler. The reason is that this filler contains a very large percentage of pure linseed oil, so refined and treated by our special method that it dries flat without destroying its elasticity. It is therefore one of the best wood preservatives known, not excepting even shellac, and holds out the varnish far better than shellac.

"NICE"
LIQUID
FILLER.

"Nice" Liquid Filler dries flat, works freely, does not show laps, will not raise the grain of the wood, and requires very little sand-papering. The light shade is perfectly transparent and will not color the lightest woods. It will stand outside, and will not crack, turn white, or peel. It is a pigment filler, but does not settle hard in bottom of package, and is easily broken up. It has a greater covering capacity than any other filler—800 sq. ft. to the gallon—which indicates its quality. It will dry hard in from 8 to 12 hours, permitting "one coat a day" work with safety.

Price for Light and Dark Shades is \$1.65 per gallon in 1-gallon cans. The light shade is mostly used, and can be tinted by the painter or finisher to suit his own ideas, when he wants a colored filler; but for the convenience of others, we make the following shades at an advance of 10 cents per gallon:

Light Golden Oak, Medium Golden Oak, Dark Golden Oak, Antique Oak, Flemish Oak, Cherry, and Mahogany.

"NICE" LIQUID
FILLER"NICE"
PASTE
FILLER.

"Nice" Paste Filler in light shade is perfectly transparent. It has non-shrinkable base, sets in about 30 minutes; has very large covering capacity, and is the best filler that can be made, regardless of price.

The price of Light, Dark, Light Golden Oak, Medium Golden Oak, Dark Golden Oak, Antique Oak, Flemish Oak, Cherry, and Mahogany is 11½ cents per pound, in 25-pound cans, packed 100 pounds to the case. The light shade is mostly used and tinted by the painter or finisher when a colored filler is required.



"NICE" PASTE FILLER

"NICE"
VARNISHES
AND
FINISHES.

"Nice" Interior and Exterior Varnishes are made from the best raw materials obtainable. All gums and other ingredients are carefully inspected and sorted, and combined by the most accurate methods. All this with proper aging insures a product unsurpassed for uniformity and durability.

"NICE"
VARNISHES
FOR INTERIOR
USE.

"Nice" Superior Inside Varnish (per gal., \$2). For the best class of interior work; pale color, good body, flows freely, sets free from dust in from 3 to 6 hours, and dries hard in from 10 to 16 hours; can be rubbed to flat surface or egg-shell gloss in about 36 hours.

"Nice" Extra Inside Varnish (per gal., \$1.65). For all good interior work; a little darker than "Superior," but very hardy and durable.

"Nice" Superior Light Hard Oil Finish (per gal., \$2). Pale color, good body, free flowing, permanent high gloss.

"Nice A" Light Hard Oil finish (per gal. \$1.65). Not quite as light as Superior, but in other respects its equal.

"Nice" Floor Finish (Superior grade, \$3.50; Extra grade, \$2.25 per gal.). These goods are tough, elastic, durable, good body, not affected by water or alkali. Will not scratch or mark white. The Superior is palest in color.

"Nice" Superior Dull Finish (per gal., \$2.25). Produces a rubbed effect without rubbing. Can be used over filler or undercoating of varnish. Light in color, very durable. Nothing finer made in a dull-finish varnish.

"Nice" Pew Finish (Superior grade, \$3.50; Extra grade, \$2.25 per gal.). Dries very hard, but elastic. Not affected by water, alkali, or atmospheric conditions. Good body and gloss. Superior grade is very pale. Never any trouble with tackiness when this finish is used.

"Nice" Coach Varnish ("A" Coach, \$3.50; Interior Coach, \$2.25). For exposed interior or sheltered exterior work and surfaces subjected to hard wear, water, gases, etc., such as bathrooms, toilet-rooms, blinds, counter tops, balusters, porch ceilings, etc. Good body and gloss. Sets dust free in from 4 to 6 hours, and dries hard in from 12 to 16 hours.

"NICE"
VARNISHES
FOR EXTERIOR
USE.

"Nice" Superior Outside Varnish (per gal., \$4.50). Very pale for an exterior varnish, heavy body and perfect flowing, dries with rich gloss.

"Nice" Extra Outside Varnish (per gal., \$3.75). A little darker than Superior, but transparent, hardy and durable. For all classes of exterior work.

JAPANS.

"Nice" Japan (per gal., \$1.75). Always sure, safe, and reliable.

"T" Japan (per gal., \$1.20). A safe japan, second only to "Nice."

COLORS.

"Nice" Superior Colors. Strongest in tinting strength; ground in pure, specially refined linseed oil. Price-list mailed on request.

ENAMELS.

"Nice" White Enamel (per gal., \$4.00). A perfect white for interior gloss. Also made in 24 colors at \$3.25 per gal.

SHINGLE
STAINS.

"Nice" Shingle Stains ($\frac{1}{2}$ bbls., and bbls., 70 to 85 cents per gal.). Creosote base, fast colors.

MIXED
PAINT.

"Nice" Mixed Paint, 31 colors and outside white, \$1.80 per gal. Inside white, \$2.40 per gal.

"Nice" Floor and Deck Paint, 12 colors, per gal., \$1.90.

"Nice" Graphite Paint, 4 colors, per gal., \$1.60.

"Nice" Barn and Roof Paint, 6 colors, per gal., \$1.10 and \$1.30.

Covering capacity of mixed paints, 350 to 600 sq. ft. to gal., according to surface.

WHITE LEAD.

"Nice" Warranted Pure White Lead. Ground fine and uniform.

"Nice" Enduring White—Paste Form.

Yellow Seal White—Paste Form.

Prices on Leads and Paste Whites will be quoted upon request.

DISCOUNTS,
PACKING,
COLOR CARDS.

Prices, where quoted, are subject to trade discounts, and unless otherwise stated are for 1-gallon cans packed in 6 or 12 gallons to the case. Where colors are mentioned, sample cards will be mailed upon request.

PRATT & LAMBERT, Inc.

MAKERS OF

Varnishes, Finishes, Stains, Fillers and Enamels

NEW YORK

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BRIDGEBURG, CANADA

PRODUCTS.

SPAR FINISHING VARNISH, for exterior work.

No. 38 PRESERVATIVE VARNISH, for the highest grade of inside work.

No. 110 CABINET VARNISH, for general inside work.

No. 61 FLOOR VARNISH, a finish for every floor.

HYGIENIC GLOSS FINISH, for hospitals, schools and institutions.

"DULKOTE," an invisible preservative for a dull finish without rubbing.

OIL and ACID STAINS, in a variety of colors to produce every practical effect known to the finishing trade.

PASTE WOOD FILLERS, of every color.

"VITRALITE," a permanent white enamel for inside and outside work.

"EGG-SHELL VITRALITE," an egg-shell enamel for a dull enamel finish without rubbing.

"SEALKOTE," for the first undercoat for enamel work.

"VITRALITE UNDERCOATING," for the second and third undercoats of enamel work.

"ALCOLAC," a first coater for close-grained woods.

SAMPLE
BOARDS,
AND
CO-OPERATIVE
SERVICE.

We provide sample panels of any description gratis to any one interested, and also aim to co-operate with architects, owners and contractors and to render any other assistance within our power in order that the best possible results may be obtained. Call upon us if we can serve you.

SUGGESTIONS
FOR
SPECIFICA-
TIONS.

The following suggestions indicate the particular uses for which Pratt & Lambert Varnishes are best adapted:

EXTERIOR WORK—

Open-Grained Woods—

One coat of Paste Wood Filler.
One coat of No. 38 Preservative Varnish.
Two coats of Spar Finishing Varnish.

Close-Grained Woods—

One coat of No. 38 Preservative Varnish.
Two coats of Spar Finishing Varnish.

FINEST INSIDE CABINET WORK—

Open-Grained Woods—

One coat of Paste Wood Filler.
One coat of "Alcolac."
Two coats of No. 38 Preservative Varnish, rubbed dull or polished.

Close-Grained Woods—

One coat of "Alcolac."
Two coats of No. 38 Preservative Varnish, rubbed dull or polished.

REGULAR RUN OF INTERIOR WORK—

Open-Grained Woods—

One coat of Paste Wood Filler.

Two coats of No. 38 Preservative Varnish, rubbed dull or left in gloss.

Close-Grained Woods—

One coat of "Alcolac."

Two coats of No. 38 Preservative Varnish, rubbed dull or left in gloss.

NOTE—*One-Tone Effects* of any color are produced by using either tinted paste fillers or acid or oil stains singly.

Two-Tone Effects are produced by the combination of tinted fillers and stains.

Color Effects requiring both stain and filler are obtained as follows:

TWO-TONE COLOR EFFECTS—

Acid Stain—

One coat of Acid Stain.

One coat of Shellac or "Alcolac."

One coat of Paste Wood Filler.

One coat of Shellac or "Alcolac."

Two coats of No. 38 Preservative Varnish, rubbed or polished.

Oil Stain—

One coat of Paste Wood Filler.

One coat of Oil Stain.

One coat of Shellac or "Alcolac."

Two coats of No. 38 Preservative Varnish, rubbed or polished.

ONE-TONE COLOR EFFECTS—

One coat of either Paste Wood Filler or Stain (oil or acid).

One coat of Shellac or "Alcolac."

Two coats of No. 38 Preservative Varnish, left in gloss, rubbed or polished.

INTERIOR WORK, DULL-FINISH, NO RUBBING—

Dull-Finish Without Rubbing—

Use the foregoing suggestions for specifications; substituting, however, one coat of "Dulkote" in every case where No. 38 Preservative Varnish and No. 110 Cabinet Varnish are specified, and omit rubbing.

ENAMEL WORK—

Any Surface—

One coat of "Sealkote."

Two coats of "Vitalite Undercoating."

Two coats of "Vitalite" Enamel, left in the gloss or rubbed.

Egg-Shell or Dull-Finish, Without Rubbing—

One coat of "Sealkote."

Two coats of "Vitalite Undercoating."

One or two coats of "Egg-Shell Vitalite" Enamel.

FLOORS—

Oak—

One coat of Paste Wood Filler.

Two or three coats of No. 61 Floor Varnish.

Maple, Pine etc.—

Two or three coats of No. 61 Floor Varnish.

COMPLETE
SPECIFICA-
TION BOOK.

Complete forms of specifications for every kind of finish are given in our "Specifications for Painting and Varnishing." It contains also much practical information and valuable suggestions on the subject of wood finishing generally, and is probably the most complete, simple and understandable volume ever published on this subject. It is sent free upon request.

RINALD BROS.

Technical Paints and Specialties

1142-1146 North Hancock Street
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PRODUCTS.

"BESSEMER" PAINT, "PORCELAIN ENAMEL" PAINT (Inside), "FLAT UNICOAT" PAINT, "CONCENTRATED GALVANIC PRIMER," "O. and I. SCOTCH ENAMEL" (Outside), "GRIPFLOOR" CONCRETE and HOLLOW-TILE PASTE; PROTECTIVE PAINTS made to order to meet given requirements.

SPECIAL NOTICE.

We manufacture a long line of paints, all special in their character, which it would be as impossible as useless to enumerate. Perfect protection and lasting decorative effects can not be obtained on various materials under various exposure and in various localities with any given grade of paint or varnish, no matter how excellent. Hence we have devoted our energies to the making of special preparations in the paint, varnish and chemical line. The list given in the "Products" paragraph enumerate those which are particularly well adapted for general use in building operations.

RUST-PROOF "BESSEMER" PAINT.

"Bessemer" Paint effectually resists the chemical, atmospheric and electrical influences to which a metal surface is generally exposed. Such liquids as water (free or in combination), benzine, turpentine, and others of the same class do not enter into the composition of the vehicle, nor do we use oxides of iron, lead, zinc, or other metals in the composition of the pigment.

Therefore, where paint more durable than Red Lead, Graphite, or Metallic Paint is wanted, years of actual use have proved that "Bessemer" Paint prevents rusting where other paints have failed. It should be specified on all structural steel, tin roofs, girders, columns, iron fences, gutters, spouts, etc. If you want to know more about the reason why "Bessemer" Paint outlasts other paints, write for our treatise: "Data on Bessemer Paint."

"Bessemer" Paint is recommended most emphatically for use on structural work, as well as bridge and truss work in general, and especially where the metal is to be protected against dampness saturated with fumes from locomotives and from manufacturing establishments. It is also well adapted for use on smoke-stacks, iron poles, lamp-posts, corrugated iron, galvanized iron, boilers, trolley poles, etc.

PRICE, ETC.

Cost, \$1.75 per gallon f. o. b. Philadelphia, in less than barrel lots. One gallon is sufficient for two coats on 500 square feet of flat surface.

SPECIFICATION.

Previous to painting have metal thoroughly clean and free from dirt, grease, oil and rust. Apply to metal before leaving the shop one solid coat of "Bessemer" Paint made by RINALD BROS., 1142-1146 North Hancock Street, Philadelphia, thoroughly spread out according to their directions. Allow not less than three days between painting and shipping. After erection, clean and paint thoroughly all bare or scratched spots and all joints with "Bessemer" Paint. Allow two days between this "touching up" and the application of a second and final coat of RINALD BROS. "Bessemer" Paint.

To prevent peeling on galvanized iron specify: "First coat RINALD BROS. Galvanic Primer; second and third coats, RINALD BROS. Bessemer Paint."

"PORCELAIN ENAMEL" PAINT.

"Porcelain Enamel" Paint is a paint only in so far as it is applied like one. In fact it is liquid porcelain, a tiling in liquid form, which wears and looks like porcelain when applied to wood, plaster, metal, brick or stone. It is thoroughly waterproof, steam-proof and germ-proof, and is the only aseptic enamel paint made. It is not a varnish enamel and is entirely free from oil and lead, both of which are found in varnish and in other enamel paints. It is as durable and as impervious as glass and may be cleaned with soap and chemicals.

"Porcelain Enamel" Paint, after it has become thoroughly dry, will be found, upon analysis, to differ in no material point from the glazing on tiles and enameled brick. When carefully applied to a smooth surface it can not be distinguished, except by an expert, from enameled brick and tile.

"Porcelain Enamel" Paint requires no primer and is for indoor use only. Its gloss is not comparable to the glare of varnish, but possesses the softness of porcelain. "Porcelain Enamel" Paint does away with the reflected light of gloss paints and varnish and the high lights and strong shadows always noticeable on ceilings painted flat. As soon as dry it has the peculiar quality of diffusing light rays in such manner as to soften shadows. It is made in any shade wanted.

SPECIFICATIONS.

New Plastered Walls and Ceilings—All walls and ceilings to receive three coats of RINALD BROS. "Porcelain Enamel" Paint as soon as the plaster is hard and dry. The enamel to be brought to the job in the original sealed packages and to be applied without the addition of varnish, oil, turpentine or benzine, and strictly in accordance with manufacturers' directions. One priming coat only of RINALD BROS. "Unicoat" or of flat lead may be given where necessary to stop suction or to act as a filler.

Old Plastered Walls and Ceilings—The whole surface to receive one coat of lead and oil, flatted, well brushed out, and to be sandpapered when dry. Continue specifications as above.

New Woodwork—Apply one coat of lead and oil, rendered flat with turps, and well brushed out, and, when dry, sandpaper and enamel in three coats with RINALD BROS. "Porcelain Enamel" Paint.

Furniture, Shelves, etc.—Be sure to specify "Quick Hardening Porcelain Enamel" where shelves, window seats, tables and furniture are concerned, unless you can give them several weeks in which to harden. The "Quick-Hardening" is applied in the same manner and sold at the same price as the regular grade.

Extra Fine Work—Where a particularly fine surface without the slightest blemish is wanted, the specifications should be as above, but should call for four or five coats instead of three, and for rubbing with pumice-stone and water, or fine steel wool, between coats.

Flat Finish—Where a flat finish is desirable call for rubbing last coat with pumice-stone and water, or specify "Flat Porcelain Enamel Paint." We advise the first method, because it will require cleaning less frequently than the Flat Porcelain Enamel, which looks and acts like "bisque porcelain," becoming soiled just as easily.

Brick Walls—Apply one coat of lead in oil well brushed out, and when dry apply three coats of RINALD BROS. "Porcelain Enamel" Paint, following their directions.

"CONCENTRATED GALVANIC PRIMER."

"Concentrated Galvanic Primer" changes the mechanical bond between the zinc and the iron into a chemical one, thus producing a stronger and more intimate union between the metals. Furthermore, Galvanic Primer acts on the surface of the "galvanizing" in such a manner that the paint takes a firm hold at once and can not peel. This makes it easy for the painter to spread his paint thoroughly and to cover more surface with a given number of gallons than he could have done had the Galvanic Primer not been used.

"FLAT UNICOAT" PAINT.

"Flat Unicoat" Paint is a unique coating of which frequently one coat is sufficient for a finished job. It is the only paint ever devised which combines whiteness and hiding power greater than those of flat lead with an absolutely "dead" (lusterless) finish. It is unique, furthermore, on account of its hard, waterproof and perfectly washable surface.

"Flat Unicoat" does not possess any of the disadvantages of calcimine or similar finishes, such as cold-water paints and others in which lime prevails in its various calcium combinations, e. g., chalk, carbonate of lime, gypsum, paris white, plaster of paris, etc. Neither does it contain anything poisonous or even injurious to health when taken internally. It is a clean, wholesome preparation which spreads readily without showing laps and which hardens over night into an opaque surface from which pencil marks, grease, stains and dirt are easily removed with water and soap. "Flat Unicoat" is adapted for use on cement floors, woodwork, plaster, stone or brick walls, and on metal ceilings. It is very elastic and easily applied. Any shade can be matched without extra charge.

Specify: "One heavy coat of RINALD BROS. 'Flat Unicoat,' to be brought to the job in original sealed and stamped cans. A second heavy coat to be given wherever the architect may deem it necessary."
Cost, \$1.80 per gallon, in less than barrels. One gallon averages three hundred square feet per coat.

"O. & I. SCOTCH (OUTSIDE) ENAMEL."

For preserving and enameling wood, plaster or brick exposed to the weather, our Outside Enamel, labeled "O. & I. Scotch Enamel," is unsurpassed. It is an enamel paint of great elasticity and more opaque than white lead, in place of which it may be used outdoors as well as indoors. It looks, wears and lasts better than white lead, reflects light perfectly, and easily keeps clean on account of its hard, smooth finish. Outside Enamel covers even better than white lead and is spread just as easily. It is particularly well adapted for light courts, brick walls, etc.

Specify: "First coat, RINALD BROS. 'Unicoat' or White Lead, mixed with pure linseed oil; second and third coats, RINALD BROS. 'O. & I. Scotch Enamel.'"
Cost, \$3.50 per gallon, f. o. b. Philadelphia, in less than case lots. Covers, on smooth brick, two hundred square feet per gallon with two coats.

THE SHERWIN-WILLIAMS CO.

MANUFACTURERS OF

Paints, Varnishes, Stains, Enamels, Colors, and Linseed-Oil Products

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PRODUCTS.

Our line of PAINTS, VARNISHES, STAINS, ENAMELS, and COLORS, covers every requirement in the finishing or refinishing of any structure for which the architect is ever called upon to write finishing specifications, including METALASTIC, ENAMELASTIC, VARNISHES, HANDCRAFT STAINS, GOLDEN OAK STAIN, PRESERVATIVE SHINGLE STAINS, HANDCRAFT SYSTEM, FLAT-TONE, FLAT-TONE SYSTEM, S W P, CONCRETE and CEMENT FINISHES, METAL PROTECTIVE PAINTS, WHITE ENAMELS, HOUSE PAINTS, WALL FINISHES, FLOOR FINISHES, ALUMINUM PAINT, GOLD PAINT, PAINT and VARNISH REMOVER and other products some of which are mentioned below.



TRADE-MARK

QUALITY.

Sherwin-Williams Finishes are well known to be standard, high quality materials that can always be depended upon to give good results.

GENERAL INFORMATION.

We will be glad to furnish catalogues or other printed matter going into detail more fully than is possible here, color samples, color sketches, panels, specifications or any desired information.

VARNISHES.

Every varnish requirement, exterior or interior, can be met to the very best advantage from the Sherwin-Williams Line. The following are a few of the most largely used varnishes we manufacture:

- S-W Durable Spar—For general exterior use. List price \$4.50.
- S-W Durable Wood Finish, Exterior—List Price \$4.80.
- S-W Durable Wood Finish, Interior—List Price \$3.25.
- S-W Kopal—An all 'round varnish for both inside and outside use. List Price \$3.00.
- S-W Excello—For high grade finishing and general varnishing. List Price \$2.50.
- S-W Pale Interior Polishing—Takes and retains a high polish. List Price \$2.90.
- S-W Mar-Not—A perfect floor varnish. List Price \$3.00.
- S-W Transparent Floor—An exceptionally good, medium-priced floor varnish. List Price \$2.65.
- S-W Velvet Finish—Produces a rubbed effect without the necessity of rubbing. List Price \$3.60.
- S-W Mission-Lac—For a finishing coat on surfaces stained in mission effects. List Price \$2.25.

The foregoing prices are for gallon cans and are subjected to trade discounts.

ENAMELS.

S-W Enamelastic is a *de luxe* grade of white enamel, manufactured expressly for interior and exterior finishing of highest quality in exclusive clubs, fine hotels, fine residences, etc. List price \$6.00 per gallon. We also manufacture a standard line of enamels for average work. List price \$4.15 per gallon.

FLAT FINISHES FOR WALLS, CEILINGS AND WOODWORK.

S-W Flat-tone is unquestionably the most satisfactory finish ever produced for the decoration of interior walls, ceilings and woodwork. It produces soft, velvety, flat effects without stippling; may be washed with soap and water; is moderate in first cost, and is adaptable for use as a groundwork under enamels and glaze colors.

STAINS.

S-W Handcraft Stains is a line of highest quality artistic stains for finishing interior woodwork. They will produce good results on Georgia Pine and the cheaper woods as well as on oak and expensive hardwoods. Sample panels and prices furnished upon application.

FLAT-TONE
SYSTEM.

Flat-tone System is a flat glaze effect produced by S-W Flat-tone, S-W Flat-tone Glaze Colors and S-W Flat-tone Glazing Liquid. It consists of a variety of the most beautifully blended and mottled effects for interior wall decoration. This rich wall coating is flat, and can be cleaned with soap and water without injury. A color folder showing twenty-four superb effects sent upon application.

HANDCRAFT
SYSTEM.

Handcraft System, composed of S-W Handcraft System Stain, S-W Handcraft System Lacquer, Transparent Lacquer and Toner, will produce a beautiful and unusual finish on oak, ash, chestnut, and similar open-grained woods. Color folder showing twenty-four handsome effects sent upon application.

METAL
PROTECTIVE
PAINTS.

S-W Metalastic is a line of metal paints which includes a standard product for every requirement for the preservation of metal surfaces. We can furnish metal paints made on graphite, charcoal or red lead base, and in a line of colors as well as natural graphite color. Full particulars and prices upon application.

FLOOR
FINISHES.

We manufacture a complete line of finishes for any floor, old or new, in any style desired, including:

- S-W Floorlac (Stain and Varnish combined)—List Price \$2.90 per gallon.
- S-W Crack and Seam Filler—List Price 28 cents per lb.
- S-W Floor Wax (Paste)—List Price 55 cents per lb.
- S-W Mar-Not (Floor Varnish)—List Price \$3.00 per gallon.
- S-W Inside Floor Paint—Prices upon application.
- S-W Porch and Deck Paint—Prices upon application.

SHINGLE
STAINS.

Wide experience in good paint making and in the handling of pigments and liquids gives us every possible advantage in the manufacture of Shingle Stains. S-W Preservative Shingle Stains are made in twenty-three handsome colors. Samples and prices upon application.

CONCRETE
AND CEMENT
FINISHES.

We offer S-W Waterproof Cement Primer (clear, liquid) and S-W Concrete and Cement Finish (7 colors, paste form) as the most satisfactory finishes available for concrete and cement surfaces. Specifications and prices furnished upon application.

MISCELLA-
NEOUS.

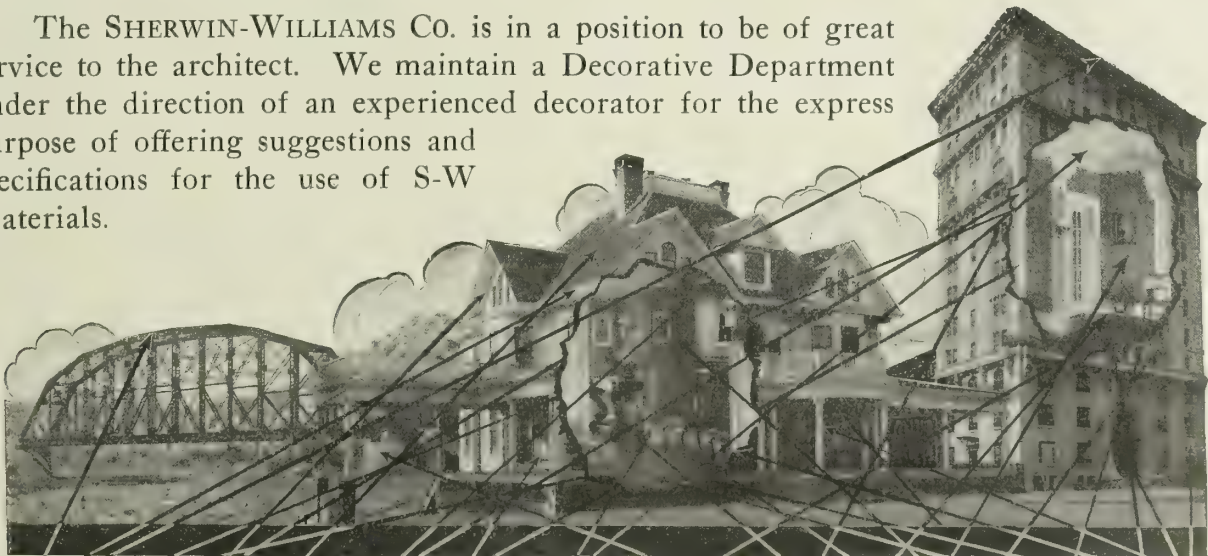
In addition to the products described above we also manufacture Sherwin-Williams Paint Prepared (S W P), Aluminum and Gold Paints, Flat Back, Oil Stains, and every other specialty needed in the finishing of any structure inside or outside.

SPECIFICA-
TIONS.

We have prepared a complete set of working specifications covering the use of our products for all important uses. We will be glad to supply these without cost to any architect writing for same on his letter-head.

DECORATIVE
DEPARTMENT,
SERVICE.

The SHERWIN-WILLIAMS CO. is in a position to be of great service to the architect. We maintain a Decorative Department under the direction of an experienced decorator for the express purpose of offering suggestions and specifications for the use of S-W Materials.



METALASTIC-EXTERIOR-SWP-PRESERVATIVE-GOLD-ALUMINUM-ENAMELASTIC-CONCRETE&CEMENT-HANDCRAFT-FLOOR-FLAT-TONE-INTERIOR-MARNOT-RADIATOR-FLAT
VARNISH SHINGLE STAIN PAINT PAINT FINISHES STAINS FINISHES VARNISH ENAMEL BLACK

SHERWIN-WILLIAMS PAINTS AND VARNISHES INCLUDE A RIGHT QUALITY PRODUCT
FOR EVERY PURPOSE

STANDARD VARNISH WORKS

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BRUSSELS, BELG., 41 Rue de la Bienfaisance

NEW YORK
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TORONTO

PRODUCTS.

Our principal products that have brought into great prominence our line of House Varnishes for office, residence, hotel, hospital, church and school finishing are: "ELASTICA" FINISH No. 1 (\$4.00 per gallon); "ELASTICA" FINISH No. 2 (\$3.00); "ELASTICA" FLOOR FINISH (\$2.50); "ELASTICA" PRESERVATIVE (\$2.50); "SATINETTE" WHITE ENAMEL (\$4.50); "KLEARTONE" OIL, and ACID STAINS (\$2.00); "FLATTINE" CABINET FINISH (\$3.00).

"ELASTICA"
FINISHES.

"Elastica" Finishes are too well and too favorably known to require any special comment. They were the first proprietary varnishes introduced into the United States and the first to be adopted and specified by prominent architects. Their superior quality has been fully maintained to the present day.



"SATINETTE"
WHITE
ENAMEL.

"Satinette" is a White Enamel distinguished by absolute permanency. The STANDARD VARNISH WORKS is sole licensee in the United States for the originators and proprietors, Pinchin, Johnson & Co., Ltd., London. (Detailed specifications upon request.)

"FLATTINE"
CABINET
FINISH.

"Flatline" Cabinet Finish is a varnish absolutely unique, and is the only successful flat or dead varnish on the market. It positively contains no wax and yet produces, without rubbing, a smooth, dead finish, in effect a water-rubbed job. It surfaces well and shows no streaks, laps, or brush marks—faults that develop where other dead varnishes are used. It produces an exceedingly tough and durable finish, and will not scratch or mar white.



We unqualifiedly recommend the use of "Flatline" Cabinet Finish where time saving is a consideration. It is also a strikingly economical varnish to employ under all conditions, as it saves the time and expense of rubbing, while the character and durability of the finish are in no degree jeopardized by its use.

"KLEARTONE"
STAINS—
OIL AND ACID.

"Kleartone" Stains are the acme of perfection, developing and enhancing the beauty of the wood over which they are applied. They are uniform in shade and easily applied, and will not affect the drying of the succeeding coats of varnish. For depth, clearness and tone they are unparalleled.



"Kleartone" Stains produce effects on mahogany that no other maker has hitherto been able to accomplish.

"Kleartone" Silver-Gray Acid Stains are the most perfect and artistic shades of their kind; the colors are absolutely fast, no aniline dye being used in their manufacture.

OIL STAINS—Olive Green, Sage Green, Early English, Dark Brown, Light Brown, Weathered Oak, Dark Mahogany, Light Mahogany, Cherry, Walnut, Light Oak, Dark Oak, Extra Dark Mahogany, Flemish Oak, Bog Oak, Dark Forest Green, Pollard Oak, English Oak, Golden Oak.

ACID STAINS—Silver Gray, Holland Blue, Light Fumed, Dark Fumed, for all woods.

SPECIFICA-
TIONS FOR
"ELASTICA"
FINISHES.

INTERIOR WORK

Open-grain Woods, such as Ash, Chestnut, Oak, Mahogany and Walnut, etc.—

Fill with Paste Filler tinted to suitable shade, if required.

Apply three coats "Elastica" Finish No. 2 or "Elastica" Preservative, allowing sufficient time for drying and hardening between coats before the succeeding coat is applied.

Rub down first and second coats with curled hair or very fine steel wool, making the surface smooth and even.

If an egg-shell gloss finish is desired, rub final coat with pumice-stone and oil.

If a dull finish is desired, rub final coat with pumice-stone and water.

If a high luster or polished finish is desired, polish with rottenstone and water after rubbing.

The above will produce the most durable and elastic interior finish possible.

Close-grain Woods, such as Birch, Poplar, Pine, Cedar, Cherry, Cypress, Maple, Redwood, White Wood, etc.—

Specify as above, omitting Paste Filler.

EXTERIOR WORK

Same specifications as above, substituting "Elastica" Finish No. 1 for "Elastica" Finish No. 2 or "Elastica" Preservative.

SPECIFICA-
TIONS FOR
"FLATTINE"
CABINET
FINISH.

INTERIOR WORK

Open-grain Woods—

Fill with Paste Filler, natural finish.

Apply two coats "Flattine" Cabinet Finish, allowing sufficient time between coats for hardening and drying.

Rub down first coat with curled hair or steel wool, thus producing a smooth and more even surface. Two coats are sufficient.

NOTE—"Flattine" Cabinet Finish dries dead or flat *without rubbing*, producing a hard and durable finish superior in every respect to the wax finishes commonly used.

SPECIFICA-
TIONS FOR
"KLEARTONE"
STAINS.

One coat "Kleartone" Stain of desired shade. Wipe off with soft cloth after Stain sets.

After 24 hours: One coat of thin Alcohol Shellac.

After 24 hours: One coat "Flattine" Cabinet Finish.

After 24 hours: Sandpaper lightly.

Second coat "Flattine" Cabinet Finish.

Where a rubbed finish is wanted, apply one coat "Kleartone" Stain of desired shade as above. After 24 hours, one coat of thin Alcohol Shellac; then, allowing ample time for drying, apply two coats of "Elastica" Finish No. 2 or "Elastica" Preservative, rubbing last coat with pumice-stone and water or oil.

All open-grained woods must be filled with paste filler, colored to correspond with stain used, 24 hours after the application of the stain. Then follow with Alcohol Shellac and Varnish as above.

SPECIFICA-
TIONS FOR
"ELASTICA"
FLOOR
FINISH.

FLOORS

On Maple or other close-grained Flooring apply two or three coats "Elastica" Floor Finish directly to the wood, allowing sufficient time for drying and hardening between coats. Where three coats are used, the first coat should be reduced about 10 per cent with spirits of turpentine, and each coat should be rubbed down with curled hair or steel wool so as to produce a smooth and even finish.

Oak or other Open-grain Woods—

Fill with Paste Filler, then proceed as above.

NOTE—Shellac Varnish, Liquid Filler, or other brittle first-coaters should not be used on floors.

ESTABLISHED 1874

INCORPORATED 1899

THE THOMSON WOOD FINISHING CO.

Enamels, Varnishes, and Finishes

GENERAL OFFICES

Bulletin Building, City Hall Square
PHILADELPHIA, PA.

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928 NORTH THIRD STREET,
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PRODUCTS.

Inventors and Manufacturers of PORCELITE ENAMELS and PORCELITE ENAMEL UNDERCOATS. Also, Makers of the best grades of ARCHITECTURAL HOUSE FINISHES, VARNISHES, WOOD FILLERS, STAINS, etc.

PORCELITE.

For over twenty years this composition has been admittedly the standard for enamel finishing. While applied like any enamel, Porcelite dries to a degree of hardness by oxidation never attained by china gloss or damar mixtures, enamels or gloss paints, which dry by evaporation. A durable porcelain-like surface is obtained by the use of Porcelite, which can be rubbed to a dull finish with pumice and water or polished to a mirror-like surface with rottenstone and oil. It is absolutely white.

PORCELITE MATTE.

An invention which permits a more varied use of the dull-rubbed effect than was heretofore possible when this style of finish was only obtained by rubbing down a high-gloss surface. As it comes from the can, Porcelite Matte dries with a soft, velvety luster and is a time and labor-saving article, as no rubbing is necessary. It is of unrivaled whiteness, contains no wax, and therefore may be painted over at any time.

PORCELITE DEAD FLAT.

This Enamel is designed to meet the most exacting requirements where a Dead-Flat finish is desired. It is pure white, dries absolutely flat and the finish has a velvety appearance without any sheen. It works easy, is free-flowing, and its spreading and drying qualities are as near perfection as is possible.

Users of Keene's Cement find Porcelite Dead Flat admirably adapted for their purpose; the dead flat finish makes a coating for cement-finished walls that is easily washed and kept in excellent condition at a minimum expense.

PORCELITE UNDERCOAT.

A scientifically prepared undercoating for Porcelite and Porcelite Matte. More economical than strictly pure white lead, covers better, smoother, shows no brush marks and covers 600 square feet to a gallon, one coat.



THE WHITE HOUSE, WASHINGTON, D. C.

Porcelite Interior has been used here for twenty-five years



RESIDENCE OF HENRY SELIGMAN, ELBERON, N. J.

The entire outside of the building is painted with Porcelite Exterior

PORCELITE
EXTERIOR.

An Enamel of superior body and covering power, easy working, very white and distinctly economical because of excellent wearing and spreading qualities. Specially suited for outside of brick and modern dwellings, producing a lasting gloss which will *withstand salt air and climatic changes.*

ADVANTAGES
AND ECONOMY.

The use of Porcelite guarantees an absolutely hygienic finish which may be scrubbed and washed as often as desired. It is impervious to steam, soap, acids, water and antiseptic solutions. Is quick-drying, yet elastic. As Porcelite covers 450 to 500 square feet to the gallon, one coat, and as its splendid wearing qualities puts off re-finishing for longest possible time, its economy is obvious. Porcelite does not yellow or darken with age, but retains its unexcelled whiteness indefinitely. Will not crack, chip, or craze.

ADAPTABILITY.

Porcelite is used on wood, plaster, brick or metal. Because of its wear-resisting qualities it makes an ideal finish (from both the artistic and utilitarian standpoints) for the finest modern dwellings as well as for office buildings, theaters, colleges and schools. From a hygienic standpoint there is nothing better for hotels, institutions of all kinds, and particularly hospitals, in the operating rooms, laundries, elevator shafts, stairways, kitchens and bathrooms. Porcelite is made regularly in white and old ivory tints, but any desired shade is made to order.

SPECIFICA-
TIONS.

The substitution of inferior articles can be avoided in a large measure by the adoption of the following general specifications: The knots and sappy places must be well coated with Grain Alcohol White Shellac. Apply one coat of white lead, stop all nail holes and defects with lead putty, then apply two coats of Porcelite Undercoat, sanding each coat lightly. (White Lead may be used if desired in place of Porcelite Undercoat where the finest results are not absolutely required.) Follow with two coats of Porcelite, thinning the first coat with half a pint of Turpentine to one gallon of Porcelite. For Plaster and Brick Work specifications are generally the same, but on Metal it is possible to produce satisfactory results with two applications of Undercoat and two of Porcelite. Detailed specifications mailed upon request.

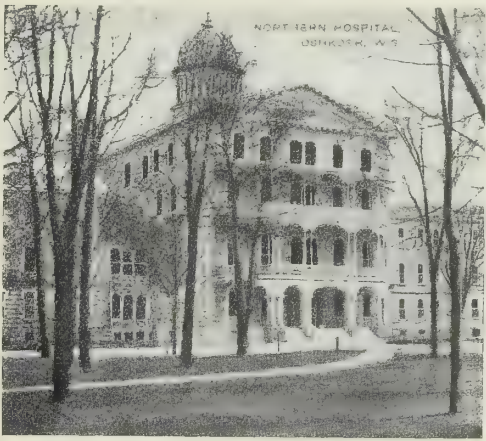
LITERATURE.

A handsome book on Porcelite, its merits and uses, complete Specifications for Porcelite, and a Catalogue of our entire line of Finishing Specialties are to be had upon request.

REFERENCES.

Leading architects, painters and contractors.
Some of the buildings on which our specialties have been used are:

- Treasury Building, Washington, D. C.
- White House, Washington, D. C.
- N. Y. C. & H. R. Railroad Depots, Buffalo and Rochester, N. Y.
- West Shore Railroad Co. Weehawken Depot, N. J.
- Pennsylvania Railroad Co., Broad Street Station, Philadelphia, Pa.
- John Wanamaker's, Philadelphia, Pa.
- Waldorf-Astoria Hotel, New York, N. Y.
- Henry Seligman's Residence, Elberon, N. J.
- Northern Hospital for the Insane, Oshkosh, Wis.
- United States Marine Hospital, Vancouver, Wash.
- Childs Restaurants, New York, Philadelphia, Pittsburg, Buffalo, and Atlantic City.
- Pennsylvania Hospital, Philadelphia, Pa.
- Medico-Chirurgical Hospital and College, Philadelphia, Pa.



NORTHERN HOSPITAL FOR THE INSANE,
OSHKOSH, WIS.
The outside of this building is painted with
Porcelite Exterior



CHILDS BOARDWALK RESTAURANT, ATLANTIC CITY, N. J.
Painted with Porcelite Exterior. Porcelite is also used in the Childs
Restaurants in all the large cities

WADSWORTH, HOWLAND & CO., Inc.

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PRODUCTS.

PAINTS, COATINGS, and ENAMELS, including "BAY STATE" BRICK and CEMENT COATING (a Finish Coating for Cement, Concrete, Brick, Plaster, and Wood), and "BAY STATE" ENAMEL NO. 2 (for same surfaces). MILL GLOSS ENAMEL, for Mill Work.

"BAY STATE" BRICK AND CEMENT COATING.

This Coating is of a cement base and is held in suspension by a volatile oil which evaporates upon application. It contains no lead, and its snow-white surface is not affected by fumes of acids and gases. It contains no glue, caseine or water, and will not mildew, rub, crack, or peel. It is not absorbent and will not change color if wet. It dries with a dull finish. Made in white and colors.



BRICK BUILDING BEFORE COATING AT CAPE GIRARDEAU, MO.



SAME BUILDING AFTER COATING WITH ONE COAT "BAY STATE" BRICK AND CEMENT COATING

USES.

FOR CEMENT, CONCRETE, BRICK AND PLASTER—It is a finish coating for the ornamentation and protection of concrete, cement, brick (see illustrations), and plaster surfaces on interiors and exteriors of all kinds of buildings, mills, dwellings, and air shafts.

FOR CEMENT FLOORS—It is a filler and surface finish for cement floors, preventing the powdering of the cement, thus making a most sanitary condition for floors of public buildings, hospitals, schools, laboratories, etc. It can be washed.

FOR MILL WORK—Mills and factories are protected by its sanitary and fireproof qualities and are free from dropping, chipping, and scaling off of loose particles.

FOR DAMP-PROOFING—It is of great value where there is dampness, as it does not peel, and when used with "Bay State" Clear Waterproofing on exteriors, holds out all moisture on brick and cement. For use above grade only.

FOR INTERIOR WOODWORK—It may be used on interior woodwork by itself as a dull finish, or may be used as an under coat for "Bay State" Enamel No. 2 and Mill Gloss Enamel. It is a fire retarder, and each package bears the label of the National Board of Fire Underwriters.

COMPARATIVE
COST.

“ Bay State ” Brick and Cement Coating costs less than lead and oil paints, as, while one gallon does not cover as much surface as lead and oil paints, it *finishes* with *one* coat, as well as two and often three coats of lead and oil paints. This reduces the cost, both of material and labor. It costs somewhat more than cold-water paints, but does not deteriorate as they do (thereby requiring renewal), and outwears both lead and oil and cold-water paints, and gives a vastly better finish.

SAMPLES.

Sample cards, showing colors, are free for the asking; also, samples of white and colors on small bricks or cakes of cement, etc. When sending for such samples, state whether they are wanted on brick, cement, wood, or plaster. Working samples for demonstration to architects or owners free on application.

ENAMEL
FINISH.

FIRST COATS FOR ENAMEL FINISH—Many surfaces of brick, cement, iron, and wood, on interiors, are desired in a glossy enamel finish, and “ Bay State ” Brick and Cement Coating forms an ideal first coat for such work, being hard and immovable and giving a smooth surface.

“ BAY STATE ”
ENAMEL
NO. 2.

FOR FINISHING COATS—“ Bay State ” Enamel No. 2 is made for white enamel interior finish over “ Bay State ” Brick and Cement Coating, and is adapted for use in office buildings, hospitals, engine-rooms, bathrooms, kitchens, laboratories, etc. It may be washed without injury, and is a most durable enamel. It may be left full gloss, or rubbed with pumice and water to a porcelain finish. Also made in colors to match the colors of “ Bay State ” Brick and Cement Coating. Samples on application.

MILL GLOSS
ENAMEL.
ORDERS,
SHIPMENTS,
AND
PAYMENT.
INFORMA-
TION FOR
ARCHITECTS.

FOR MILL WORK—A Special Enamel of less price than “ Bay State ” Enamel No. 2. Order from nearest office, store or agent. Shipments can be made at once, or notice of delay will be given. Parties having satisfactory rating in “ Dun’s ” allowed 60 days time net or 2 per cent for cash in 10 days from date of bill. Parties having no account and not rated must give satisfactory references or send cash with order.

The following information will be useful to architects in making specifications:
Brick, cement, concrete, stucco, and wood, unless excessively rough, porous, and weather-beaten, will ordinarily require but one coat of “ Bay State ” Brick and Cement Coating. Interior plaster will require two or three coats of “ Bay State ” Brick and Cement Coating.

The following table shows requirements for first coat under differing conditions, for good work:

“ Bay State ” Brick and Cement Coating—On brick, hard finish, 1 gallon, not to cover more than 18 sq. yds.
On brick, rough and porous, 1 gallon, not to cover more than 15 sq. yds.
On concrete, hard finish, 1 gallon, not to cover more than 18 sq. yds.
On concrete, rough and porous, 1 gallon, not to cover more than 15 sq. yds.
On plaster, exterior, rough, 1 gallon, not to cover more than 15 sq. yds.
On plaster, interior, hard finish (over first coat), 1 gallon, not to cover more than 30 sq. yds.
“ Bay State ” Enamel No. 2—Over undercoat of “ Bay State ” Brick and Cement Coating, 1 gallon, not to cover more than 30 sq. yds.

NOTICE.

Do not use “ Bay State ” Brick and Cement Coating on vitrified or any other unab-sorbent brick. Clean off all loose particles from all surfaces before using.
When ordering Coating for cement, plaster, or floors, please to so specify.

SPECIFICA-
TIONS.

In specifying “ Bay State ” Brick and Cement Coating, and “ Bay State ” Enamel No. 2, please follow the directions below:

New Interior Plaster Walls—When to be used on interior plaster specify Special Cement Coating for Plaster.
Coat No. 1—Apply one coat of “ Bay State ” Brick and Cement Coating thinned with pure spirits of turpentine, one pint only to a gallon of coating.
Coat No. 2—Apply one good flowing coat of Special Cement Coating as taken from the original package.
Coat No. 3—Apply the same as Coat No. 2.
Exterior Brick, Concrete, Cement, and Plaster—Coat No. 1—Apply one good flowing coat of Cement Coating with a (Dutch) calcinine brush, as taken from the original package.
NOTE—This one coat should cover sufficiently well to give a good finish. If a whiter or more dense surface is desired an extra coat may be applied, allowing 24 to 48 hours between coats.
Interior Brick, Concrete, Cement, and Cement Floors—Same as foregoing.
Enamel Finish—Over “ Bay State ” Brick and Cement Coating for interior work only. Sandpaper the Cement Coating thor-oughly and apply a good flowing coat of “ Bay State ” Enamel No. 2. Do not apply on surfaces which contain any dampness, as the moisture will cause blisters and peeling.
Interior Woodwork—“ Bay State ” Brick and Cement Coating (white) makes an excellent ground work for “ Bay State ” Enamel No. 2, as it dries hard as a stone.
Apply three good coats of “ Bay State ” Brick and Cement Coating, allowing 24 hours between each coat. Sandpaper each coat, and apply one or two heavy coats of “ Bay State ” Enamel No. 2. This will leave a high gloss. If a dull egg-shell gloss is desired, allow it to stand 48 hours and then rub down with pumice and water. If two coats of Enamel are used, sandpaper lightly the first coat before applying the second.
Damp-Proofing—Apply one coat of “ Bay State ” Clear Waterproofer followed by two coats of “ Bay State ” Brick and Cement Coating.

PRICES AND
REFERENCES.

Prices and particulars giving testimonials, names of architects, and buildings where used sent on application.

ALABAMA MARBLE COMPANY

High-Grade Marbles

GANTTS QUARRY, ALA.

NORTHERN DISTRICT
NEW YORK, N. Y., 156 Fifth Avenue

SOUTHERN DISTRICT
BIRMINGHAM, ALA., 1342-1343 Brown-Marx Building

- PRODUCTS AND SERVICES.** We are the sole producers of ALABAMA MARBLE in all of its kinds and grades. We are prepared to sell it unfinished or finished, or to take contracts for work set in position.
- DESCRIPTION.** Alabama Marble is an extremely fine-grained, compact, perfectly crystalline calcium carbonate. It is suitable for exterior uses of all kinds, including monuments, but it is especially suitable for interior work, for it is both decorative and sanitary.
- COMPOSITION.** The composition of Alabama Marble has shown by chemical analysis: calcium carbonate, 99.41 per cent, and foreign materials of all kinds, 0.59 per cent.
- STRENGTH.** Alabama Marble has been tested in 3-inch cubes; on the bed of the stone to 16,670 pounds, and on the edge of the grain to 13,690 pounds per square inch.
- DURABILITY.** Alabama Marble is at least as durable, exposed to the weather, as any other stone. This is amply proven by old monuments, and by the condition of the weathered surfaces at the quarry.
- FINISH RECOMMENDED.** For exterior work: Sand rubbed gives the best finish and tooling the next. The grain of the stone and the method of working it make rock face difficult and expensive, and the stone is too fine to be used in this way.
For interior work: Polish or hone finish. Alabama Marble takes a higher polish than any similar marble. The polishing should be done with a mixture of putty powder and sulphur without the use of acid.
- CARVING AND CUTTING QUALITIES. HARDNESS AND RESISTANCE TO ABRASION. COLOR AND TEXTURE.** Alabama Marble carves and cuts like statuary Italian. No stone is superior to it in this respect.
In these respects, Alabama Marble is a full equivalent for the best Italian Marble.
Alabama Marble is generally white, with more or less clouding. There are two distinct varieties of the white marble; one is cream white, the other has the translucent whiteness of the Grecian Pentelican. Both classes are produced in various grades, varying from one that is almost entirely free from color, to others that are more or less heavily veined and clouded. We also produce some beautiful colored marbles. Full information as to the kinds, grades, and the uses to which they are adapted will be furnished upon request.
- SIZES.** Alabama Marble occurs in layers; the thickest layer at present exposed is six feet. The thickness of blocks varies from eighteen inches to six feet. The other dimensions are limited only by the capacity of our largest derrick, which is 35 tons, equivalent in weight to 420 cu. ft. Sound blocks of this size are easily furnished, but if they are very long, as for columns, some extra time is required to get them.
- COST.** The cost of Alabama Marble is no greater than that of other marbles of comparable quality; in the case of the higher grades, which are comparable only with the best imported marbles, such as Blanco P. Italian, the cost of Alabama Marble is appreciably less than that of the comparable marble.

CO-OPERATIVE
SERVICE.

We shall be more than glad to render all assistance within our power in the way of estimates and information to those desiring to use Alabama Marble. For work north of the southern boundaries of Virginia, Kentucky, Missouri, Kansas, Colorado and Utah, inquiries should be addressed to the Sales Office at 156 Fifth Avenue, New York, N. Y. For work south of the above line, to the Sales Office at 1342-1343 Brown-Marx Building, Birmingham, Ala.

All persons interested are invited to inspect our quarry and plant.

EXAMPLES OF
EXTERIOR
WORK.

First National Bank of Alexandria, Va., stone set on bed.

Atlantic National Bank of Jacksonville, Fla., stone on edge of grain.

Alabama Marble has been used in many other exteriors, but the above are the latest and the best examples.

EXAMPLES OF
INTERIOR
WORK.

United States Customs House, New York, N. Y., hone finished.

Trust Company of America, New York, N. Y., polished.

Common and Select Council Rooms, Philadelphia City Hall, polished.

First National Bank, Youngstown, Ohio, polished.

Atlantic National Bank, Jacksonville, Fla., polished.

Brown-Marx Building, Birmingham, Ala., polished.

Chamber of Commerce, Birmingham, Ala., polished.



VIEW OF NORTH END OF QUARRY OF ALABAMA MARBLE COMPANY, GANTTS QUARRY, ALA.

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We produce the finest grades of pure GRAY, PINK and DARK MARBLE for high-class Interior Decorations and Exterior uses.

HIGHEST QUALITY AND STRENGTH.

The Gray, Pink and Dark Marble produced by us is superior for use in high-class exterior work or in interior decorations. Being of extraordinary grade it is the highest in strength as well as the most beautiful. Its strength is 25,000 pounds per square inch. It absorbs the least of any marble known, which largely assists it in maintaining its high standard.

CO-OPERATIVE SERVICE.

The inquiries of architects and builders will be given immediate and careful attention. We solicit correspondence.

REFERENCES.

We refer with pardonable pride to several large buildings that have used our marble:

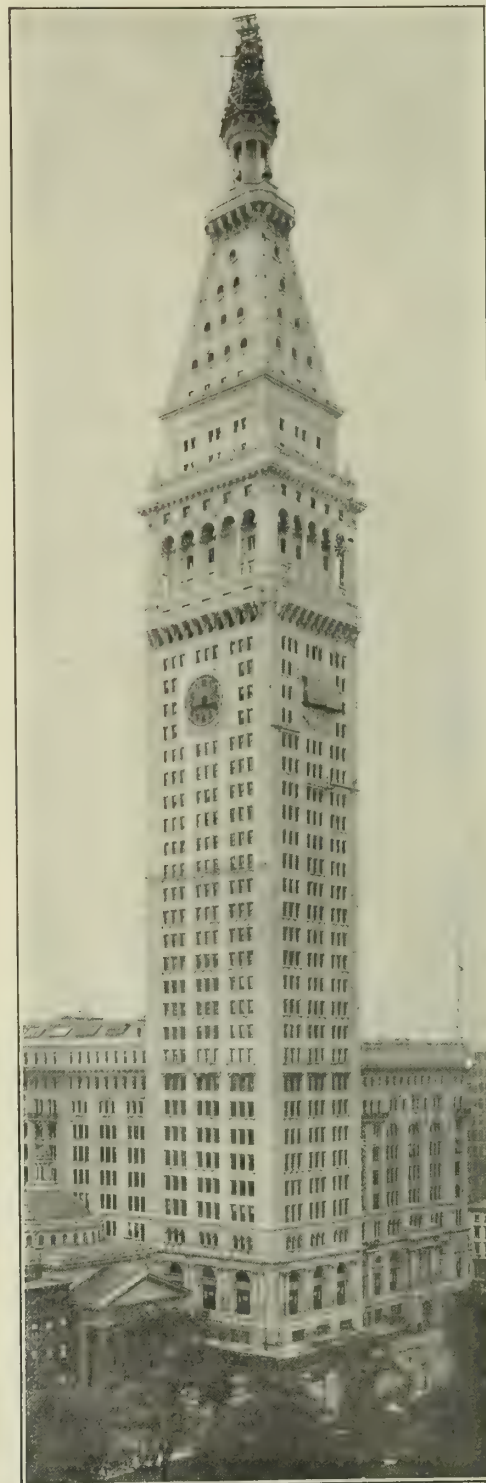
McKinley Monument, Canton, Ohio
New Art Museum, Boston, Mass.
Pennsylvania Railroad Terminal, New York, N. Y.
New Federal Building, Indianapolis, Ind.
New Agricultural Building, Washington, D. C.
American Republic Building, Washington, D. C.
United States Post Office, Knoxville, Tenn.
United States Post Office, Chattanooga, Tenn.
United States Post Office, Memphis, Tenn.
Metropolitan Life Insurance Building, New York, N. Y.

ILLUSTRATIONS.

The Buildings illustrated have been furnished with our marble in goodly quantities.

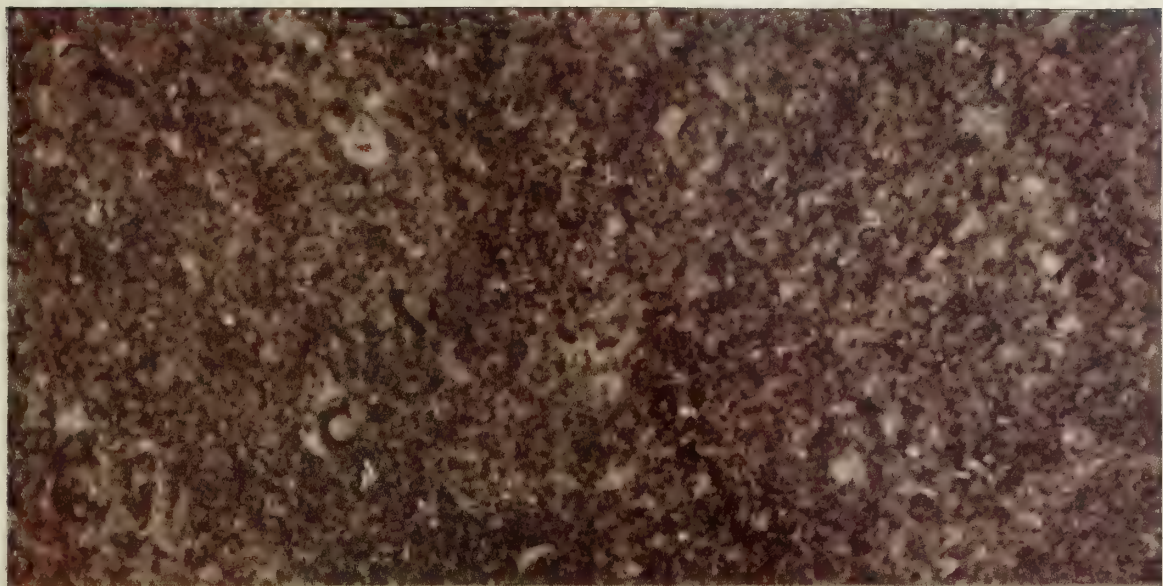


NEW ART MUSEUM, BOSTON, MASS.
GUY LOWELL, Architect



METROPOLITAN LIFE INSURANCE COMPANY'S BUILDING,
MADISON SQUARE, NEW YORK, N. Y.
N. LE BRUN & SONS, Architects

CRAIG'S DARK
CEDAR



GRAY EAGLE
GRAY



DIAMOND
C. PINK

GRAY EAGLE MARBLE

ITALIAN MARBLE MOSAIC CO.

429-431 Spruce Street

PHILADELPHIA, PA.

PRODUCTS. MARBLE MOSAICS; TERRAZZO MOSAICS; and TILE for FLOORS, WALLS, and MANTELS.

ADAPTABILITY. Marble Mosaics and Terrazzo are used exclusively for all public buildings and are taking the place of Tile for floor work. The Mosaic Ceilings are used in Mausoleums and for Court Houses, Office Buildings, Churches, etc. Our goods are suitable for residences as well as office buildings. Experienced men are required to install the work.

CO-OPERATIVE SERVICE. We are glad at all times to make special designs. All that is necessary is for the architect to send us floor plan of spaces to be done.

INSTALLATIONS. From among the buildings throughout the country for which we have furnished marble and mosaic work, we have selected the following:

BUILDINGS	LOCATION
United States Court House and Post Office	Butte, Mont.
United States Court House and Post Office	Helena, Mont.
United States Court House and Post Office	Salt Lake City, Utah
United States Court House and Post Office	Annapolis, Md.
United States Court House and Post Office	Newport News, Va.
United States Court House and Post Office	West Chester, Pa.
United States Court House and Post Office	Camden, N. J.
United States Court House and Post Office	Philadelphia, Pa.
United States Court House and Post Office	Philadelphia, Pa.
United States Mint	Philadelphia, Pa.
Numerous Post Offices and Churches throughout the States of New York, New Jersey, and Pennsylvania	
Orient Insurance Building	Hartford, Conn.
James Building	Chattanooga, Tenn.
Hibbs & Union Trust Building	Washington, D. C.
Reed Hospital	Washington, D. C.
D. L. & W. R. R. Stations	Marathon and Nichols, N. Y.; Ampere, N. J., and Scranton, Pa.
Two High School Buildings	Rochester, N. Y.
Park Theater	Buffalo, N. Y.
Fahy Office Building	Rochester, N. Y.
Webster Hotel	Canandaigua, N. Y.
Hotel Allen	Allentown, Pa.
Harrisburg Capitol	Harrisburg, Pa.
County Court House	Somerset, Pa.
County Court House	Hollidaysburg, Pa.
County Court House	Camden, N. J.
U. G. Improvement Co.	Philadelphia, Pa.
Fidelity Insurance Building	Philadelphia, Pa.
Y. M. C. A. Building	Philadelphia, Pa.
Y. W. C. A. Building	Philadelphia, Pa.
Baptist Publication Building	Philadelphia, Pa.
Baily Building	Philadelphia, Pa.
Snellenburg & Lit Bros.	Philadelphia, Pa.
Subway Stations for Philadelphia Rapid Traction Co.	Philadelphia, Pa.
Jno. F. Betz Mausoleum	Philadelphia, Pa.
S. F. Poth Mausoleum	Philadelphia, Pa.
Illinois Memorial Building	Vicksburg, Miss.
Jermyn Hotel	Scranton, Pa.
Briarcliff Hotel	Briarcliff, N. Y.
Fairmount Hotel	San Francisco, Cal.
Marlborough-Blenheim Hotel	Atlantic City, N. J.
Traymore Hotel	Atlantic City, N. J.



CORRIDOR OF UNITED STATES MINT, PHILADELPHIA, PA.

NEW PEDRARA MEXICAN ONYX COMPANY

INCORPORATED

MAIN OFFICE, YARDS AND FACTORY

Twenty-Third Street and Santa Fe Railroad
SAN DIEGO, CAL.

QUARRIES IN MEXICO

BRANCHES

BOSTON, MASS., 278 Congress Street
NEW YORK, N. Y., 446 East 106th Street
CHICAGO, ILL., 1215 Marquette Building

SAN FRANCISCO, CAL., 268 Market Street
SEATTLE, WASH., 1308 First Avenue
LOS ANGELES, CAL., 702 South Spring Street

PRODUCT.

MEXICAN ONYX for Interior Finish or Decorative Work, such as Counters, Wainscoting, Pedestals, Church Altars, Fonts, Tombstones, Monuments, Vaults, etc.

We are the largest producers of Onyx in the world, including the celebrated PENINSULAR MEXICAN ONYX.

PENINSULAR MEXICAN ONYX— ITS USES.

To all persons interested in the use of anything made of the finer grades of stone we wish to call attention to our Peninsular Mexican Onyx. This stone is the most beautiful material ever discovered or produced for the finishing of fixtures of fine residences, hotels, office buildings, theaters and banks; for counter and fixture work of all descriptions; in the manufacture of special designs in furniture, such as sideboards, china-closets, tables, pedestals, baptismal and holy water fonts, church altars, electroliers of all kinds; also, for tombstones, monuments and vaults; or, in fact, in any place or for any interior work where stone can be used.

If interested in the designing or construction of anything where stone will or can be used for producing the most striking and most beautiful effect, you should investigate the Peninsular Mexican Onyx.

FACILITIES.

In our main yard at San Diego, Cal., we have a complete plant, and also a bonded yard carrying a large stock of onyx for the supplying of the world. Our quarries are fully opened, and are producing some extraordinarily large sizes in onyx, something unknown to the world at large. Peninsular Mexican Onyx is handled by all first-class marble dealers.

SAMPLES AND ESTIMATES.

Samples and information will be given at all times, and upon receipt of blue-prints we will cheerfully furnish estimates. For further particulars, address F. J. Lea, Vice-President and General Manager, San Diego, Cal.

TERMS.

Our terms are always arranged in accordance with the requirements of architects.

REFERENCES.

The following list comprises a few notable buildings the interiors of which are worked in our onyx:

The National Bank of Commerce, Seattle, Wash.
Merchants National Bank, San Diego, Cal.
San Diego Savings Bank, San Diego, Cal.
Southern Pacific Offices, San Diego, Cal.
Christ's Church, Los Angeles, Cal.
First National Bank, Long Beach, Cal.

French Bank, San Francisco, Cal.
Fritz Building, San Diego, Cal.
Elks Hall Association, San Diego, Cal.
Central Trust Bank, San Francisco, Cal.
Moore Theater, Seattle, Wash.
Scripps Building, San Diego, Cal.



SQUARING ONYX AT THE QUARRY



UNLOADING A SLAB OF PENINSULAR MEXICAN ONYX
AT SAN DIEGO WHARF

Size of slab 18 ft. x 3 ft. 4 in. x 14 in.



INTERIOR OF FIRST NATIONAL BANK, LONG BEACH, CAL.
One of our latest complete Onyx Bank Interiors

THE HENRY A. SCHWEYER COMPANY

Quarrymen and Manufacturers of American Green Marble from Pennsylvania

QUARRIES, OFFICES AND WORKS

EASTON, PA.

HANDLED BY ALL MARBLE DEALERS

PRODUCTS.

PENNSYLVANIA SERPENTINE MARBLE, known as SYLVAN GREEN, used for Interior Finish, and Decorative work, such as WAINSCOTING, COLUMNS, COUNTERS, MANTELS, TILING, BASE, SHELVES, TERRAZZO FLOORS, etc.



SYLVAN GREEN MARBLE

DESCRIPTION.

As seen by the accompanying cut, Sylvan Green Marble possesses a soft blending of all the shades of Nature's green commonly found in serpentines.

Since this marble is largely composed of silica (nearly 50 per cent), it is highly impervious to organic-acid stains, making it an excellent interior decoration.

It is also very adaptable to exterior work, because of its unfading and weathering qualities.

For Terrazzo and Marble Tile floors it has no equal, on account of its extreme hardness.

WORKABILITY AND COST.

Sylvan Green Marble can be procured at as reasonable a cost as any green or colored marble on the market, when it is executed along plain surfaces.

The idea naturally presents itself that it can not be carved, moulded or used in curved surfaces. The accompanying illustrations prove that it can be worked into any shape or size that may be required.

FACILITIES.

Our quarries are fully opened and are producing some very large and richly colored blocks at the present time. A new electric mill and finishing plants, equipped entirely with modern marble-working machinery, make it possible for us to execute orders for all kinds of interior marble work.

SAMPLES AND ESTIMATES.

We will furnish samples and information at all times, and upon receipt of blue-prints will cheerfully furnish estimates.

Sylvan Green Marble is handled by all marble dealers.



INTERIOR OF NORTH RIVER SAVINGS BANK,
NEW YORK, N. Y.
CHARLES I. BERG, Architect



SYLVAN GREEN MANTEL, NEW YORK CITY HALL OF
RECORDS, NEW YORK, N. Y.
HORGAN & SLATTERY, Architects

REFERENCES.

BANKING ROOMS

- The North River Savings Fund Bank, New York, N. Y., Charles I. Berg, Architect
- The People's Bank, McKeesport, Pa.
- Bank of Summerset, Summerset, Pa.
- First National Bank, Cobleskill, N. Y.
- Dexter-Horton Bank, Seattle Wash.
- Ulrich's Savings Bank, Mt. Clements, Mich.
- The Commercial National Bank, Chicago, Ill.
- The Quebec Bank, Quebec, Que., Can.
- The Bank of British North America, Quebec, Que., Can.
- The People's Savings Bank, Cincinnati, Ohio, Rapp, Zettler & Rapp, Architects
- The Ohio Savings Bank and Trust Co., Toledo, Ohio, George S. Mills, Architect
- The First National Bank, Norristown, Pa., Churchman & Thomas, Architects
- Commercial Bank & Trust Co., Louisville, Ky.
- Rochester Security & Trust Co. Bank, Rochester, N. Y., Bragdon & Hillman, Architects
- Capitol National Bank, Denver, Colo.
- First National Bank, Zanesville, Ohio
- First National Bank, Detroit, Mich., D. H. Burnham & Co., Architects
- Real Estate Title & Trust Co., Altoona, Pa.
- Canal Louisiana Bank, New Orleans, La.
- Joliet National Bank, Joliet, N. Y., Julian Barnes, Architect, Chicago, Ill.

PUBLIC BUILDINGS

- Officers' and Engineers' Quarters on the Panama Canal, Canal Zone
- The Nashua Post Office, Nashua, N. H.
- Two large mantels on sixth floor of New York City Hall of Records, New York, N. Y., Horgan & Slattery, Architects
- Plant Pavilion of St. Luke's Hospital, New York, N. Y., Ernest Flagg, Architect
- The Governor General's Residence, Rideau Hall, Ottawa, Can.
- The Noyes Memorial Library, Litchfield, Conn., Ross & McNeil, Architects

- The Circuit Clerk's Office, Jefferson County Court House, Louisville, Ky., Bankers' Construction Co., Architects
- Blair County Court House, Hollidaysburg, Pa., W. L. Plack, Architect
- Allentown Post Office, Allentown, Pa., Geo. Bispham Page, Architect
- Court House, Minneapolis, Minn., Long & Kees, Architects
- New York Central R. R. New Passenger Station, Auburn, N. Y., Reed & Stem, Architects
- Terminal Station D. L. & W. R. R., Jersey City, N. J., Kenneth M. Murchison, Architect
- Court House, Memphis, Tenn., Hale & Rogers, Architects
- Luzerne County Court House, Wilkesbarre, Pa., McCormick & French, Architects

HOTELS

- St. James Hotel, Philadelphia, Pa., Horace Trumbauer, Architect
- Imperial Restaurant, Brooklyn, N. Y., Herts & Tallant, Architects
- English Hotel, Indianapolis, Ind.
- The New Ponchartrain Hotel, Detroit, Mich.
- Banquet Room, Auditorium Annex, Chicago, Ill., Holabird & Roche, Architects
- Majestic Theater Café, Chicago, Ill., Richard Schmidt and H. M. G. Garden, Associated Architects
- Hotel Albany Café, New York, N. Y.
- Waldorf-Astoria Hotel, New York, N. Y.
- Wellington Hotel, Chicago, Ill.

STORES, OFFICES, APARTMENTS

- The Wanamaker Building, New York, N. Y., D. H. Burnham & Co., Architects
- Bachelor Apartments, Washington, D. C., Wood, Donn & Deming, Architects

RESIDENCES

- Frank W. Goodyear, Buffalo, N. Y., Carrère & Hastings, Architects
- F. W. Clifford, Minneapolis, Minn., Harry N. Jones, Architect
- John Leslie, Winnipeg, Can., L. T. Bristow, Architect
- W. H. Robinson, Granby, Province of Quebec, Can.
- C. M. Clark, Philadelphia, Pa., J. Horace Sellers, Architect

THE UNITED MARBLE TILE & TERRAZZO COMPANY

PITTSBURG, PA.

TOLEDO, OHIO

PRODUCTS.

We are Manufacturers of and Contractors for ROMAN and VENETIAN MOSAIC FLOORS and BASE; TERRAZZO and GRANOLITHIC FLOORS and BASE; CERAMIC and ENCAUSTIC FLOORS and WAINSCOTING; "HYGIENE" COMPOSITION FLOORS, BASE and WAINSCOTINGS; MARBELITH BASE, MARBELITH TREAD and RISERS and MARBELITH TILING. INTERIOR MARBLE WORK.

HOSPITAL WORK.

We make a specialty of Sanitary Hospital Floors. Our connection with this class of work enables us to give our patrons the benefit of our past experience.



FIG. 1. "W. J. K." PANELING AND REINFORCING SYSTEM OF VENETIAN AND TERRAZZO FLOOR

ILLUSTRATIONS.

Fig. 1 illustrates our "W. J. K." Paneling and Reinforcing System of the Venetian and Terrazzo Floor. The design was taken from a club room with 36 x 60 foot floor. It had been laid seven years yet showed no signs of cracks. Notice the striking effect of the paneling system.

Fig. 2 shows section of our Marbelith Base with Cove.

Fig. 3 shows Tread and Risers made of Marbelith. These can be had in any length and size.

Fig. 4 shows our Sanitary Base and Cove of Terrazzo. Note that the base is in one piece from top to border. Where the "W. J. K." paneling and reinforcing system is used we guarantee the floors against imperfections.

Figs. 5 and 6 show some of our stock designs of Marbelith Tiling.

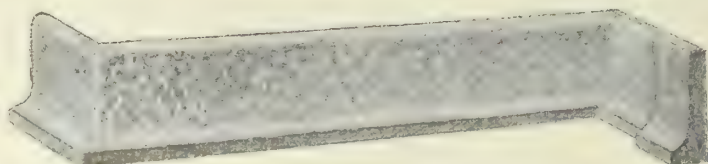


FIG. 2. SECTION OF MARBELITH BASE WITH COVE

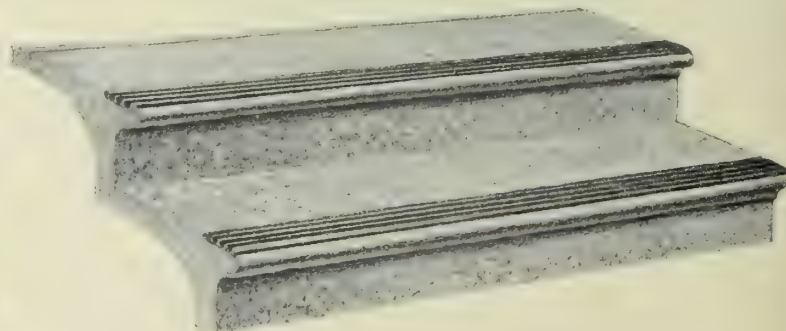


FIG. 3. TREAD AND RISERS MADE OF MARBELITH

FACILITIES.

Our facilities are such that we are in a position to handle the largest jobs in any section of the United States. Our new plant now in course of construction is the largest and most complete plant of its kind in the country.

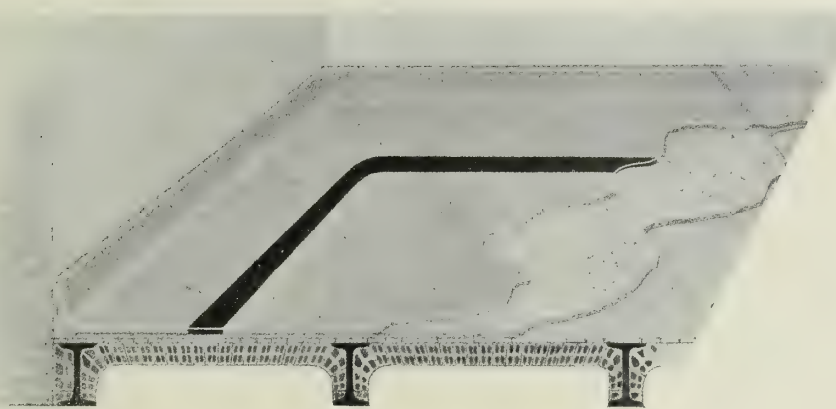


FIG. 4. SANITARY BASE AND COVE OF TERRAZZO

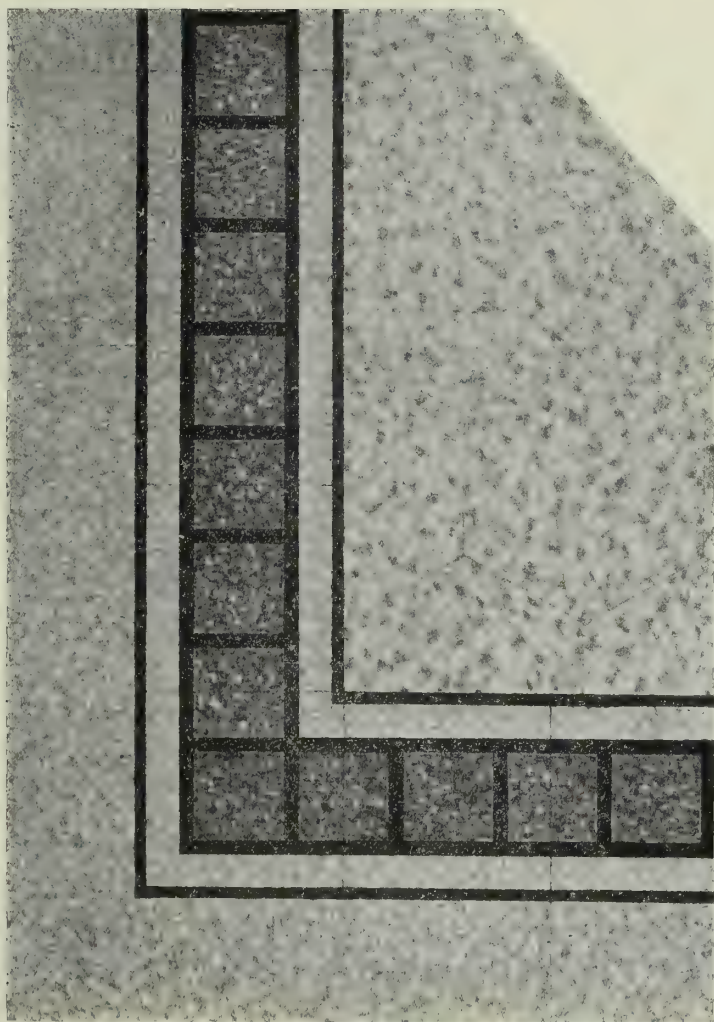


FIG. 5

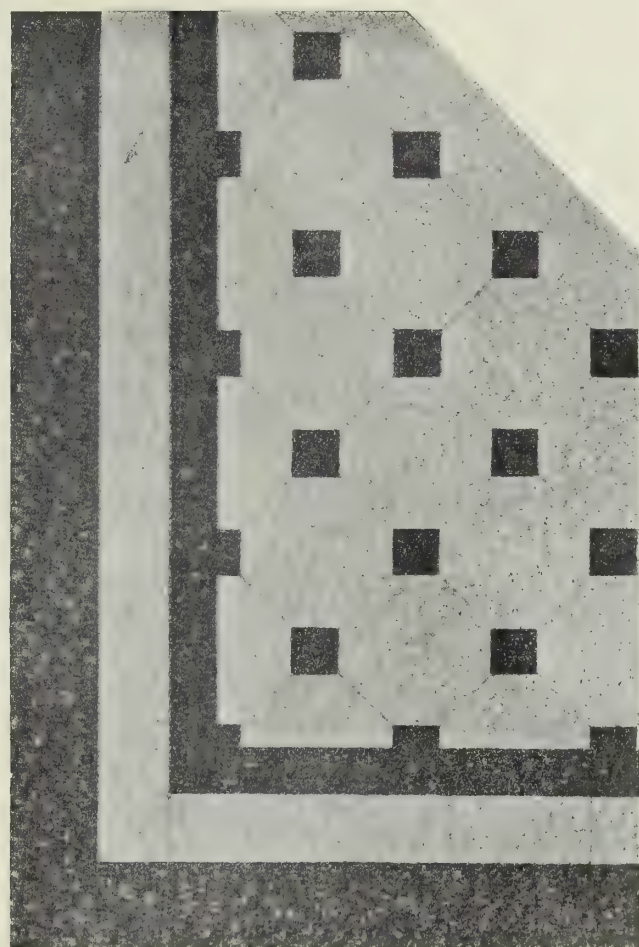


FIG. 6

EXAMPLES OF OUR STOCK DESIGNS OF MARBELITH TILING

RECENT WORK.

The following is a representative list of recent work:

City Hospital, Pittsburg, Pa.
 Woodville County Home, Pittsburg, Pa.
 Hamory Building, Sharon, Pa.
 First National Bank, Cambridge Springs, Pa.
 Elyria Memorial Hospital, Elyria, Ohio
 St. Joseph's Hospital, Lorain, Ohio
 St. Vincent's Hospital, Toledo, Ohio
 Robinwood Hospital, Toledo, Ohio

Mercy Hospital, Iowa City, Iowa
 Elks Club, Fort Wayne, Ind.
 Secor Hotel, Toledo, Ohio
 Boody House, Toledo, Ohio
 Wayne Hotel, Toledo, Ohio
 St. Nicholas Hotel, Springfield, Ill.
 Hershey State Bank, Muscatine, Iowa
 Clark Avenue Bath House, Cleveland, Ohio

AMERICAN ART MARBLE COMPANY

OFFICE AND FACTORY

609-613 North American Street

PHILADELPHIA, PA.

TELEPHONE CONNECTION
CABLE ADDRESS, "QUADRANT"

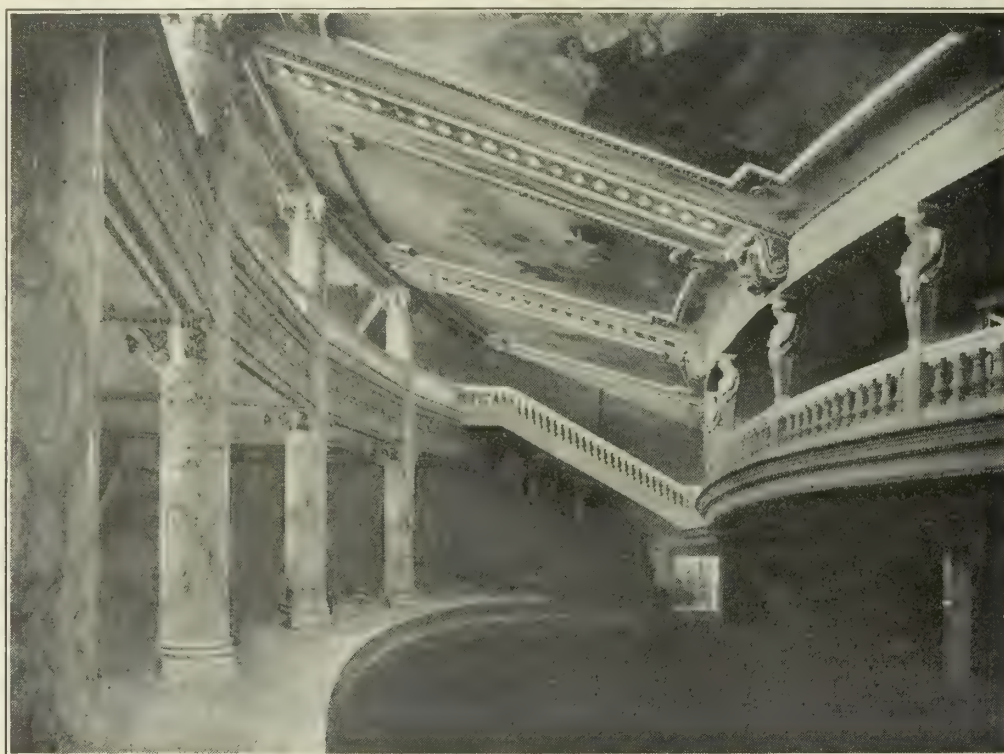
LOUIS BLOOM, MANAGER

PRODUCTS.

Reproducers of ARTIFICIAL MARBLE, ARTIFICIAL ONYX and ARTIFICIAL CAEN STONE. CASTINGS and MOULDINGS in KEENE'S CEMENT. Sole Agents for IMPORTED VICTORIA KEENE'S CEMENT in Philadelphia and vicinity.

DESCRIPTION.

American Art Marble is a scientific reproduction of fine natural marbles manufactured from the best grade of white English Keene's Cement and mixed with colors to give the various tints, veins, grainings and even the irregularities of natural marble and onyx.



HAMMERSTEIN'S OPERA HOUSE, PHILADELPHIA, PA.

Ten thousand feet of American Art Marble were furnished and set complete in this opera house in less than eight weeks

FACILITIES.

The AMERICAN ART MARBLE COMPANY have the largest and most modern plant in this country for the manufacture of Artificial Marble, and can reproduce any of the decorative and highly prized foreign marbles at short notice.

ADAPTABILITY.

Our artificial marbles are not to be distinguished from the original, and in many instances have been used in connection with natural marble. They are adapted for walls, wainscotings, columns, pilasters, altars, etc.

We also make a specialty of slabs, mouldings and bases.

CATALOGUE.

Our new catalogue, showing the beautiful color plates of our Art Marble, is now ready, and will be sent free on application.

AWARDS.

The AMERICAN ART MARBLE COMPANY received the First Prize and Gold Medals at the St. Louis Exposition, the first awards in the United States for the products.

J. MARTINELLI

C. RADINI

E. CASELLI

ARTIFICIAL MARBLE WORKS

SUCCESSORS TO

ARTIFICIAL MARBLE CO.

MANUFACTURERS OF

Interior Decorative Marble, Improved Scagliola

306 East Fortieth Street

NEW YORK, N. Y.

TELEPHONE CONNECTION

PRODUCTS.

We manufacture ARTIFICIAL MARBLE (IMPROVED SCAGLIOLA) for Architectural and Ornamental Purposes.

FACILITIES.

The factory of the Company is the largest in existence, and is capable of taking care of the largest contract.

TERRITORY.

The operations of the Company cover the entire United States and Canada.

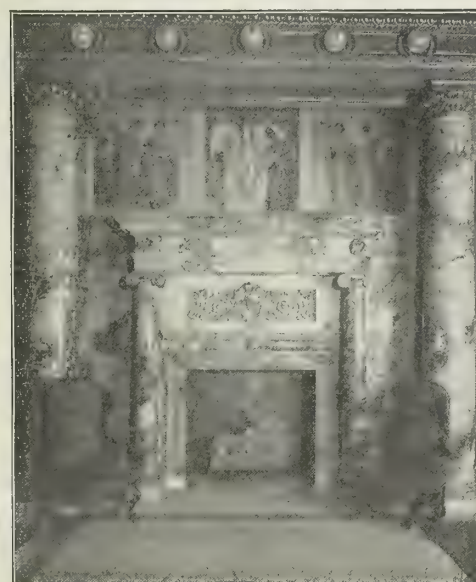
INSTALLATION.

Artificial Marble is installed in the same manner as natural marble, and a greater latitude is allowed the architect in the selection of mouldings and carvings, and every member is produced according to details; all joints are carefully mitered and fitted.

GENERAL INFORMATION.

By our process of manufacture we can imitate perfectly any marble or stone in existence, and have repeatedly installed our material in the same room with the natural marble. In the making of columns, a very large saving can be made, when compared with the cost of the natural marble.

Our work is applied around iron or steel columns, and at once relieves the architect's mind as to how he will decorate an isolated column; pilasters are treated in the same manner.



EXAMPLES OF ARTIFICIAL MARBLE

REFERENCES.

Some of the most important buildings in New York City and elsewhere contain our Improved Scagliola. A list of a few is appended:

CHURCHES

St. Francis Xavier's, Brooklyn, N. Y.
 St. Patrick's, Brooklyn, N. Y.
 All Saint's, Brooklyn, N. Y.
 All Saint's, Jersey City, N. J.
 Holy Saviour, Wilkesbarre, Pa.
 St. Hedwig's P. R. C. Church, Wilkes-Barre, Pa.
 Sacred Heart, Scranton, Pa.
 St. Elizabeth's Convent, Convent, N. J.
 Methodist Episcopal, Lincoln, Neb.
 Church of Ascension, New York, N. Y.

THEATERS AND BANKS

Hudson Theater, Union Hill, N. J.
 Fulton Theater, Brooklyn, N. Y.
 Greenpoint Theater, Brooklyn, N. Y.
 Lyceum Theater, Elizabeth, N. J.
 Mills Theater, Minneapolis, Minn.
 Dime Savings Bank, Brooklyn, N. Y.
 First National Bank, Brooklyn, N. Y.
 Jefferson Bank, New York, N. Y.
 National Bank of Havana, Havana, Cuba.
 Mineola Bank, Mineola, L. I.

PUBLIC BUILDINGS

Passaic Trust & Safe Deposit Building, Passaic, N. J.
 Briarcliff Lodge, Briarcliff Manor, N. Y.
 Troy Record Building, Troy, N. Y.
 Albany Trust Co., Albany, N. Y.
 Chamber of Commerce, Havana, Cuba
 Susquehanna Silk Mills, 18-22 West 18th Street, New York, N. Y.

HOTELS

Capital Hotel, Little Rock, Ark.
 Stanwix Hotel, Albany, N. Y.
 Greek Hotel, New York, N. Y.

COURT HOUSES

Queens County Court House, Brooklyn, N. Y.
 Luzerne County Court House, Wilkes-Barre, Pa.

APARTMENT HOUSES

Haven Court, 180th Street and Broadway, New York, N. Y.
 Woodward Apartment Houses, Washington, D. C.
 Residences at 183d Street and Park Avenue, New York, N. Y.
 Residences at 180th Street and Broadway, New York, N. Y.

THE FLEXIBLE MOSAIC CO.

Manufacturers of Flexible Mosaic

1512 Marquette Building

CHICAGO, ILL.

PRODUCTS.

FLEXIBLE MOSAIC, for Wall and Ceiling Decoration.

ORIGIN.

A prominent and experienced designer, realizing the necessity of a mosaic that could be applied regardless of the conditions that usually hamper that class of work, after years of careful, scientific research, perfected a decorative structure equal in beauty and durability to marble and ceramic mosaic for all wall and ceiling decorations, panels and mantel faces, or any place where mosaic can be used.

DESCRIPTION.

Flexible Mosaic is a durable structure made in separate pieces mounted on a waterproof base. It is impervious to either steam, water or acids and can be set by any decorator, painter or paper hanger.

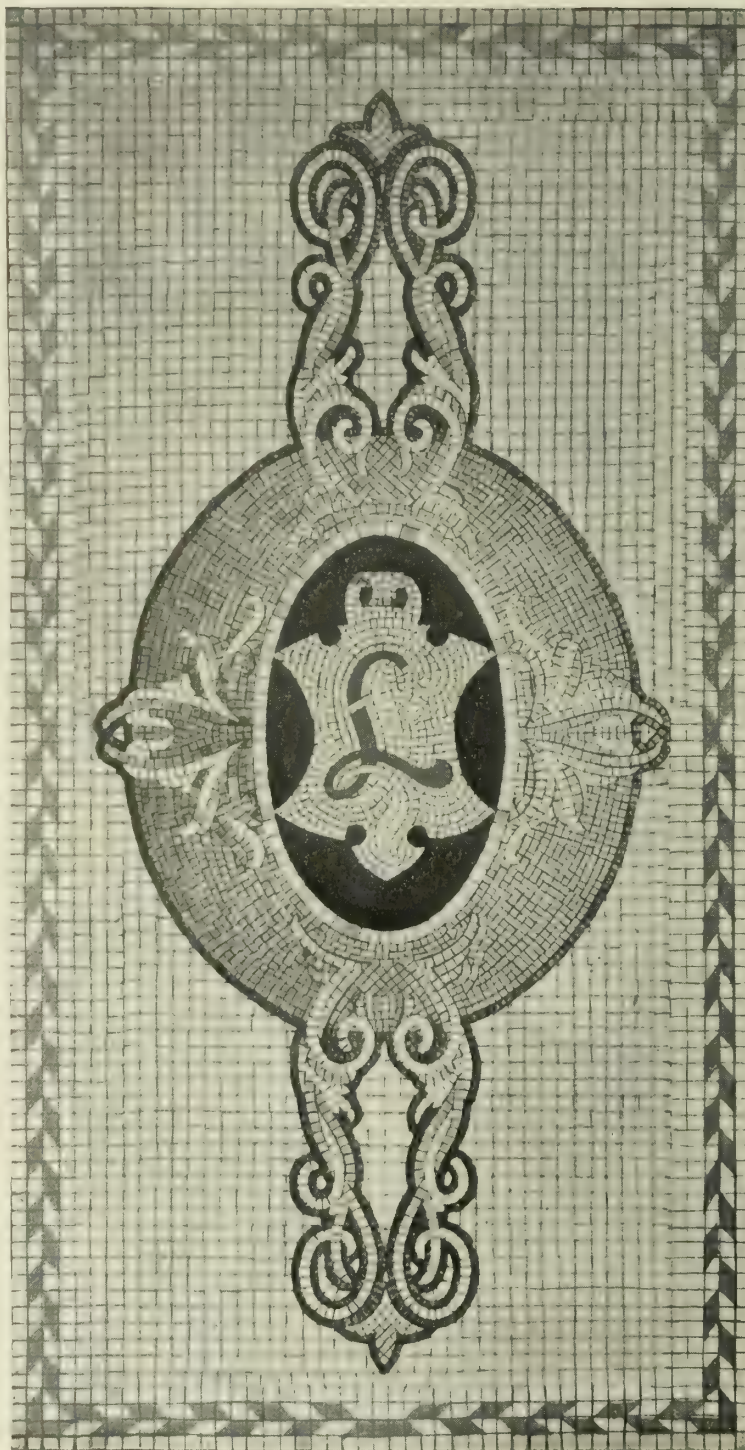
WHAT WE OFFER.

In placing this mosaic before you we are giving the trade a structure that will meet every requirement where a decorative mosaic is desired. We offer it at a price which will make its use profitable to decorators and we can satisfy any special requirement that may arise.

COLORS.

The color possibilities are unlimited. Flexible Mosaic is capable of any color effect. It is not confined to the limited number of shades of marble or the difficult art of successfully coloring ceramic tiles. It is equal in iridescence to the most expensive glazes

and color tones produced in opalescent tiles and glass. Any color or shade or combination is thus possible at the option of the user, and absolute permanency is assured.



SAMPLE OF FLEXIBLE MOSAIC WALL COVERING

SPECIAL
DESIGNS.

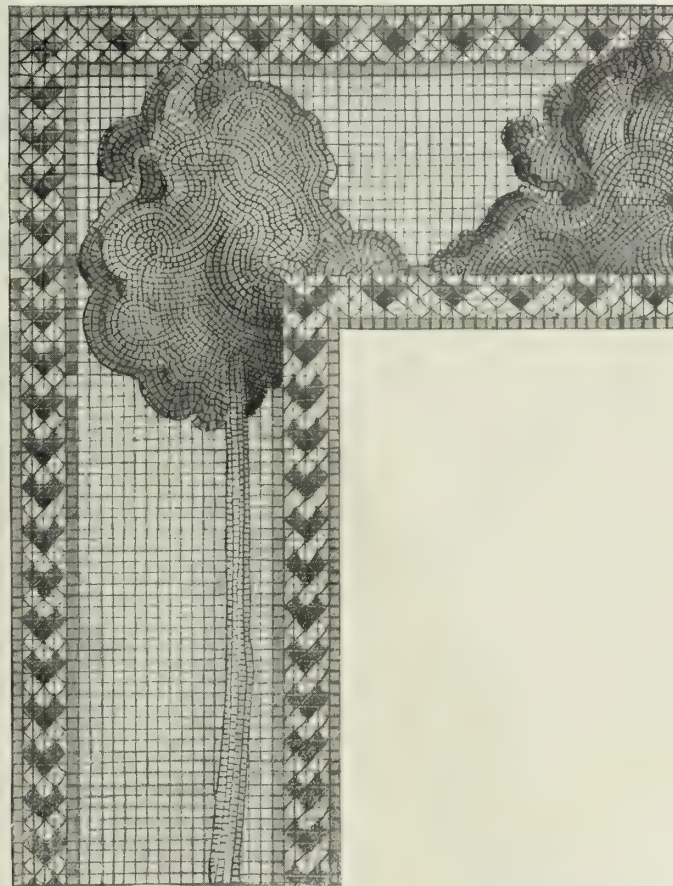
Any special design or combination the user may suggest will be carefully worked out by our corps of artists and the result will be submitted for your approval; or we will make up a special design to suit such requirements as you may name.

CURVED
SURFACES.

Curved surfaces can be covered at the same cost as flat side walls and ceilings and there is no danger of cracking or falling from the wall. This feature will be recognized as of special advantage in these days of construction in which many curved surfaces frequently appear.



FLEXIBLE MOSAIC PANEL



FLEXIBLE MOSAIC MANTEL FACE

PORTABLE
PANELS.

We make Portable Panels in any size or design which can be applied or removed at a very small expense. In many instances this feature will commend itself to the builder and may assist in the solution of a difficult decorative problem.

CO-OPERATIVE
SERVICE.

We are ready at any time to give you our hearty co-operation, based upon our knowledge of and experience with this mosaic, and our experts are always at your service in reaching any desired result.

CORRE-
SPONDENCE.

Whatever you may want, do not fail to write us about it and we will give your request for information or suggestion our prompt attention.

WILLIAM B. QUAILE

SOLE AGENT IN THE UNITED STATES FOR

"Glacier" Window Decoration, a Substitute for Stained Glass

752 Broadway

NEW YORK, N. Y.

TELEPHONE, 8407 SPRING

PRODUCT.

"GLACIER" WINDOW DECORATION, a substitute for Stained Glass.

DESCRIPTION.

"Glacier" Window Decoration, as well as being artistic, durable and economical, is more easily adapted to any shape or style of window and lends itself to variety of combination better than any other similar article produced as a substitute for stained glass. It is a thin, transparent material in gelatine finish, carrying designs in colors for the ornamentation of sheet glass. It is insoluble in water, and, when properly fixed, will withstand heat, cold or moisture.

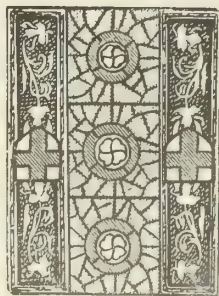
The "Glacier" Decoration is fitted to take the place of stained glass in numberless instances where the latter would be too costly.

Windows, no matter what may be their size, shape or position, can be made to represent artistically the finest stained glass.

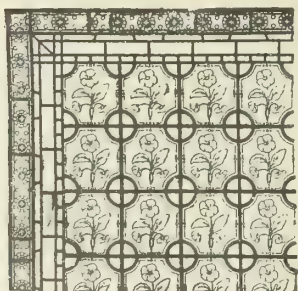
DESIGNS AND THEIR USES.

The "Glacier" designs are so varied in character that no difficulty can be experienced in properly decorating domestic windows of any size or shape; also, windows in churches, chapels, public institutions, hotels, libraries or schools. They can also be used for decorative panels to hang against windows; or in making screens of every description.

The "Glacier" patterns are very numerous, and comprise borders, corners for borders, curves, ground patterns and centerpieces. The borders are of all widths from $\frac{1}{2}$ inch up to 5 inches, and 18 inches long. Every border pattern is produced in curved lengths of different radii, enabling the designer not only to carry any required border round any curve, but also to form special designs or complete circles for framing centerpieces. The ground patterns are used for filling large areas after the border and center are affixed. The centerpieces are of all styles—ecclesiastical, emblematic, floral, heraldic, etc.—and accurately represent the effect of stained glass of the highest style.



Prevailing Color,
Warm Blue

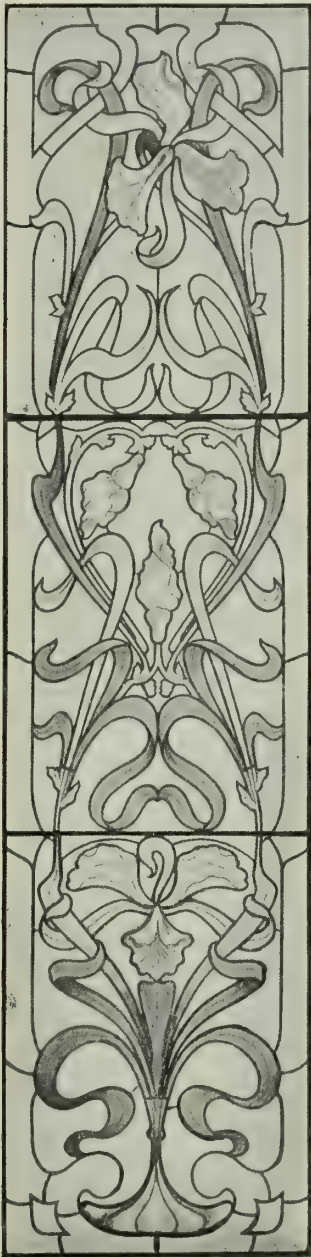


Prevailing Color, Red

HARMONIES OF BORDERS AND FILLINGS



DESIGNS IN "GLACIER" WORK



ART NOUVEAU
No. S 2157 A, B, C



EXAMPLE OF CHURCH DECORATION



PASSION FLOWER
No. S 2156 A, B, C

ILLUSTRATIONS.

The accompanying illustrations will convey an idea of the artistic quality and variety of design of "Glacier" Decoration, but the omission of color in these reproductions makes it impossible to exhibit the surpassing beauty of the "Glacier" work. The only limit to design is the degree of skill and taste in the operator.

PRICES.

The list prices for ground patterns are from 12½ cents per square foot up; for panels, from 30 cents per square foot up.

ESTIMATES AND CO- OPERATION.

Sketches and estimates will be furnished free. To ascertain the cost of decorating any windows, send rough sketches, showing sashes and noting size of the lights. We have also a colored catalogue of 88 pages, showing all the numbers, but owing to the cost of producing so many designs in colors, the manufacturers are compelled to charge for this, and the landed cost in this country, duty paid, is 75 cents.

Booklet "S," showing colored designs, sent free of charge, on request.

TOGNARELLI & VOIGT COMPANY

Modelers, Carvers and Casters

2302-2310 Chestnut Street

PHILADELPHIA, PA.

PRODUCTS AND SERVICES.

EXTERIOR and INTERIOR ORNAMENTS of every description in CEMENT, COMPOSITION, PLASTER, STONE and WOOD; CORNICES, MOULDINGS, FRIEZES, PANELS, CAPITALS, BRACKETS, CEILING and WALL DECORATIONS; GARDEN, LAWN, HALL, and CONSERVATORY FURNITURE; BENCHES, FOUNTAINS, SUN-DIALS, VASES, TABLES, WELL-HEADS, BALUSTRADES in CEMENT and IMITATION STONE; MODELING in all its branches; STONE and WOOD CARVING.

GARDEN, LAWN, HALL, AND CONSERVATORY FURNITURE.

This illustrates one of the many designs shown in our catalogue. We shall be pleased to submit sketches suggesting designs and arrangement of pieces for lawns, gardens, halls and conservatories, for each requires special treatment in order to conform to surrounding conditions.

ADAPTABILITY.

We furnish all articles shown in our catalogues in the material best suited for the purpose for which they are to be used.

PRICES AND ESTIMATES.

Our catalogues give prices on all stock goods. We shall be pleased to give estimates on all special work in our line.

FACILITIES.

We have every facility for handling both large and small contracts in any part of the United States or Canada. We are equipped to produce anything in our line, either from our stock models, from details furnished, or under our client's personal direction.

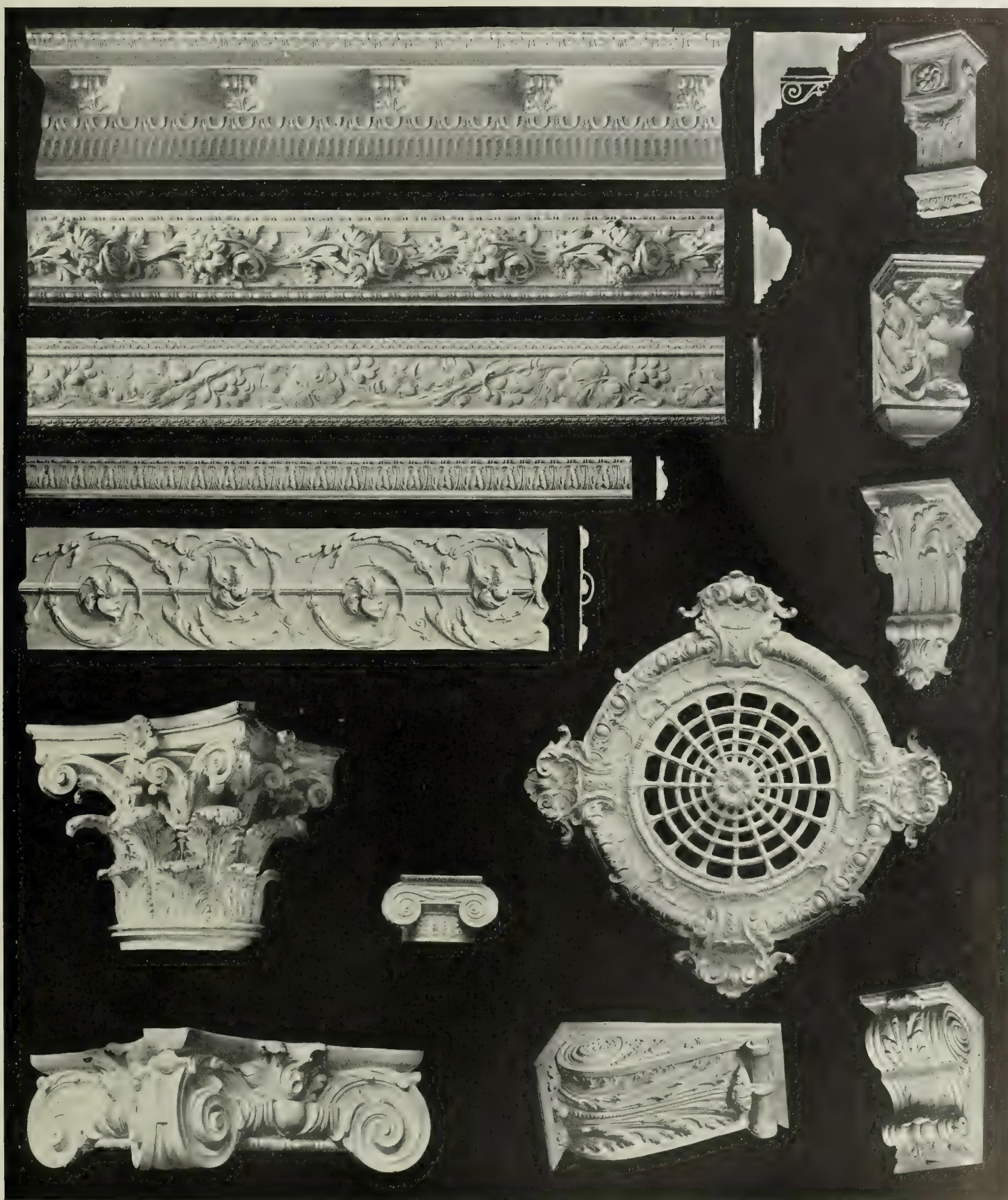
CATALOGUES.

We issue the following Catalogues: "Garden, Lawn, Hall and Conservatory Furniture"; "Capitals and Brackets"; "Plaster and Composition Relief Work."

Any one or all of these will be furnished free if "SWEET'S" is mentioned.



ORNAMENTAL VASE DESIGN



DESIGNS FROM OUR ILLUSTRATED CATALOGUES

Catalogues give all dimensions

ESTABLISHED 1872

T. DE LONG FURNITURE CO.

MANUFACTURERS OF

High-Grade Interior Finish and Cabinet Work

MAIN OFFICE AND FACTORY

TOPTON, PA.

AGENCIES

BOSTON, MASS., OFFICE, BANK & LIBRARY Co., 157 Summer Street
TELEPHONE, 1867 OXFORDNEW YORK, N. Y., OFFICE, BANK & LIBRARY Co., 180 Broadway
TELEPHONE, 4719 CORTLAND

PRODUCTS.

INTERIOR FINISH and CABINET WORK; TILE FLOORING; PARQUET FLOORING; DECORATING; CHANCEL FURNITURE; OFFICE and BANKING-ROOM FURNITURE.

SPECIAL
ORDER WORK.

All of our work is special, either from our own designs or from those of architects. This feature assures the individual effects which architects may be trying to carry out.

CO-OPERATIVE
SERVICE.

We will promptly submit estimates on architects' plans and specifications and will assist architects, contractors or owners in every way by submitting suggestive sketches to fill their requirements.

FACILITIES.

We have a modern factory fully equipped and have ample dry kilns. Our system of close personal supervision enables us to guarantee the satisfactory execution of any contract that we undertake.

We contract to install our products or, if preferred, will let it to a local contractor.

We are well equipped to manufacture built-up Veneered Panels in any hardwood.

All Painting, Varnishing and Finishing are done at our own factory.

PRICES.

Our expenses are comparatively low, due to our location, and we give the benefit of this to our clients.

We are always glad to quote prices upon receipt of information giving requirements

REFERENCES.

A few representative references are given below. We will send you more if desired:

Kutztown National Bank, Kutztown, Pa.
 National Bank of Malvern, Malvern, Pa.
 Blair County Title & Trust Co., Altoona, Pa.
 Central Trust Co., Altoona, Pa.
 John Dillon Hotel, Bridgeport, Pa.
 W. F. Davis Hotel, Glassboro, N. J.
 F. W. Speakman Hotel, Coatesville, Pa.
 John C. McGovern Hotel, South Bethlehem, Pa.
 Anewalt Brothers (Store), Allentown, Pa.

P. G. Diener (Store), Harrisburg, Pa.
 Cohen Brothers (Store), Reading, Pa.
 W. H. Appel (Store), Allentown, Pa.
 Hohl's Pharmacy, Easton, Pa.
 Christ Evangelical Lutheran Church, Allentown, Pa.
 Zion's Union Church, Windsor Castle, Pa.
 St. John's Evangelical Lutheran Church, Nazareth, Pa.
 W. K. Gresh & Sons (Office), Norristown, Pa.
 Adam Scheidt Brewing Co. (Office), Norristown, Pa.



STORE OF W. H. APPEL, ALLENTOWN, PA.

All cabinet work in this store made and erected by the T. DE LONG FURNITURE CO.

ILLUSTRATIONS.



BLAIR COUNTY TITLE AND TRUST COMPANY, ALTOONA, PA.
All cabinet work in these rooms made and erected by the T. DE LONG FURNITURE Co.



CHRIST EVANGELICAL LUTHERAN CHURCH, ALLENTOWN, PA.
All woodwork and pews furnished and erected by the T. DE LONG FURNITURE Co.
RUHE & LANGE, Architects

FARR & BAILEY MFG. CO.

MANUFACTURERS OF

Oilcloth, Linoleum, Cork Carpets, etc.

CAMDEN, N. J.

AGENCIES

ST. LOUIS, MO., J. KENNARD & SONS CARPET CO.
ST. JOSEPH, MO., WHEELER-MOTTER MERCANTILE CO.
SAN FRANCISCO, CAL., HULSE, BRADFORD CO.
CINCINNATI, OHIO, GEORGE F. OTTE CO.
NEW YORK, N. Y., POTTER & PEARSON, 15 East 16th Street
ATLANTA, GA., NAILL-HERIN CO.
DENVER, COLO., DANIELS & FISHER STORES CO.
SALT LAKE CITY, UTAH, SALT LAKE HARDWARE CO.

OILCLOTH PLANT
12TH AND PINE STREETS

LINOLEUM PLANT
7TH STREET AND KAIGHN AVENUE

BRANCHES
CHICAGO, ILL., 227-229 Washington Street
NEW YORK, N. Y., 17 East 16th Street

PRODUCTS.

Our line includes OILCLOTHS, OILCLOTH RUGS, STAIR OILCLOTH, CARRIAGE OILCLOTH; OAK RUG BORDER; PRINTED, PLAIN and INLAID LINOLEUMS; OAK PLANK and GRANITE INLAID LINOLEUM; CORK BATH MATS; CORK CUSPIDOR MATS; BATTLESHIP LINOLEUM, and CORK CARPET.

QUALITY.

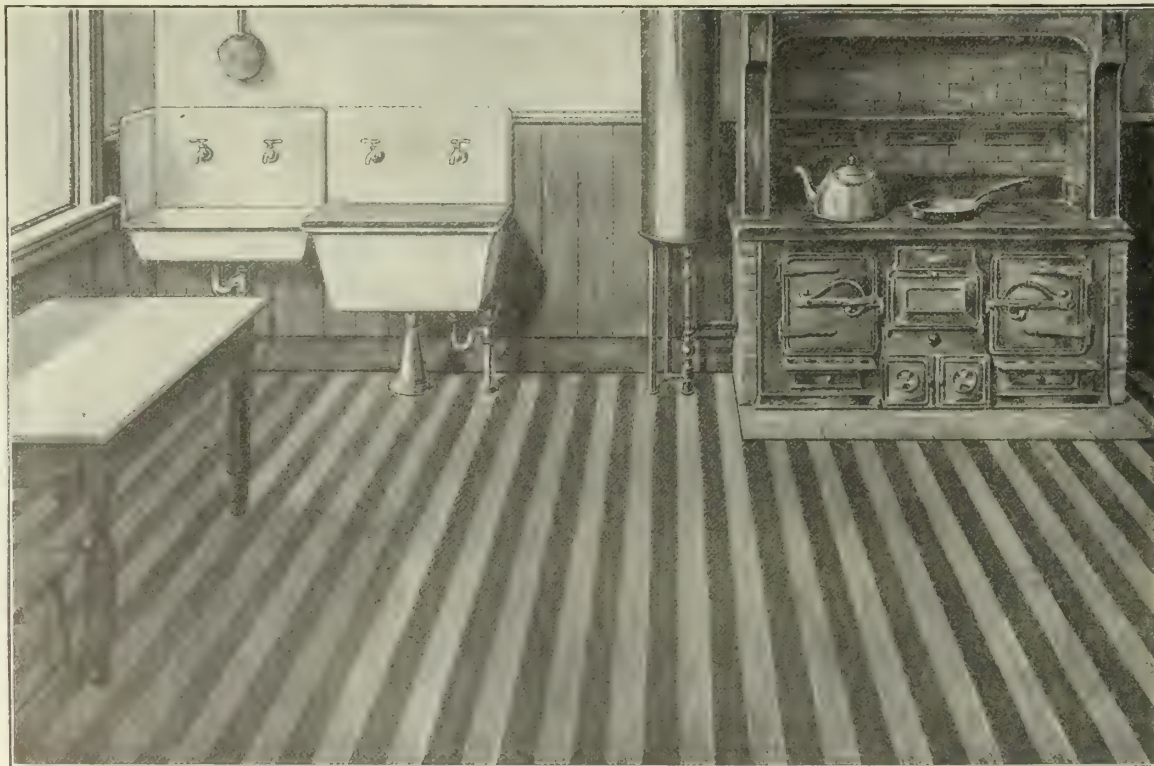
The FARR & BAILEY MFG. CO. products have, during thirty years of continuous production, held the unchallenged position of superiority.

We operate two plants, embracing fifty buildings equipped in the most modern manner, and the materials going into our products as well as the labor are of the highest grade.

Our motto is "Quality first," regardless of the cost of production.

INLAID OAK PLANK LINOLEUM.

This is one of our well-known products and makes a perfect covering for kitchen and pantry floors. It is an exact and correct imitation of oak flooring, having the color and graining running through to the back of the goods. It is made under our special process, measures .085 of an inch in thickness, and is attractive in appearance. It will wear ten or fifteen years, never looks soiled, and is reasonable in price.



FARR & BAILEY INLAID OAK PLANK LINOLEUM APPLIED TO KITCHEN FLOOR

CORK
CARPET.

Cork Carpet is one of the most widely known products of our mills. It is made under our special process by our own formula and, although resembling in many ways domestic and foreign cork carpets, is vastly superior.

It is a combination of the finest grade of cork and pure oxidized linseed oil prepared on a burlap foundation. It is rich in appearance, elastic, entirely noiseless to the tread, sanitary and easily laid and is practically indestructible.

It will not "wear down" and harden like a carpet nor will it rot like rubber tiling, nor will it crack and chip like a cork tiling.

It is very desirable for sleeping apartments and upstairs halls, and is particularly adapted for public buildings of concrete construction, as it can be cemented direct to a concrete surface, thus saving the additional cost of a wood flooring.



FARR AND BAILEY CORK CARPET ON LIBRARY FLOOR

SIZES AND
COST OF
CORK
CARPET.

Cork Carpet is made in rolls of 2 yards wide and 30 yards long and of two thicknesses: "A" quality $\frac{3}{10}$ " thick; "B" quality $\frac{3}{16}$ " thick. It is made in four plain colors as follows: natural cork, green, terra-cotta, and blue.

It costs about 15 cents per square foot, laid, for the best quality, and for second quality about $13\frac{1}{2}$ cents per square foot.

ADAPTABILITY.

Our Cork Carpet has been proved by the most severe tests to be the ideal covering for the floors of automobiles, assembly rooms, banking-rooms, billiard halls, offices, corridors, churches, gymnasia, hospitals, libraries, reading-rooms, sanitariums, theaters, etc.

SERVICES.

We are always glad to quote prices and to assist, in every way possible, architects contemplating jobs where this product can be used; and we will send, upon request, a paper-weight demonstrating our product to those who mention "SWEET'S."

REFERENCES.

The following are a few users of Farr and Bailey Cork Carpet:

Grace Methodist Episcopal Church, Zanesville, Ohio
Court House, Eastman, Ga.
Court House, Cairo, Ga.
Court House, Thomaston, Ga.
Court House, Newberry, S. C.
Public Schools, Chicago, Ill.
Unique Theater, Philadelphia, Pa.
Cathedral, Manchester, N. H.
A. O. M. Hall, Manchester, N. H.

National Bank, Camden, N. J.
Cooper Hospital, Camden, N. J.
Millville National Bank, Millville, N. J.
A. G. Spaulding & Bros., 134 Geary Street, San Francisco, Cal.
The Coliseum (a very large job, originally put down on track for the big Marathon race, San Francisco, Cal.)
Porterville Public Library, Porterville, Cal.
Mercy Hospital, North Bend, Ore.

THE FORD & JOHNSON COMPANY

Manufacturers of Chairs and Furniture

Indiana Avenue and Sixteenth Street

CHICAGO, ILL.

SALESROOMS

CHICAGO, ILL., 1433-1437 Wabash Avenue
CINCINNATI, OHIO, 427 East Sixth Street

ATLANTA, GA., 172-178 Marietta Street

NEW YORK, N. Y., Forty-Third Street and Lexington Avenue

LOUISVILLE, KY., 413 Garden Street

PRODUCTS.

Manufacturers of CHAIRS and FURNITURE for Hotels, Clubs, Libraries, Offices, Court Houses, Museums, Railroad Stations, and all classes of Public and Private Buildings.

GENERAL INFORMATION.

This Company was originally established over fifty years ago and has grown from a small plant at Michigan City, Ind., into an organization with a capital of \$3,000,000, owning and operating twelve factories throughout the United States, devoted to the manufacture of chairs and furniture.

In addition to a large and comprehensive line of stock patterns, it has unusual facilities for the manufacture of specially designed furniture of any Period style in domestic or foreign woods. The company has its own force of designers and draftsmen, and special designs will be furnished promptly on application. Estimates also furnished upon architects' specifications.

HOTEL FURNITURE.

Furniture from the FORD & JOHNSON factories may be found in representative hotels throughout the United States and in Canada, Cuba and Mexico, where it is known for its strength, durability, and finish. By reason of its large capacity and resources the Company is prepared to supply the furniture for hotels from the small summer hotel to those requiring the highest art of the cabinet maker.

On account of hard usage to which hotel furniture is subjected, it is necessary to pay special attention to its construction, a fact we always consider in making this class of goods.



TYPICAL HOTEL CHAIR

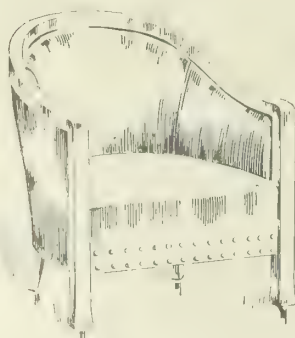
CLUB FURNITURE.

This Company has the best facilities for the production of high-class club furniture. It is prepared to furnish a country club with both outdoor and indoor furniture, and can handle as well the large city club.

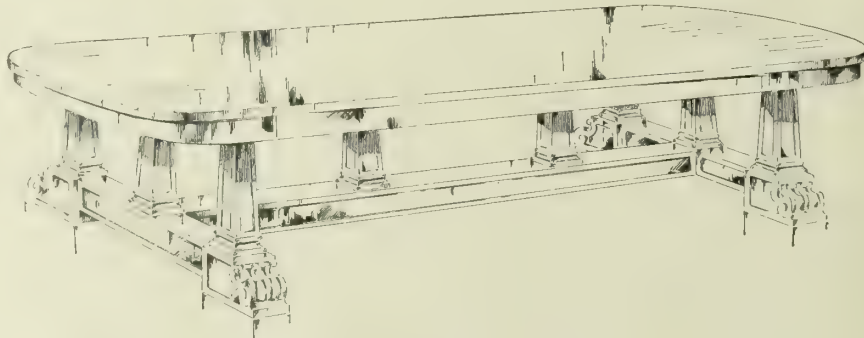
A large variety of all kinds of club furniture is carried in stock and cuts of designs will be furnished on application.

LIBRARY FURNITURE.

The library tables manufactured by this Company are especially well constructed. All tops are built up with ash cores and $\frac{1}{8}$ inch sawed veneer on all outside surfaces.



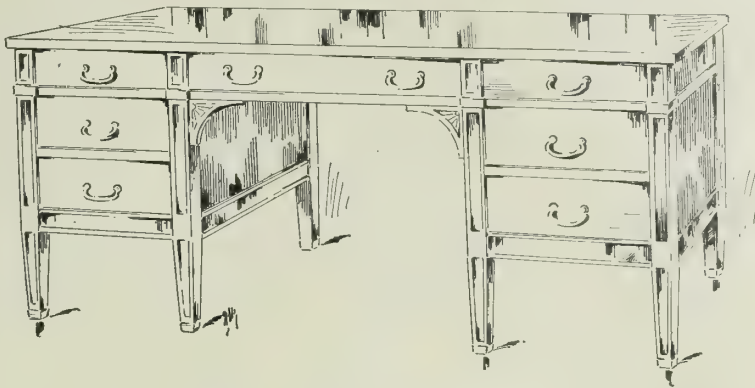
CHAIR, SUITABLE FOR CLUB USE



ONE OF OUR LIBRARY TABLES

OFFICE
FURNITURE.

This Company carries a comprehensive line of stock office chairs and settees, and makes to order, from special designs, desks, tables, and all other portable office furniture.



DESIGN FOR AN OFFICE DESK



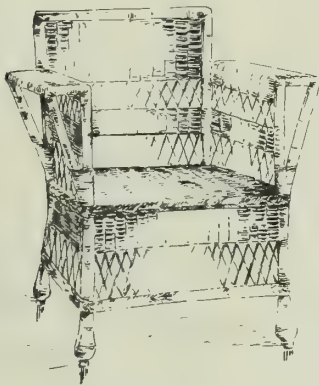
COURT HOUSE CHAIR

COURT HOUSE
AND BANK
FURNITURE.

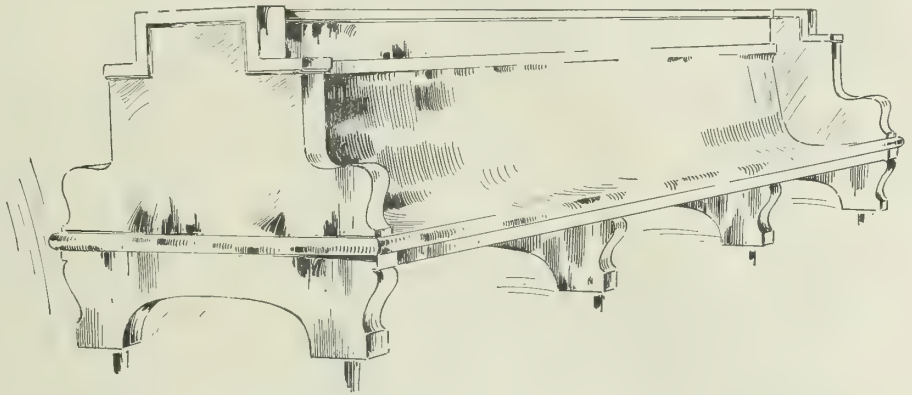
FORD & JOHNSON Court House and Bank Furniture carries many features of construction that give it unusual strength and raise it above the ordinary. The construction and designs are used by many architects as *standard*.

RAILROAD
SEATING.

This Company manufactures all kinds of seating for railroad stations. It has many stock patterns which can be supplied on short notice, and makes a specialty of work made to order from architects' drawings. The construction in this line of work is of the best: built-up cores with $\frac{1}{8}$ inch sawed veneer.



FIBER RUSH CHAIR



COMFORTABLE SEATING FOR RAILROAD STATION

FIBER RUSH
FURNITURE.

Fiber Rush Furniture is used for both indoor and outdoor purposes. It is green in color and blends nicely with most all shades of woodwork and materials. It is used extensively for summer homes, hotels, and clubs, throughout the country. This Company is the exclusive manufacturer of this specially made furniture.

CONSTRUC-
TION AND
FINISH.

This Company pays especial attention to the construction of all its furniture. All table-tops and settees are made of built-up cores veneered with $\frac{1}{8}$ inch sawed veneer, and the best cabinet-work employed throughout.

The Finishing Department is equipped to do all kinds of finishing, and is especially competent to match any color desired on any wood from samples furnished.

REFERENCES.

The following is a partial list of buildings this Company has recently furnished:

Hotel Knickerbocker, New York, N. Y.
College of the City of New York, New York, N. Y.
7th Regiment Armory, New York, N.Y.
American Club, Havana, Cuba
The Sinton, Cincinnati, Ohio
The New Seelbach, Louisville, Ky.
The Andrews, New Orleans, La.
The Gayosa, Memphis, Tenn.
The Gadsen, Douglas, Ariz.
The King Edward, Toronto, Can.

The Paxton, Omaha, Neb.
Tait's Pompeian Garden, San Francisco, Cal.
Auditorium Annex, Chicago, Ill.
The Kaiserhoff, Chicago, Ill.
South Shore Country Club, Chicago, Ill.
New Cook County Court House, Chicago, Ill.
Arrow Head Hotel, Hot Springs, Ark.
Baltimore Hotel, Kansas City, Mo.
Battle House, Mobile, Ala.

Robodeaux Hotel, St. Joseph, Mo.
New York Central Station, Schenectady, N. Y.
La Salle Street Station, Chicago, Ill.
Illinois Central Station, Chicago, Ill.
Grand Central Station, Chicago, Ill.
P. & L. E. Ry. Station, Pittsburg, Pa.
Union Depot, Dayton, Ohio
Union Depot, Grand Rapids, Mich.
New Orleans Terminal, New Orleans, La.

FRANK H. GRAF MANUFACTURING COMPANY

Metal Workers

322 Seventh Avenue
NEW YORK, N. Y.

TELEPHONE CONNECTION

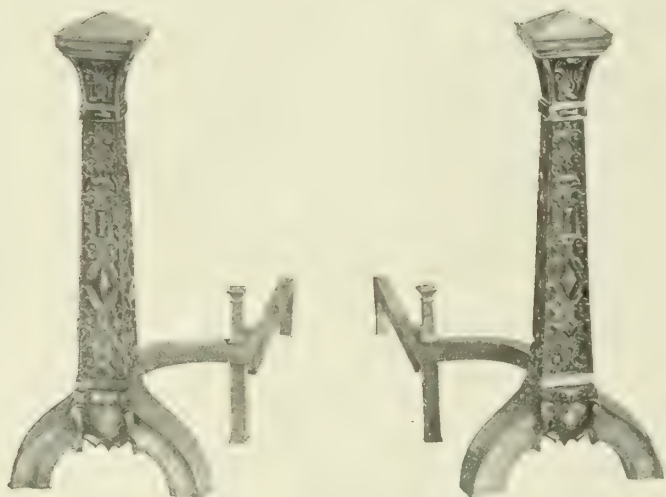
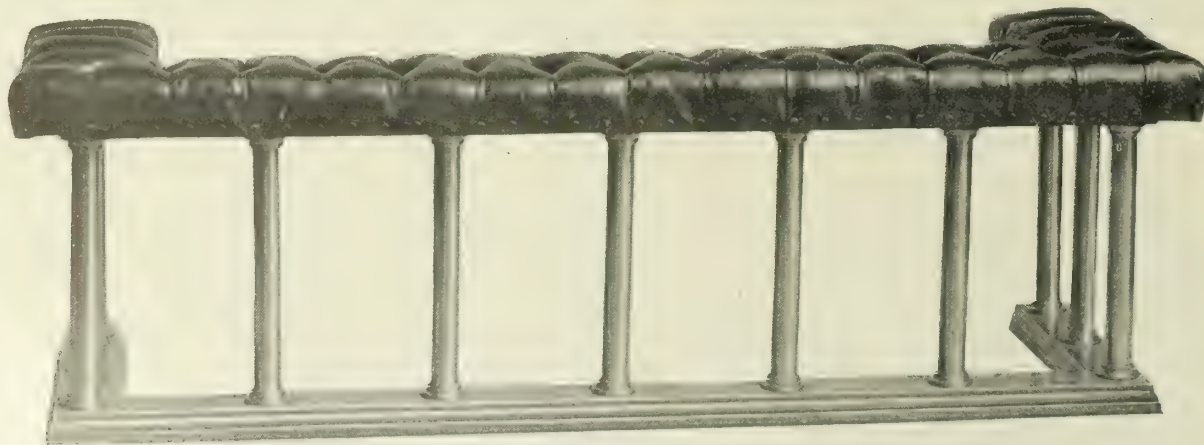
PRODUCTS.

We manufacture and import ANDIRONS, FRAMES, SEAT FENDERS, STANDARD FENDERS and FIRE SETS in all metals and all styles and periods; SCREENS, SMOKELESS GAS LOGS, etc.

MEDICINE CABINETS in Brass, Nickel-Plated, and in Non-Corrosive White Metal, in our standard patterns or to architects' designs.

FIREPLACE
FIXTURES.

Our Fireplace Fixtures of every kind are known for their refined taste of design and the high quality of their manufacture. The materials are of a superior grade and the execution is characterized by the highest skill obtainable. Special designs from architects executed with minutest care under personal supervision.

ELIZABETHAN BRONZE ANDIRONS
26½ inches highBRONZE ANDIRONS
32½ inches high

UPHOLSTERED SEAT FENDER

PORTFOLIO
OF DESIGNS.

We invite you to call at our Show Rooms or will send our representative with our portfolio of photographs, prices, etc., for your inspection.

DESCRIPTION
OF METAL
MEDICINE
CABINETS.

Our Metal Medicine Cabinets are made in all sizes. They are constructed with a heavy steel back, white porcelain enameled. Each cabinet is supplied with our own Special Shelf Supports, consisting of slotted uprights equipped with set screws which permit the shelves to be set at any desired height. (See illustration.) The standard depth of the cabinets is $4\frac{1}{2}$ inches, but they can be made deeper or shallower if necessary.

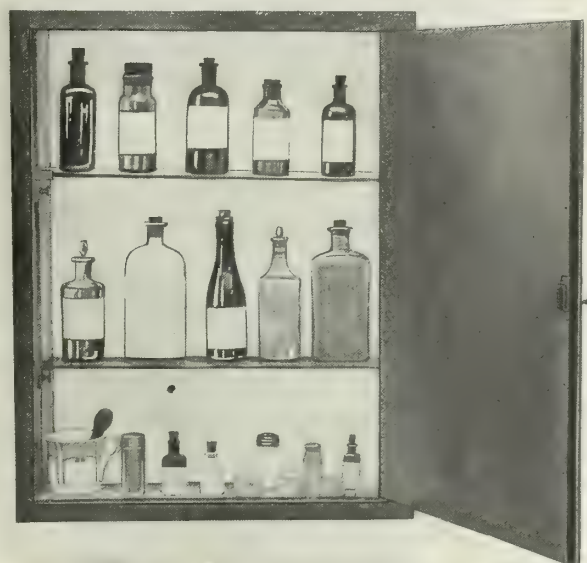
As the frame and door are made entirely of metal they will not shrink or bind, warp or crack. The interior corners being rounded, the cabinets can be easily cleaned and are perfectly sanitary.

The fronts of these Cabinets are fitted with a very fine grade of highly polished beveled French plate mirror.

The cabinets can be had from any of the Mantel and Tile Dealers. Owing to their peculiar construction they are easily installed.

CATALOGUE.

Write for Catalogue.



METAL MEDICINE CABINET, OPEN



PERSPECTIVE, SHOWING ADJUSTABLE
SHELF SUPPORTS



MIRROR FRONT OF CABINETS

KING MANTEL COMPANY

521-523 West Jackson Avenue
KNOXVILLE, TENN.

LONG DISTANCE TELEPHONE CONNECTION

CABLE ADDRESS, "KINGMANTEL"

PRODUCTS.

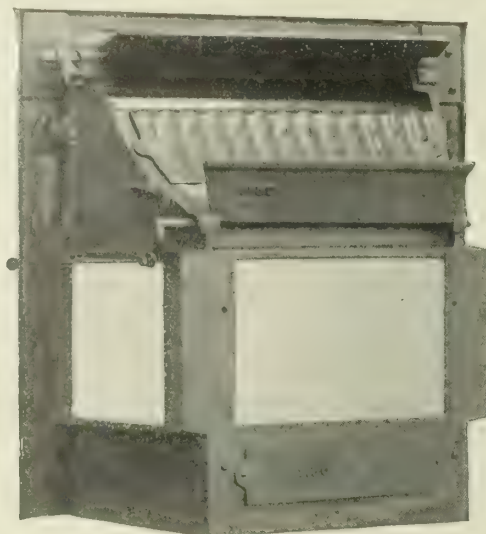
WOOD, BRICK, and TILE MANTELS, consisting of something like 250 stock designs in the various styles, Colonial, Craftsman, Mission, etc.; a large line of WOOD GRILLES in Fret-work, Colonnade, and other effects; ENCAUSTIC and ENAMELED TILE of all kinds and for every purpose; a complete line of FIREPLACE FIXTURES, which includes our famous "KING" MOUNTED GRATE, illustrated herein.

"KING" MOUNTED GRATE.

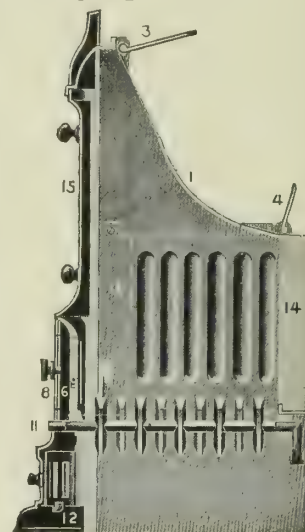
The "King" Mounted Grate is built practically in one piece, so as to be set in the fireplace just like a stove. It has double-draft dampers operated from the front of grate by knobs and rods; also, register slides in both fire front and ash screen, by means of which the fire can be regulated and controlled at all times. It has a shaking and dumping bottom.



Front View, Showing Summer Front. For Open View of Grate, see Mantel No. 747, on opposite page



Side and Rear View, showing Upper and Lower Dampers



Section

"KING" MOUNTED GRATE, NO. 3

ADVANTAGES.

The leading features of the "King" Mounted Grate, wherein it excels all others, are:

Its curved, corrugated top, which reflects the heat into the room. Improved method of operating upper damper (with thumb screw), which permits it to be opened any desired width without danger of dropping. Damper attachments are of malleable iron. Extra heavy grate bars. Back bar and trunnions are protected under back, preventing same from warping or being clogged with cinders. Double basket with extra wide space between allows ashes to fall behind the screen. The fire-pot is full-lined with fire tile to a height that will protect back from live coals. The shaker head is of malleable iron. The grate bottom, besides freeing itself from ashes when being operated, opens up the fire and does not jar the grate from position.

SIZES.

The "King" Grate is made in three sizes: Nos. 1, 2, and 3.

No. 1 size has fire-box 20 in. wide x 12 in. deep, and has frame with outside dimensions 24½ in. wide x 30½ in. high.

No. 2 grate has the same size fire-box as No. 1, but a wider frame, the outside measurements being 30½ in. wide x 30½ in. high.

No. 3 size (as shown here) is an extra large grate, with fire-box 24 in. wide and outside frame measurements of 30½ in. wide x 30½ in. high.

This grate is intended for very cold climates and where intense heat is desired. It is the heaviest grate of its kind made, weighing when boxed for shipment, 240 lbs. The "King" Mounted Grate may be used for burning either coal or wood, or even coke, if desired.

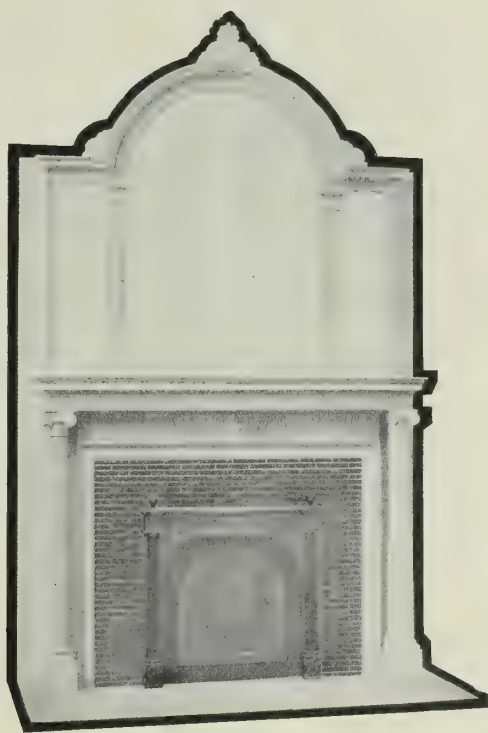
PRICES AND FINISHES.

No. 1 "King" Grate, boxed f. o. b. cars, Knoxville, Tenn., \$15.00

No. 2 "King" Grate, boxed f. o. b. cars, Knoxville, Tenn., 16.50

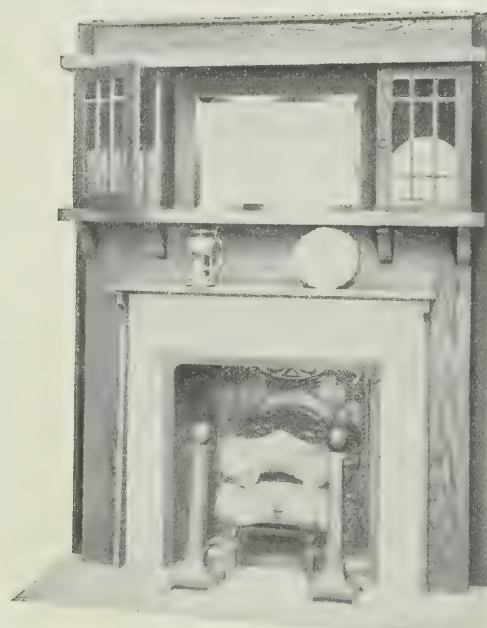
No. 3 "King" Grate, boxed f. o. b. cars, Knoxville, Tenn., 18.00

All prices include summer front, and the grates may be had in oxidized-copper, oxidized-brass, or wrought-iron finish, as preferred.



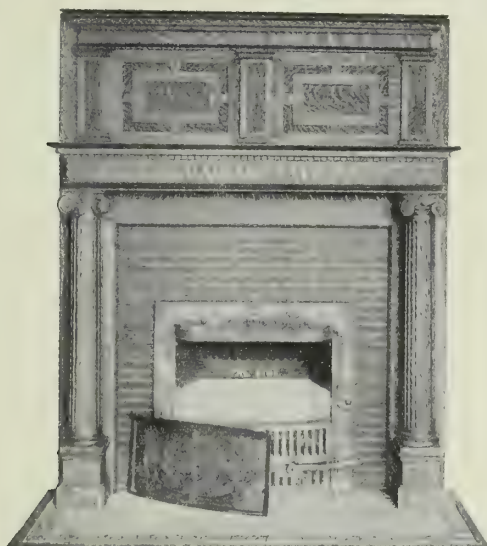
NO. 647. COLONIAL MANTEL

Height, 9 ft. 8 in. Width, 6 ft. Plain French Mirrors, one 36" x 50"; two 9" x 32". Opening in Mantel: Width, 48 in.; Height, 39 in. Tile Projection, 7 $\frac{1}{2}$ in. Price of Mantel only, Primed for Enamel, \$200



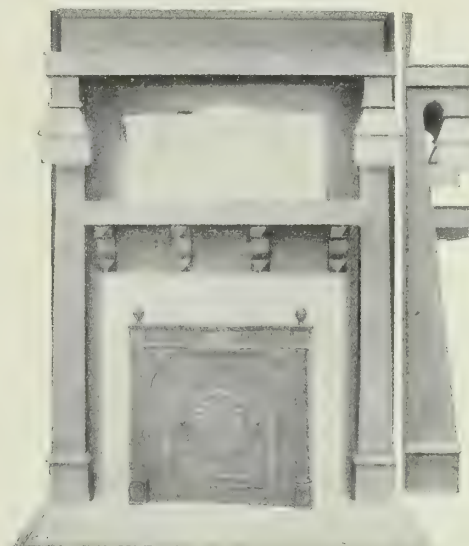
NO. 763. MISSION MANTEL

Height, 6 ft. 7 in. Width, 5 ft. Plain French Mirror, 18" x 24". Two Glass Doors, 9" x 16". Opening in Mantel: Width, 42 in.; Height, 39 in. Tile Projection, 3 $\frac{3}{8}$ in. Price of Mantel only, made of Oak, Mission Finishes, \$27.50



NO. 747. ARCHITECTURAL MANTEL

Height, 6 ft. 3 in. Width, 5 ft. Opening in Mantel: Width, 42 in.; Height, 42 in. Tile Projection, 2 $\frac{1}{2}$ in. Price of Mantel only, Quartered Oak, any finish, \$40



NO. 714. CRAFTSMAN MANTEL

Height, 7 ft. 2 in. Width, 5 ft. Plain French Mirror, 18" x 36". Opening in Mantel: Width, 42 in.; Height, 39 in. Tile Projection, 4 in. Price of Mantel only, Oak, Mission Finishes, \$60

REFERENCES.

We refer to any Bank, Agency, or any of our customers, of whom we have thousands throughout the United States, Canada, and Mexico. Names in your locality furnished when desired.

CO-OPERATIVE SERVICE.

We make a specialty of executing Mantel and Grille work from drawings or original designs of our customers. Submit sketches and details, and we will quote prices.

CATALOGUE.

We will gladly send our large Catalogue to those interested.

LORD & TAYLOR

Contractors for Interior Decoration

Corner Broadway and Twentieth Street

NEW YORK, N. Y.

PRODUCTS.

CARPETS, including HAND-WOVEN IRREGULAR CARPETS; RUGS, ORIENTAL and DOMESTIC; MATTINGS; LINOLEUMS; OIL CLOTHS.

HOUSEHOLD and DECORATIVE FURNITURE for Dining-room, Bedroom, Parlor, Library, Porch and Veranda; UPHOLSTERINGS; WINDOW-SHADES and AWNINGS.

LACE PANELS, EMBROIDERED MUSLINS, CURTAINS, PORTIÈRES, TAPESTRIES, and other DRAPERIES and HANGINGS.

INTERIOR DECORATIVE DEPART- MENTS.

In our Interior Decorative Departments are included those of Draperies, Portières, Hangings, Lace Curtains, Bed Sets, Embroidered Muslins, Upholsterings, Furniture, Bedsteads and Bedding. In these departments we carry at all times complete stocks of staple goods. Our department for Special Orders of draperies, hangings, etc., is thoroughly equipped to execute individual ideas or to follow the Period or Classical decorations.

WHOLE CARPETS.

In the weaving of a whole carpet, for use in rooms of irregular shape, the artistic is alone made possible; for it is here that a rug, however, elegant, will not only accentuate the irregularity of the floor shape but will be inappropriate and ill adapted for the place, since it will cover only a portion of the desired space. We specialize this feature of carpet-weaving, possessing exceptional facilities for the work. We are prepared to execute orders in qualities as follows: India and Turkish weaves, English Hand-Tufted, Scotch Chenille Axminster, and French Aubusson and Savonnerie. These carpets are seamless and are woven by hand. A conference with our artist will solve any problem you may encounter. These hand-woven, one-piece carpets are made in designs equal in effect to any to be found in regular shapes and sizes. The Firm's designer conforms to the other decorations employed, thus producing a perfect harmony. The hand-woven, one-piece carpets may, of course, be ordered for rooms of regular shape as well.

ORIENTAL RUGS.

Our Firm's representatives in the Orient are capable artists and men of discriminating tastes. Hence it is that there is consistent beauty in our large stock of rugs. We import these rugs continually, submitting suggestions to our agents as to predominating color desired when an importation is required for the filling of a special order. The care employed in our rug department is of greatest value to buyers of oriental rugs, since there is no line of floor coverings compelling greater care in purchasing. The attention we give to orders precludes the possibility of paying overvalue to unreliable, unscrupulous dealers.

FURNITURE.

We carry, in various styles, including Colonial, Chippendale, Sheraton, Louis XV, Louis XVI, Old English and Flanders, sets and pieces for dining-room, bedroom, parlor and library. Mission and Craftsman Furniture and Porch and Veranda Furniture are also handled extensively by us.

TAPESTRIES.

We are prepared to design fine Aubusson and Beauvais Tapestries and execute special orders for the same in size, design and color to conform to decoration of the room.

- LACES. In our Lace workroom we manufacture, to order, all such goods as panels, bed sets and curtains, in Point Venice, Filet Italian, Point d'Arab, Cluny, and like makes, to match all decorative schemes and in specific individual designs.
- BEDDING. Our Bedding Department is stocked with the output of our own workroom, the most hygienic conditions prevailing there.
- SHADES AND
AWNINGS. Our Shades and Awning Department is a most extensive and important branch of our manufacturing plant and we here execute contracts however extensive, the work being in the hands of skilful workmen.
- SERVICES
AND
FACILITIES. In the above described lines we design, contract and install completely, from individual pieces and sets to entire rooms and the whole of the furnishings, for the sundry apartments of residences, hotels, clubs, offices, theaters, churches, steamships, yachts, and of public and private buildings of every description.
- We assume contracts in all parts of the country and send out competent men from our Home Office to superintend the work of installation.
- Our facilities for the prompt execution of work are unsurpassed. Our close connection with the leading manufacturers of the United States, Europe and the Orient place at the command of our patrons the highest grade and greatest variety of merchandise for interior furnishings.
- TO
ARCHITECTS. Architects who have in their charge the decoration and furnishing of the residences, hotels and other buildings they are erecting will find the House of LORD & TAYLOR fully prepared to meet the manifold requirements of such commissions, either from stock or to special order.
- We prepare designs from architects' ideas or sketches for their approval, or carefully execute their own designs for decorations, hangings, floor coverings, furniture and fittings.
- Decorative Lace Panels for walls and windows of hotels, clubs and cafés, with emblematical designs, and special upholsterings in stuffs or leather are a specialty of our House.
- CO-OPERATIVE
SERVICE. We are pleased at all times to submit designs and estimates, with samples and specifications, for any orders in our various lines. Our experts and designers are at the service of our patrons for advice and suggestions on any subject connected with Decoration and Furnishing.
- GUARANTEE. The firm of LORD & TAYLOR is one of the oldest established and best known Mercantile Houses in New York City, with an enviable reputation for character and ability. In the particular line of Decoration and Interior Furnishings we have the honor of serving a clientele of the most select class, who demand the best in taste and quality. Our guarantee is all-embracing.

MANDEL BROTHERS

Decorators, Upholsterers, Furnishers

State Street, Madison Street, and Wabash Avenue

CHICAGO, ILL.

LONG DISTANCE TELEPHONE, EXCHANGE 10

PRODUCTS.

HOUSEHOLD FURNITURE, BANK FURNITURE, LIBRARY FURNITURE, BATTLESHIP FURNITURE, CHURCH FURNITURE, CLUB FURNITURE, HOTEL FURNITURE, COURT-HOUSE FURNITURE, DECORATIVE FURNITURE, RAILROAD STATION FURNITURE, SCHOOL FURNITURE, SPECIALLY DESIGNED FURNITURE, THEATER FURNITURE, and MIRRORS.

ORIENTAL RUGS, AMERICAN WOVEN RUGS, AUBUSSON TAPESTRY RUGS, HAND TUFTED RUGS, AUSTRIAN and GERMAN ART RUGS, and SCOTCH RUGS.

CARPETS: WILTON, BRUSSELS, BODY BRUSSELS; LINOLEUMS: CORK and INLAID; COCOA MATTINGS, COCOA DOOR-MATS, RUBBER MATTING, RUBBER DOOR-MATS, and BRASS NOSINGS.

CHINAWARE, GLASSWARE, CUSPIDORS, LAVATORY FITTINGS, CLOCKS.

MONOGRAM BED-SPREADS
MONOGRAM TOWELS, MONOGRAM
TABLE-COVERS, SHEETS, and PILLOW-CASES.

DECORATIONS, INTERIOR: For Theaters, Hotels, Churches, Clubs, Restaurants, Cafés, Offices, Hospitals, Residences, Apartments, Stores, Convents, Schools, Banks, Colleges, Court Houses, Public Buildings, Y. M. C. A. Buildings, and Ecclesiastical Buildings.

GLASS, STAINED and LEADED: For Court Houses, Restaurants, Cafés, Hotels, Offices, Clubs, Hospitals, Theaters, Churches, Public Buildings, Y. M. C. A. Buildings, Convents, Banks, Colleges, Apartment Buildings, and Ecclesiastical Institutions.

WINDOWS, MEMORIAL: For Hospitals, Churches, Public Buildings, Y. M. C. A. Buildings, Convents, Colleges, Ecclesiastical Buildings, and Mausoleums.

FURNISHINGS, INTERIOR: For Theaters, Hotels, Churches, Clubs, Restaurants, Cafés, Offices, Hospitals, Residences, Apartments, Stores, Convents, Schools, Banks, Colleges, Court Houses, Public Buildings, Y. M. C. A. Buildings, and Ecclesiastical Buildings.

LIGHTING FIXTURES: For Theaters, Hotels, Churches, Clubs, Restaurants, Cafés, Offices, Hospitals, Residences, Apartments, Colleges, Banks, Court Houses, Public Buildings, Y. M. C. A. Buildings, and Ecclesiastical Buildings.



ART GLASS MEMORIAL WINDOW

PRODUCTS

(CONTINUED).

DRAPERIES: For Theaters, Hotels, Churches, Clubs, Restaurants, Cafés, Offices, Hospitals, Residences, Apartments, Stores, Convents, Banks, Colleges, Court Houses, Public Buildings, Y. M. C. A. Buildings, and Ecclesiastical Buildings.

DOMES, ART and LEADED GLASS: For Theaters, Hotels, Clubs, Residences, Cafés, and Apartment Buildings.

GLASS, PLATED: For Furniture Tops.

ORNAMENTAL LAMPS, LIGHTING FIXTURES and METAL WORK: For Theaters, Hotels, Churches, Clubs, Restaurants, Cafés, Offices Hospitals, Residences, Apartments, Stores, Convents, Schools, Banks, Colleges, Court Houses, Public Buildings, Y. M. C. A. Buildings,

METAL BEDS: For Residences, Clubs, Institutions, Convents, Hotels, Hospitals, and Colleges.

FLOORS, PARQUETRY: For Theaters, Hotels, Churches, Clubs, Restaurants, Cafés, Offices, Hospitals, Residences, Apartments, Stores, Convents, Schools, Banks, Colleges, Court Houses, Public Buildings, Y. M. C. A. Buildings, and Ecclesiastical Buildings.

PAINTINGS, MURAL: For Theaters, Hotels, Churches, Clubs, Restaurants, Cafés, Offices, Hospitals, Residences, Apartments, Stores, Convents, Schools, Banks, Colleges, Court Houses, Public Buildings, Y. M. C. A. Buildings, and Ecclesiastical Buildings.

COVERINGS: For Walls of Theaters, Hotels, Churches, Clubs, Residences, Apartments, and Public Buildings.

LAMP and LAMP STANDS.

METAL WORK, ORNAMENTAL and BRONZE.

CURTAINS, LACE, SILK, COTTON and LINEN: For Residences, Cafés, Hotels, Offices, Restaurants, Hospitals, Theaters, Public Buildings, Y. M. C. A. Buildings, Convents, and Ecclesiastical Buildings.

INTERIOR
DECORATING.

This branch of our business is maintained at the highest standard, a fact demonstrated forcibly the past few years by the execution of numerous contracts for the decorating and complete furnishing of several large public institutions secured in competition with prominent, long-established decorating concerns in the United States.

WALL PAPER.

Our lines of Wall Paper comprise the best products of prominent European and American manufacturers.



MODERN WALL TREATMENT

ART GLASS.

This is a specialty in which the Mandel Artists have achieved high reputation.

FURNITURE.

We devote large floors and warehouses to furniture, carrying all the approved styles. We supply furniture for hotels, restaurants, clubs, public institutions, and private homes, at lowest prices. Hand-made and period furniture a specialty.

ORIENTAL CARPETS
AND RUGS.

We import on a vast scale, showing every species of Oriental weave.

CARPETS.

There is no difficulty in securing the quality and pattern best suited to a given interior.

TABLE

LINENS.

We enjoy exceptionally advantageous arrangements with foreign and domestic manufacturers for the supply of reliable merchandise for hotel and restaurant business.

THE MERRILL CORPORATION

MANUFACTURERS OF

"Merrill's" Patent Furniture

324 Dearborn Street

CHICAGO, ILL.

TELEPHONE, HARRISON 7167

DEMONSTRATION ROOMS AND BRANCH OFFICES

SALT LAKE CITY, UTAH, 33 W. South Third Street

IDAHO SPRINGS, COLO., 10 Soda Street

CHICAGO, ILL., Room 510, Monon Building

CHICAGO, ILL., Wabash Avenue, Window of the Alex. R.

Revell & Company Store

VANCOUVER, B. C., 1070 Haro Street

PRODUCTS AND SERVICES.

"MERRILL'S" PATENT FURNITURE, including BEDS, SIDEBOARDS, DRESSERS, BOOK-CASES, SAMPLE TABLES, DINING-TABLES, DISHES, PATENT GARBAGE PAILS, DRIERS, and COMBINATION SINKS.

Parties who incorporate a local Company and secure a lot can contract with us to erect, equip and furnish at cost plus a fixed profit. We accept our pay out of the income. Write for terms.

DESCRIPTION.

The Merrill Patents consist in mounting the ordinary, every-day furniture (we attempt nothing new in design) so that a room may be appropriately used for two or more purposes. Because the furniture is fastened at the back to revolving and swinging doors and is held clear of the floor we have it manufactured stronger and with strips at the back by which it is fastened to the doors.

ILLUSTRATIONS.

We give here actual photographs of one room when used (Fig. 1) as a living-room, (Fig. 2) as a bedroom, and (Fig. 3) as a dining-room. As easily and quickly as a child opens a door the change is made from one to the other.



FIG. 1. A Living-Room.



FIG. 2. A Bedroom



FIG. 3. A Dining-Room.

ADAPTATION OF ONE ROOM WITH "MERRILL'S" PATENT FURNITURE

ADVANTAGES.

A room with two hundred square feet of floor space with the furniture mounted gives the accommodations of six hundred square feet with the furniture divided among three rooms.

There is a saving of two rugs, the decorating of two rooms, and chairs, curtains, heating, light, and taxes.

COST.

For equal accommodations to the tenants with "Merrill's" Patent Furniture, there is a saving in the cost of land of 60 per cent, building of 40 per cent, decoration of 65 per cent, furniture of 35 per cent, heating of 50 per cent, lighting of 45 per cent, maintenance of 50 per cent.

PRICES.

The price of the furniture to mount as per Merrill Patents is the same as the old style of the same quality furniture.

The durability is increased several times. By mounting, it becomes a part of the building and outlasts several times the life of furniture that is moved in and out with every tenant.

The stationary sideboard outlasts the one moved every six months. There is as much reason for moving gas and plumbing fixtures with every tenant as there is furniture. "Merrill's" Patent Furniture is guaranteed to last as long as the plumbing, with half the cost of repairs.

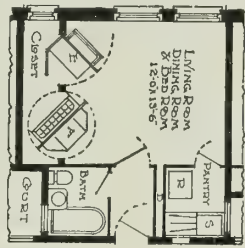


FIG. 4. 300 Square Feet

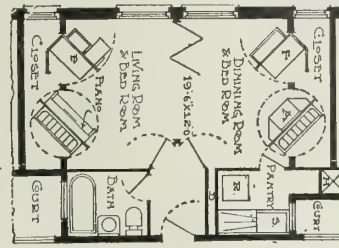


FIG. 5. 450 Square Feet

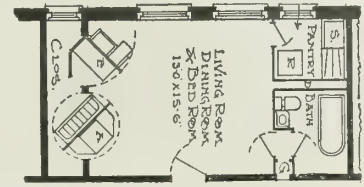


FIG. 6. 300 Square Feet

Corridor

FLOOR PLANS

FLOOR PLANS.

We give three very popular floor plans drawn to a scale of $\frac{1}{16}'' = 1$ foot.

Figs. 4 and 5 may be side by side and units in a scheme to use centering in reinforced-concrete construction over and over in many buildings; Fig. 4 taken as a unit and Fig. 5 a unit and a half.

We will send blue-prints of floors where excellent results have been attained. To accommodate four people Fig. 5 is a world beater.

Fig. 6 is for buildings where the space from the corridor to the outer wall is from 11 to 16 feet. No light-well is required, under any ordinance we know of, when the ceiling of the kitchenette is lowered 16 inches and light and air admitted to the bathroom.

RENTS.

The rents average from 4 to 6 cents per square foot per week, \$2.00 to \$3.00 per square foot per year. Buildings fitted with "Merrill's" Patent Apartments, situated in the choicest residence section of a city, pay a higher rate per square foot of floor space than the best office buildings of the same city. To date there has never been a vacancy of a "One-Room Apartment." Let us send you monthly income sheets for examination.

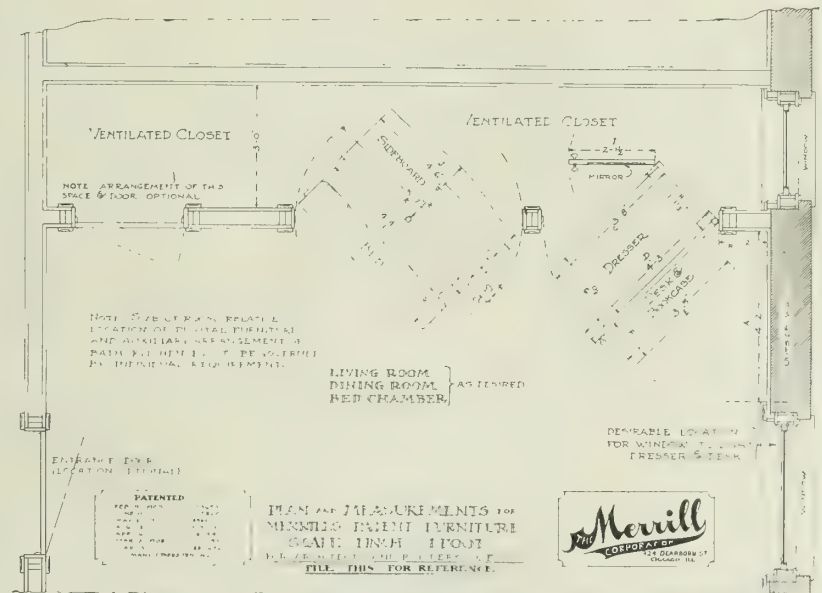
CO-OPERATIVE SERVICE.

We are pleased at all times to give suggestions.

Send us size of the lot, outlook and surroundings, and we will either prepare special preliminary plans or send a blue-print for a building on a similar size lot.

HOTELS.

Every hotel should have rooms fitted as offices by day and bedrooms by night for commercial men. Every sample room should have a set of the "Merrill's" Patent Furniture so the salesman may sleep in the same room. We have a special table for small sample rooms.



SAMPLE OF "MERRILL" FLOOR PLAN

MANSIONS.

We publish all the best floor plans of buildings designed to use our patent furniture, in a little paper called "The Mansions," which we send upon request.

UNIT SYSTEM FOR CONCRETE BUILDINGS.

With our Patent Furniture it is very practical to adopt a Unit System of Apartments by which any given unit adopted may be carried through many buildings, saving the cost of centering. The unit being for full accommodations for two people, a unit and a half giving equal accommodations for four people. We have them worked out in many illustrations and will furnish same upon request.

THE EMMEL CO.

MANUFACTURERS AND DESIGNERS OF

Architectural Ornamentation

61-81 Bristol Street
BOSTON, MASS.

TELEPHONE, TREMONT 203

FACTORY
BOSTON, MASS.

AGENCIES

SPRINGFIELD, MASS., F. W. EDWARDS, 73 Dwight Street

PHILADELPHIA, PA., HENRY C. ELDER, 711 Fidelity Building

PRODUCTS. THE EMMEL CO. are manufacturers and designers of ARCHITECTURAL ORNAMENTATION in PAPIER-MACHE, COMPO, PLASTER, CEMENT, STAFF, and STUCCO; also, do MODELING and WOOD CARVING.

DESCRIPTION. We have a large assortment of finished Plastic Ornaments and Mouldings of Papier-Maché, Compo, Staff, or Cement at our Boston office, and thousands of stock models from which we can make any style on short notice. We make Models and work up full-sized drawings from architects' sketches; also, do Wood Carving of all kinds; a mere suggestion being all that is necessary for us to work from.

ADAPTATION, CO-OPERATION, AND INSTALLATION. Our products are adapted for all classes of work, interior and exterior, and we are always glad to co-operate with architects in preparing designs for ornamentation in plastic materials or wood carvings. While we have men who make a specialty of setting this work, it may be done by any careful carpenter, mason, painter, paperhanger or other workman.

FACILITIES. We have every facility for executing and delivering all orders on short notice. We employ a large force of skilled workmen in every department, and with their years of training and experience they can execute the very best of work, with correctness of style, detail and artistic effects which can only be produced by pure craftsmanship.

TERRITORY. We are prepared to fill orders of any size in any part of the continent, by freight or express, as the urgency demands.

PRICES. Information relating to prices will be cheerfully given upon request. As we are called upon to execute all manner of designs in different material, etc., it is impossible here to give prices of our work.

REFERENCES. Our work has been used and specified by the leading architects of the country for many years, and we will most willingly refer you to any number of our clients, at any time, upon request.



Wood Carving



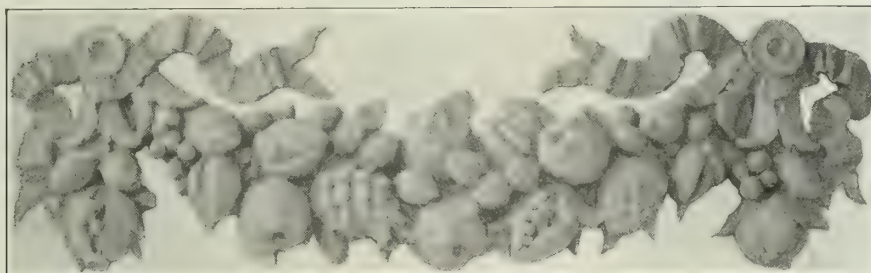
Stucco



Modeling and Papier-Maché



Model for Metal Casting



Plaster



Wood Carving

SPECIMENS OF WORK EXECUTED BY THE EMMEL CO.

FISCHER & JIROUCH

Decorative Sculptors

1008 Scovill Avenue, S. E.
CLEVELAND, OHIO

PRODUCTS.

We execute DECORATIVE ORNAMENTS in STUCCO, FIBROUS PLASTER, COMPO, PAPIER-MACHÉ and CEMENT, and make a specialty of WOOD CARVING and MODELING.

STOCK.

We carry a complete line of Stucco Ornaments and details made from exterior and interior composition and weather-proof materials in all styles and sizes.

FACILITIES.

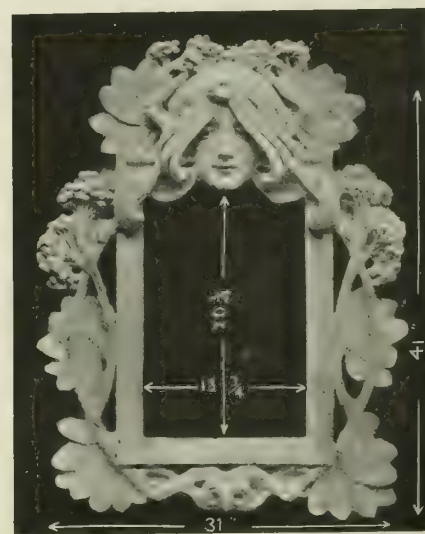
We are unrivaled in our technical resources for high-class decorative work, are equal to any demand, and prepared to accept and promptly execute orders of any style and size. We feel assured that we can meet any competition where quality as well as price is considered.

CATALOGUE.

Careful study has been taken and neither expense nor sacrifice has been spared to make our catalogue attractive and interesting as well as instructive to architects and others.

CO-OPERATIVE SERVICE.

We are pleased at any time to furnish architects and others with estimates or any other information they desire, and to that end we invite correspondence. Our complete illustrated catalogue sent upon request.



A FEW DESIGNS FROM OUR ILLUSTRATED CATALOGUE

CHECKING-LIST

FOR

SPECIFICATIONS AND ESTIMATES

ARRANGED WITH REFERENCE TO

"SWEET'S" INDEXED CATALOGUE OF BUILDING CONSTRUCTION

Second Edition, based on First Edition by DUNCAN M. ROBERTSON

Extensively Revised and Enlarged by

WM. BROKAW BAMFORD

A. M. Am. Soc. C. E., Architect

The function of a Checking List can be regarded from many points of view, and even among experts there will be some difference of opinion as to how far elaboration may be carried advisedly. It is only fair to Mr. Bamford to say that in revising the second edition of "SWEET'S" Checking List, he has been more controlled by the necessities of "SWEET'S" than by his own fundamental ideas of what a Checking List might be. The publishers of "SWEET'S" very naturally conceived the Checking List as primarily a part of a series of catalogues and as an instrument of reference that should connect specification work with the contents of this book. A highly elaborated, technical Checking List, useful as it no doubt would be, would go far beyond the purposes of this publication. The Checking List which follows will be found to be, we believe, of high service to those who make use of "SWEET'S."

EDITOR "SWEETS."

The arrangement for dividing this Checking List has been to group the work of the generally recognized main trades together. These are divided into the work of the separate sub-trades. There are numerous sub-trades who are more or less independent, but in practice they are usually sub-contractors of one of the main trades; their assignment here to main trades is more or less arbitrary, and in practice would be a matter of personal experience.

All the carpenter work will not be found under CARPENTER CONTRACTOR'S WORK, such as FORMS, under REINFORCED CONCRETE WORK, or CENTERS under MASON CONTRACTOR'S WORK, or ENCLOSING BUILDING, FENCES (temporary), FLOORS (temporary), SIDEWALKS, etc. (temporary), under GENERAL WORK. Nor will all the work of a particular kind like IRON, ELECTRICAL, PLUMBING, etc., be found under the division for the contractors for such kind of work; thus the distinction is drawn that the work under the heading is not all the carpenter work, but is all the work to be done by the carpenter. In the actual writing of a specification this distinction will not be as great as it may appear, as most carpenter work will naturally fall under the CARPENTER CONTRACTOR'S WORK, etc. It will be found in practice that there is certain work that it would be better to have installed under the direction of one contractor than of others. This division is largely a matter of experience and no hard and fast rule can be laid down.

CLASSIFICATION OF BUILDINGS.

Buildings, irrespective of the purpose for which they are to be used, can be divided broadly into five classes, typified by the kind of material in general forming the structural part of their construction.

- 1st. Full Framed
- 2nd. Part Framed
- 3rd. Mill Construction
- 4th. Semi-Fireproof or Fire Resisting
- 5th. Fireproof

The main points only for each class have been developed for this checking list. The difference between the semi-proof and fireproof buildings is impossible to briefly describe, as the difference is due largely to matters of detail in materials and construction rather than to the quality or kind of material used. Thus a building may be composed of non-burnable materials having terra cotta or concrete floors, metal partitions and protection of structural members; it may also have metal doors and windows with wire glass, and other so-called fire-proof materials. It has, however, been found by recent conflagrations or tests that such materials may not be thick enough or properly put together, than to do more than act as fire resisters, and can not be called fireproof materials, under the implied meaning that they will effectually protect the building from serious damage under actual fire conditions. Very few

buildings erected over five years ago can be fairly classed as fireproof, but should be termed as semi-fireproof or fire resisting. The true fireproof building is only now being evolved as a result largely of experience with materials in actual fires. The recent conflagrations of San Francisco, Baltimore, Rochester, Toronto, etc., have added materially to previous knowledge or assumptions.

FULL FRAMED BUILDINGS

Walls
frame
Floors
frame
Partitions
frame
Roofs
frame

PART FRAMED BUILDINGS

Walls
brick
concrete
stone
tile or terra cotta
Floors
frame
Partitions
frame
metal (see 5—19.4 Partitions)
plaster boards, etc. (see 5—15.3 Partitions)

Roofs
frame

MILL CONSTRUCTION BUILDINGS

Walls (exterior)
brick
concrete
stone
tile or terra cotta
Walls (interior)
to divide area in maximum units, with
fire doors to segregate fires
enclosing stairs or elevators
Floors and Interior Framing
heavy timber framing
plank flooring
Partitions
wood
semi-fireproof
Roofs
timber

SEMI-FIREPROOF OR FIRE-RESISTING BUILDINGS

NOTE—Buildings, especially those containing quantities of flammable material, should be divided by fireproof partitions into as small units as possible; corridors, stair enclosures, etc., should preferably be made fireproof if building contains many persons

Walls
 brick
 concrete
 stone
 steel skeleton, masonry filling
 tile or terra cotta

Floors
 concrete systems
 (see 5—5. Reinforced Concrete)
 (see 5—5.1 Floor Construction)
 terra cotta systems
 (see 5—14.7 Floor Construction)
 other systems
 brick arches
 stone arches
 heavy timber floors
 similar to mill construction

Partitions
 concrete systems
 (see 5—5. Reinforced Concrete)
 (see 5—15.3 Partitions)
 terra cotta systems
 (see 5—14.9 Partitions)
 other systems
 brick partitions
 stone partitions
 metal partitions
 (see 5—19.4 Partitions)
 structural steel partitions
 masonry filling

Roofs
 (see under Partitions above)

Means of egress
 fireproof construction of corridors and stair enclosures
 fire-resisting or fireproof doors to corridors and stair enclosures

Windows
 wood, metal-covered, wire glass
 all metal, wire glass

Shutters
 wood, metal-covered
 all metal

Auxiliary fire apparatus
 (see 24—0. Auxiliary Fire Apparatus)

FIREPROOF BUILDINGS

NOTE—No systems should be used that have not been tested by experience. All large quantities of interior finish, decoration, etc., should preferably be made, where practically possible, of fire-proof or fire-resisting material, unless built solid and backed up solidly by substantial masonry.

Walls
 brick
 concrete
 stone
 steel skeleton, masonry filling
 tile or terra cotta

Floors
 concrete systems
 (see 5—5. Reinforced Concrete)
 (see 5—15.1 Floor Construction)
 terra cotta systems
 (see 5—14.7 Floor Construction)
 other systems
 brick arches
 stone arches

Partitions
 concrete systems
 (see 5—5. Reinforced Concrete)
 (see 5—15.3 Partitions)

terra cotta
 (see 5—14.9 Partitions)
 other systems
 brick partitions
 stone partitions
 metal partitions
 (see 5—19.4 Partitions)
 structural steel partitions
 masonry filling

Roofs
 (see under Partitions above)

Means of Egress
 fireproof construction of corridors and stair-enclosures
 fire-resisting or fire-proof doors to corridors and stair-enclosures

Windows
 all metal—double, with wire glass
 wood—metal covered, if fireproof shutters are self-closing

Shutters
 wood—metal covered
 all metal

Auxiliary Fire Apparatus
 (see 24—0. Auxiliary Fire Apparatus)

PRESERVATION OF PUBLIC HEALTH AND SAFETY. Public authorities have promulgated regulations for the preservation of the public health and safety from loss of life. Insurance Authorities have regulations which are intended primarily to reduce insurance risks of losses to buildings by fire. The laws of the different public authorities and regulations of local insurance authorities differ greatly in detail and much in principal and must therefore be carefully studied for the particular jurisdiction in which buildings are to be erected. Public and Insurance Authorities are recently working more and more along similar lines as the risk of loss of life and loss to building and contents are reduced largely by the same expedients. These regulations are usually made with reference to the purposes for which the buildings are to be used and not as much as they should be with reference to the classification of buildings as above.

1st. PRESERVATION OF PUBLIC HEALTH

(see regulations of states and municipalities)
 reduce the chances for spread of disease
 regulations concerning plumbing and sanitation
 regulations concerning proper ventilation and light

2nd. FIRE PROTECTION AND PUBLIC SAFETY

To reduce the loss of life due to fires
 (see regulations of states and municipalities)
 increase facilities for rapid and safe exit
 reduce possibilities of suffocation from smoke
 increase facilities for segregating fires and extinguishing them
 reduce the possibilities of fires being transmitted from adjoining property
 reduce the amount of flammable material

To reduce the loss to buildings and contents due to fires
 (see regulations of Fire Insurance Authorities)
 (see regulations of states and municipalities)

reduce the amount of flammable material
 increase the facilities for segregating fires and extinguishing them
 reduce the possibilities of fires being transmitted from adjoining property

SPECIAL TYPES OF BUILDING AND EQUIPMENT. There are numerous buildings devoted to special purposes which require special features, not only in their planning and equipment, but also in the material used in their construction. The general requirements for building construction are not dependent upon the type of building but only on the class of construction, and therefore the scope of the main body of this checking list is general and of almost universal application. As the work of the individual architect relates to special types of buildings as well as to the matters of general construction, it has been thought advisable to make a beginning in the development of information pertinent to some of these types which is given in Part II.

The following are the usual branches or trades of contractors who undertake the erection, complete, of any of the various classes of buildings or make contracts for the complete work of any of the various main sub-divisions.

General Contractors
 Foundation Contractors
 Waterproofing Contractors
 Concrete and Reinforced Concrete Contractors
 Artificial Stone (exterior) Contractors
 Mason Contractors
 Cut Stone Contractors
 Terra Cotta Contractors
 Fireproofing (terra cotta) Contractors
 Fireproofing (concrete) Contractors
 Sheet Metal Contractors
 Roofing Contractors
 Furring and Lathing Contractors
 Plaster Contractors
 Artificial Marble Contractors
 Artificial Stone (interior) Contractors
 Paving Contractors
 Interior Marble Contractors
 Tile and Mosaic Contractors
 Structural Steel Contractors
 Ornamental Steel Contractors
 Brass and Bronze Contractors
 Carpenter Contractors
 Fire Resisting Work Contractors
 Hardware Contractors
 Painting and Finishing Contractors
 Plumbing Contractors
 Heating and Ventilating Contractors
 Electrical Contractors
 Drinking Water System Contractors
 Filtration Apparatus Contractors
 Water Softening Apparatus Contractors
 Refrigeration Plant Contractors
 Automatic Sprinkler System Contractors
 Mechanical Cleaning System Contractors
 Vault Contractors
 Elevator Contractors
 Lighting Fixture Contractors
 Interior Decoration Contractors
 Auxiliary Fire Apparatus Contractors
 Roads and Paving Contractors
 Sewerage Disposal Contractors
 Garbage Disposal Contractors
 Landscape Architecture and Gardening Contractors

SYNOPSIS

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1—0. MATTERS PRELIMINARY TO CONTRACTS

1—1. INVITATION FOR PROPOSALS

.1 AUTHORITY

Public
city
state
Private
corporate
individual

.2 FORM OF PROPOSAL

.3 QUALIFICATION OF BIDDERS

.4 BOND

.5 DAMAGE FOR DELAY

.6 DIRECTIONS TO BIDDERS

.7 DRAWINGS, ETC.

Examination of drawings
Obtaining drawings
sum to ensure return

.8 REJECTION OF BIDS

1—2. INFORMATION FOR BIDDERS

Blanks for bids
Withdrawal of bid
No recapitulation of work
Proposals in sealed envelope—Where delivered
No modification permitted
Returning drawings
Additional information required by bidders

.1 INSPECTION AND CONDITIONS OF SITE

information peculiar to site and unusual features
Material on premises which can be used
Water supply for building purposes
Accessibility to railroad
Difficulty in getting labor or materials

.2 SAMPLES

.3 RIGHT TO REJECT PROPOSALS

1—3. PROPOSAL

1—4. BOND ON PROPOSAL

2—0. ARTICLES OF AGREEMENT (OR SO-CALLED CONTRACT)

2—1. AGREEMENT

Time for completion
Damages for delay
Amount to be paid by owner
Conditions of payment
Definition of "the Architect"

2—2. SCHEDULES OF CONDITIONS OF CONTRACT

.1 DRAWINGS AND SPECIFICATIONS

.2 CONTRACTOR TO PROVIDE EVERYTHING NECESSARY

.3 COPIES OF DRAWINGS AND SPECIFICATIONS

.4 CONFORM TO LAWS, REGULATIONS, ETC.

.5 SETTING OUT WORK

.6 FOREMAN

.7 ASSIGNMENT OF CONTRACT

.8 WORK BY OTHER CONTRACTORS

.9 MATERIALS, ETC. TO CONFORM TO SPECIFICATION

.10 DISMISSAL OF WORKMEN

.11 ACCESS TO WORK

.12 CLEARING OF WORK

.13 WORK TO BE OPENED UP

.14 REMOVAL OF WORK

.15 DEFECTIVE WORK

.16 COPY OF QUANTITIES, ETC.

.17 VARIATION AND EXTRAS

.18 PRICES FOR EXTRAS

By estimate and acceptance in a lump sum
By unit prices
By net cost
By cost, plus a lump sum

.19 DAMAGE TO PERSONS AND PROPERTY

.20 DAMAGE TO WORK

.21 PATENT INFRINGEMENT, ETC.

.22 INSURANCE

.23 DAMAGE FOR DELAY

.24 EXTENSION OF TIME

.25 SUSPENSION OF WORK BY CONTRACTOR

.26 TERMINATION OF CONTRACT BY OWNER

.27 NET COST

.28 PROVISIONAL SUMS

.29 SUB-CONTRACTORS

.30 PAYMENT AND CERTIFICATE

.31 LIENS

.32 UNFIXED MATERIALS

.33 TERMINATION OF CONTRACT BY CONTRACTOR

.34 ARBITRATION

.35 DAMAGES FOR SUBMITTING TO ARBITRATION

2—3. BOND FOR FULFILMENT OF CONTRACT

3—0. GENERAL CONDITIONS

Checking document
Doing work in freezing weather
Architect's approval
Materials and workmanship

.1 CONTEMPLATED WORK

Material supplied by owner
Progress of various parts of work

.2 CONTRACT DOCUMENTS

.3 DEFINITIONS

"Approved"
"Best"
"Net cost"
"Provide"
"Provisional amount"
"Neat lines"
"Unit prices"

.4 DRAWINGS

Shop and setting drawings
conform to architect's drawings and specifications
conform to measurements at building
number of copies to architect
Models or templates

.5 FIRES, SMOKING

Only permitted under proper safeguards approved by Architect

.6 IMPERFECT CONSTRUCTION

.7 IMPERFECT DESIGN

.8 LINES AND LEVELS

Conform to architects drawings and owner's survey
Contractor responsible for accuracy
Batten boards
Surveyor's certificate after foundations completed

.9 MEASURING WORK

To insure proper execution of subsequent work
To assist architect in making his drawings

.11 NOTIFYING ARCHITECT

Concerning conditions of site, soil, various portion of work proposed work
laws and ordinances governing work

.12 OVERLOADING STRUCTURE

.13 REPORTS TO ARCHITECT

Status of work at building, and in shop

.14 SIGNS

Only by written permission

.15 STORAGE LIMITS

Defined by architect

4—0. GENERAL WORK

CLEANING WORK

Interior
Exterior
Diluted acid and water
Washes
Clean water and hay to remove paint smell
Scrub floors, wash windows

CUTTING AND PATCHING

General contractor supervise cutting and patching
Each trade cuts their own work for proper installation of other trades
Each trade cuts all work to install their own work

No excessive cutting without permission
Must not endanger stability of structure

PROTECTION OF WORK

Trees, shrubs
Landscape features
Roofs and skylights of adjoining buildings
Protection of plaster walls, etc. by burlap

RUBBISH

Each trade cleans up own rubbish
General contractor cleans all rubbish

SCAFFOLDING, ETC.

Enclosed outside scaffolding

.1 ELEVATOR, (TEMPORARY)

.2 ENCLOSING BUILDING, (TEMPORARY)

.3 FENCES, (TEMPORARY)

Closed fences
Open fences

.4 FLOORS, (TEMPORARY)

.5 HEATING, (TEMPORARY)

.6 LIGHTING, (TEMPORARY)

.7 OFFICES, ETC.

Desk, table, cabinet
Washstand, stove, lights
Telephone
free for local messages for all trades

.8 OVERTIME WORK.

.9 PARTITIONS, ETC., (TEMPORARY)

.11 PHOTOGRAPHS

Showing progress of work
Showing details of construction

.12 PROTECTION OF TREES, ETC.

.13 PUMPING, ETC.

.14 SANITARY CONVENIENCES

.15 SHEDS, (TEMPORARY)

.16 SIDEWALKS, (TEMPORARY)

Along streets
Shed over
Enclosed passageways

.17 STAIRWAYS, (TEMPORARY)

.18 WATCHMAN

4—I. WORK PRELIMINARY TO CONSTRUCTION

.1 BORINGS, ETC.

System
pipe and water jet
drill and core
Samples from borings
Borings made by owner
Borings made by contractor, responsibility for conditions encountered

.2 CARRYING CAPACITY OF SOIL

Tests to determine carrying capacity of soil
test pits
test piles
(see 4—1.1 Borings)
test loads

.3 CONTOUR MAP

Made by owner

Made by contractor; responsibility for conditions encountered

.4 LAYING OUT WORK

(See 3—0.8 Lines and Levels)

4—2. WRECKING AND CLEARING SITE

Tearing down buildings, etc.

Removal of rubbish and materials

Materials reserved by owner

Removing buildings

Sprinkling work

Bracing adjoining work

Protecting adjoining work

Moving fire hydrants, lamp posts, etc.

Grubbing up old foundations, etc.

Protecting trees, shrubs, etc.

Clearing up preparatory to excavation

Removing trees and grubbing up site

Temporary construction roads

4—3. EXCAVATION, ETC.

Material excavated

assume as shown by borings

extra for fair and just additional expense

classification of excavated material

Excavation required

to complete all work

to properly waterproof outside of walls

boiler foundations

pipe trenches, drains

machinery foundations

yard walls

retaining walls

wells

cisterns

sidewalks

paths

roadways

sewer main

water main

gas main

electrical mains

Extra excavation

price per cubic yard

Storing excavated material

Removal of excavated material

.1 PUMPING, ETC.

Electric, hand, steam

maintained by whom

Protecting foundations of adjoining buildings during pumping

Springs or running water drainage, diverting

.2 SHEET PILING AND SHORING

Wood

Steel

interlocking

Driving, bracing, drawing

method and apparatus

4—4. FILLING AND GRADING

Back filling

Old excavations near and below new work

Broken stone drain around walls

Gravel drain

Tile drain

Top soil

.1 GRADING

Terraces, etc.

Walks, roads

Material on premises

Surplus material

Top soil

.2 SODDING

Grass sod from property

Grass sod obtained elsewhere

Preparing ground, sowing seed, fertilizing

5—0. MASON CONTRACTOR'S WORK

(See 2—2. Schedule of Conditions of Contract)

(See 3—0. General Conditions)

(See 4—0. General Work)

Contemplated work

CENTRES

Construction

Setting

Striking

CUTTING AND PATCHING

Responsibility for cutting and patching

Cutting and patching done by whom

each trade its own work for all other trades

each trade all work to install its own work

Excessive cutting not permitted

5—I. FOUNDATION WORK

Laying out building

(see 3—0.8 Lines and Levels)

(See 4—1.2 Tests to Determine Carrying Capacity of Soil)

Allowable bearing pressure on soil

Inspecting excavations before starting footings

.1 FOOTINGS ON FIRM MATERIALS

Concrete (see 5—4.5 Footings)

Stone (see 5—11.4 Footings)

Brick (see 5—8.11 Walls, Piers, etc.)

Granite bearing stones (see 5—12.3 Bearing Stones)

Structural steel footings (see 6—1.7 Foundation Work)

Level of footings, below frost line

.2 FOOTINGS ON COMPRESSIBLE MATERIALS

Bulkheads

construction, materials

method of sinking

Caissons

construction, materials

method of sinking

Coffer-dams

construction, materials

method of sinking

Cribs

construction, materials

method of sinking

Grillage

reinforced concrete

structural steel

Piling

construction, materials

method of sinking

kinds of piling

concrete piles

compressor systems

disk piles

guide or short piles

metal or screw piles

sand piles

test piles

wood piles

Extra footings

price for different footings than contemplated

.3 FOUNDATIONS

Brick (see 5—8.16 Walls, Piers, etc.)

Concrete (see 4—5.6 Foundations)

Reinforced concrete (see 5—5. Reinforced Concrete Work)

Stone (see 5—11.8 Walls, Piers, etc.)

Structural steel (see 6—1.7 Foundation Work)

Extra foundations

price per cubic yard

.4 SUB-DRAINAGE**.5 UNDERPINNING**

Materials

Method

blocks, wedges

piers or walls

caissons or pipe method

Repairing damage to adjoining property

Supporting present work by needles, blocks, jacks, etc.

5—2. WATERPROOFING AND DAMP-PROOFING

Methods

bituminous

waterproofing paints and compounds

paraffine waterproofing

cement waterproofing compounds

Warranty

Water level

pressure system

non-pressure system

Sub soil drainage

.1 INSTALLATION

What to be waterproofed

footings, walls and piers below basement

sidewalk, arches, vaults

pits, trenches

area walls

machinery foundations

grillage and column bases

copper pans under column bases

under and around boilers, smoke flue and places subject to heat

Carrying waterproofing on outside walls

Carrying waterproofing on independent walls

Waterproofing pipes, etc. through walls

Waterproofing entrance steps

Waterproofing toilet room floors

.2 PREPARATION FOR WATER-PROOFING

Dry surface

Smooth surface

plastering smooth

Independent wall to receive waterproofing

.3 PROTECTION OF WATERPROOFING

By masonry walls

By cement coating

Repairing damage

.4 WORKMANSHIP AND MATERIALS**FELT**

Brand

Make

Quality

Detailed specification for

Weight per 100 sq. ft.

PITCH

Coal tar

straight run pitch

softening point

melting point

specific gravity of distillate oils

Natural asphalt

quality

proportion of ingredients

solubility

loss by heat

WORKMANSHIP

Number of layers of felt

Method of installation

Protection of work after installation

5—3. MORTAR AND CONCRETE CEMENT

Method for packing cement

casks, bags, paper and burlap

Sufficient quantity of cement to prevent delay by testing

Notify architect of delivery at building

WARRANTY

- Requirements to be fulfilled for testing, standard requirements Am. Soc. C. E.
- for cements (except tensile strength), standard requirements of Am. Soc. for Testing Materials

TESTING

- By architect
- By independent laboratory
- Standard requirements Am. Soc. C. E. for Testing Materials

PORTLAND CEMENT

- Tensile strength
- Standard Requirements of Am. Soc. for Testing Materials

NON-STAINING CEMENT

- Tensile strength
- Specific gravity
- Standard Requirements of Am. Soc. for Testing Materials

ROSENDALE CEMENT

- Tensile strength
- Standard Requirements of Am. Soc. for Testing Materials

PUZZOLAN CEMENT

- Tensile strength
- Other requirements

DAMAGED MATERIAL

- Rejected even if passed tests

APPROVED CEMENTS

- Brands approved if fulfilling requirements

LIME

- Finely ground
- Fresh burned
- Slacking, screening
- Time before using

HAIR AND FIBRE

- Quality, requirements

SAND AND AGGREGATE**SAND**

- Fresh water sand
- White sand
- Sand on premises
- Marble dust
- Stone screenings
- Clean and sharp, free from impurities
- Volume of silt
- Fineness and percentage of voids

AGGREGATE—STONE

- Granite
- Trap rock
- Other stone
- Size, other requirements

AGGREGATE—GRAVEL

- Clean
- Size, other requirements
- Gravel on premises

AGGREGATE—SLAG

- Requirements

AGGREGATE—CINDERS

- Requirements

WATER

- Clean, free from acid or strong alkalis, salts or other injurious minerals

.1 CEMENT, MORTAR, ETC.

- Kiln dried and machine mixed
- Mixed on premises
- Measuring ingredients
 - loose by volume, in box of uniform capacity
 - by weight
- Mixing—method
- Maximum time for using after mixing rettempering not permitted
- Proportions for mortar
 - Portland cement mortar
 - Rosendale cement mortar
 - lime and Portland cement mortar
 - lime and Rosendale cement mortar
 - lime mortar
 - non-staining cement mortar

grout

parging

Coloring matter for mortar

.2 CONCRETE

- Measuring
 - automatic measuring devices
 - by hand
- Heating materials in cold weather
- Wetting materials in hot weather

PROPORTIONS

- Percentage of voids to fills

MIXING

- Machine mixing
- Hand mixing

WATERPROOF CONCRETE**PLACING CONCRETE**

- Thickness of courses
- Prevent injury to material in place
- Ramming
- Trenches
 - strength
 - tightness
 - cleaning
- steam jet

Maximum time for deposit after addition of water

Temperature for stopping work

Protection of work

Cleaning surface of work in place before depositing new work

PREPARING SURFACE OF CONCRETE WHICH HAS SET

- By grooving surface $\frac{1}{4}$ in. deep and using cement paste
- Liquids for roughening surface then using grout and cement paste

REMOVING FORMS, ETC.

When permitted

5—4. CONCRETE WORK

(See 5—3. Mortar and Concrete)

Uses for concrete

.1 FENCES

- (See 5—5.2 Forms)
- (See 5—5.2 Surface Finish)

.2 FLOOR CONSTRUCTION

(See 5—15.1 Floor Construction)

.3 FLOOR FILLING

- For wooden construction, etc.
- For masonry construction
- Hollow tile filling, to lighten thick fills

FILLING UNDER MASONRY FLOORS

- Proportion and thickness
- Sand cushion
- Expansion joint
- Wearing surface

FILLING UNDER WOOD FLOORS

- Proportion and thickness

ROOF FILLING

- Proportion and thickness

.4 FLOORS—CEMENT

Location

FOUNDATION

- Proportion of materials and thickness
- Waterproofing
 - foundation for
 - safety coat on top of
- Reinforcement in floors

WEARING SURFACE

- Proportions of materials and thickness
- Pitching to cesspools, etc.
- Maximum time between mixing of base and floating wearing surface
- Blocking off wearing surface
- Coloring wearing surface
- Finish of wearing surface
 - smooth
 - acid treatment
 - sand treatment
- Protecting work
- Keeping moist

BASE

Sanitary

PLINTHS**.5 FOOTINGS**

- Size where not shown must be sufficient to properly distribute loads
- Preparations of materials
- Underpinning adjoining property
- Filling around grillage

.6 FOUNDATIONS

- (See 5—1. Foundation Work)
- Concrete piles
- Concrete walls
- Flag staff foundations
- Machinery foundations
 - anchors for machinery
- Boiler foundations
- Protection for waterproofing

.7 PROTECTION OF STRUCTURAL WORK

(See 5—15.4 Protection of Structural Work)

.8 MISCELLANEOUS CONCRETE WORK

- Coping for walls
- Ventilating ducts in basement
- Pipe subways
- Sewers and pipes

.9 RETAINING WALLS**.11 SUMPS, ETC.**

- Cisterns
- Wells
- Cesspools
- Manholes
- Tanks

.12 WALKS, CEMENT

Where

FOUNDATION

- For soft or spongy places
- For fills
- For firm material
- Slope towards curb
- Drainage under foundations
- Materials of foundations
- Thickness of foundations
- Forms
- Reinforcing slabs larger than 36 sq. ft.

WEARING SURFACE

- Thickness
- Blocking off
- Pitch
- Finish of surface
 - smooth
 - rough
 - acid finish
 - sand treatment
 - coloring wearing surface

WARRANTY

Length of time

CURB

- Size, joints
- Steel edge along corners
- Drainage of foundation

GUTTERS

- Sizes and jointings
- Pitch—to what

.13 WALLS

- Forms
 - (see 5—5.2 Forms)
- Surface finish
 - (see 5—5.2 Surface Finish)
- Protection for waterproofing
- Retaining walls

5—5. REINFORCED CONCRETE WORK

- Uses for
- Systems
 - monolithic
 - unit construction

DRAWINGS

Submitted by contractor

TESTS

- Live load for test
- Allowable deflection

.1 MATERIALS

Mixing, handling, etc.
 (see 5—3. Mortar and Concrete)
 Proportion of materials
 Waterproof concrete
 Types of reinforcement
 plain and deformed bars
 truss and stirrup attachments
 unit frame systems
 wire cloth and expanded metal
 Systems and types of construction
 American system
 Columbian system
 Cummings system
 expanded metal systems
 Faber system
 Gabriel system
 Hennebique
 Johnson bar system
 Kahn bar system
 Merrick system
 Mushroom system
 "M" system
 round bar systems
 structural steel systems
 Visintini system

STEEL

Ultimate strength
 Elastic limit
 Elongation
 Requirements similar to structural steel
 (see 6—0. Structural Steel Work)
 Cleaning steel
 Steel not to be painted

WATERPROOFING

(See 5—2. Waterproofing)

.2 WORKMANSHIP AND CONSTRUCTION

Requirements to conform to 5—3. Mortar and Concrete

CLEANING FORMS

Steam jet

FINISHED SURFACES

Straight and true, all jambs, arrises, moulded work, etc.

Beveled angles

PROTECTION**JOINTS****REINFORCEMENT**

Installation

SPLICES

Where permitted
 Length of splice
 Use of splice bar
 Largest diameter of section
 Connection to columns, etc.

SECURING REINFORCEMENT

Method, materials

PROTECTING REINFORCEMENT

Thickness of concrete outside of reinforcement
 for floor slabs
 for partitions or walls
 for beams
 for girders and columns
 for footings

COLUMN REINFORCEMENT**OPENINGS IN FLOORS AND WALLS****PROVISION FOR PIPES, ETC.****STAIR TREADS**

Hard and soft steel
 Dovetailed brass
 Carborundum
 Lead and steel
 Rubber

PARTITIONS

(See 5—15.3 Partitions)

ANCHORAGES, ETC.**MACHINERY ANCHORS, ETC.**

Furnished by owner
 Furnished by contractor

STRUCTURAL ANCHORS

Columns, beams, etc.
 Terra cotta
 Cast concrete trimmings and facings
 Brick facing, etc.
 To secure cornice

FORMS**CONSTRUCTION****REMOVAL OF FORMS****OILING FORMS****CHAMPFERING EDGES****CUTTING RODS, etc. WHERE EXPOSED****SURFACE FINISH**

Interior finish
 Floor finish
 Exterior finish
 Kind of finish
 washed
 dressed
 tooled
 sand
 sand blast
 rough
 pebble dash
 granite
 lime stone
 gravel
 sand grit
 Moulded work
 finish

.3 SPECIAL WORK

Retaining walls
 Slabs for vent ducts in basement
 Sidewalks
 Protection for waterproofing
 Roof construction
 Floor construction
 Walls
 (see 5—8.16 Common Brick Work)
 Partitions
 (See 5—15.3 Partitions)
 Fences
 Chimney
 Machinery foundations
 anchors for machinery

5—6. ARTIFICIAL STONE WORK (EXTERIOR)**5—7. MASON'S IRON WORK**

Setting and building in
 Requirements for material to conform to
 6—0. Structural and Ornamental Iron
 Work to be set
 coal hole frame in sidewalk
 coal door in sidewalk
 manhole frame in sidewalk
 cesspools and covers in floors
 bearing plates under beams, girders, etc.
 sockets in sidewalk for canopy, etc.
 ash drop for fireplace
 garbage closet
 coal chute and window
 window cleaner's device
 (see 8—13.2 Window Cleaner's Device)

Work to be furnished and set anchors

(see anchors required under 5—8. Common Brick Work)
 (see anchors required under 5—9. Face Brick Work)
 (see anchors required under 5—11. Rubble Stone Masonry)
 (see anchors required under 5—12. Cut Stone Masonry)
 (see anchors required under 5—13. Ornamental Terra Cotta)

anchors for machinery
 kinds of anchors
 box and hoop
 screw, shear, star

clamps, rods, bolts, straps
 pipe sleeves
 water
 steam
 electric
 gas pipes
 location of sleeves
 waterproofing of sleeves
 wall plugs

5—8. COMMON BRICK WORK**Kinds of brick**

clay
 clinker
 sand lime
 sand stone
 shale

Methods of manufacture

dry clay
 hand moulded
 hydraulic-pressed
 machine moulded
 repressed
 sand struck
 slop moulded
 soft mud
 stiff mud
 wire cut

Brand and make

Burning, hardness, soundness

Tests for brick

Mortar for brick work

Filling joints**Grouting**

Backing up lime stone, etc.

Wetting brick before laying

Laying brick, plumb, level and true

Bonding

Bedding in full bed of mortar

Pushing brick into place

Thickness of joints

Carrying up work evenly and at regular stages

Jointing

face work

where covered with waterproofing, etc.
 work to be plastered

Sand joints

Staging both sides of wall for laying brick

Stopping work when temperature is below 28° Fahr.

Protecting work

Frozen materials

.1 CESSPOOLS, ETC.

Caps for cesspools
 Manholes for sub-soil drains
 Clean-outs for plumbing
 Sumps
 Drains
 Catch basins
 Wells
 Cisterns
 Trap boxes

.2 CHIMNEYS, FLUES AND FIRE-PLACES

Don't build on floor or woodwork
 Corbeling out from wall
 number of courses

BOILER FLUE LINING

Double walls
 Fire brick

SMOKESTACK

Double walls
 Fire brick
 Custodi's system
 Steel stack
 Tall independent chimneys
 Extending chimneys of adjoining property

Chimney caps

FLUES

Ventilating
 Fireplaces

- Ash and clean-out doors
- Frames for smoke-pipe
- Thimbles
- Anchors and supports
- FLUE LINING**
 - Terra cotta pipe
 - Steel lining
 - Fire brick
 - Underground flue
- FIREPLACES**
 - Brick throats
 - Arched supports
 - Iron throats with ratchet device
 - Fire brick lining
 - filling solidly behind facings with masonry, etc.
 - Arches under hearths and fireplaces
 - Ash drop
- FIREPLACE ACCESSORIES**
(See 10—6.5 Fireplace Accessories)
- .3 CHUTE**
 - Ash
 - Clothes
 - Coal
 - Garbage
 - Manure
- .4 FENCE**
- .5 FILLING BETWEEN STUDS**
 - Exterior wooden walls
 - Interior wooden walls
 - Thickness of filling
 - Mortar
- .6 FIRE STOPS**
 - Exterior walls
 - Interior walls
 - Drop girths
 - Girders
 - Partition caps
 - Sills
 - Wall plates
 - Between roof plates and roofing
 - Thickness of stops
 - Mortar
 - Filling between wall and nearest beam
 - brick corbels
 - concrete
 - asbestos fibre, etc.
- .7 FLOOR ARCHES**
 - For buildings more than 100 ft. in height (N. Y. Law)
 - For buildings less than 100 ft. in height (N. Y. Law)
- .8 PARTITIONS**
 - Brick between partition framing, etc.
 - Encasing columns
- .9 PAVING**
(See 5—25. Paving)
- FLOORS**
 - In basement
 - Under boilers
 - Yards, areas, etc.
 - Method of laying
- WALKS**
 - Curbing
- YARDS**
- .11 PROTECTION OF STRUCTURAL WORK**
(See 5—14.11 Protection of Structural Work)
- .12 RECEIVING BASINS**
- .13 RETAINING WALLS**
- .14 TRENCHES**
 - For heating and hot water pipes under floors
 - Thickness of walls
 - Cement bottoms
 - Metal cover plates
- .15 WALKS**
(See 5—8.9 Paving)
- .16 WALLS, PIERS, ETC.**
 - Start and finish with header course
 - Mortar

- BONDING**
 - Backing up face work
 - diagonal headers
 - splitting face brick and bonding with continuous row of headers
 - metal ties
 - Slip joints
 - Racking for future bonding
 - Laying face brick at the same time as backing
- ANCHORS**
 - Box
 - Hook
 - Screw
 - Spear
 - Star
 - Clamps, rods, bolts, straps
- BRACE WALLS DURING ERECTION**
- HOLLOW BRICK FURRING**
- DAMP COURSE**
 - Slate
 - Lead
 - Felt
 - Waterproof cement
 - Protecting damp course
- VENTILATING OPENINGS**
- CORBELS**
 - Chimney breasts
 - Cornices
 - To carry fireproof floors
 - For wood floors
- PIERS**
- CHASES**
 - Plumbing
 - Heating pipes
 - Electrical work
 - Ventilating flues
 - Filling with masonry at floor levels
 - Maximum depth
 - Maximum horizontal length
 - Maximum aggregate area compared to solid wall on story
 - Chases to be at least 6 ft. apart or from other openings
- BEARING PLATES**
- WALL PLUGS**
 - Wood
 - Metal
- WORK BUILT IN WALLS**
(See 5—7. Masons Iron Work)
- Frames for direct and indirect heating system
- Shutter eyes
- Timbers for structural iron work
- Window cleaners' device
- DAMP-PROOFING**
 - Cement
 - Felt
- (see 5—2. Waterproofing and Damp-proofing)
- ROOF SUPPORTS**
 - Partitions to under side of roof
- POINTING FRAMES, ETC.**
 - Setting and bedding frames
 - Removing beads and caulking
 - To make weather-tight
- BRICK WINDOW SILLS**
- HOLLOW WALLS**
 - Exterior
 - Vault
- WALLS OF ADJOINING BUILDINGS**
- PARTY WALLS**
- BONDING OF PIERS**
 - Steel plates
 - Bonding stones
- ARCHES**
 - Types of arches
 - elliptical
 - flat
 - Gothic
 - segmental
 - semi-circular
 - three-centered

- Artificial provision for stability
- tie rods
- anchors
- buttresses
- Where required
- relieving arches
- over openings
- over pipes, ducts, conduits, etc.
- through walls
- Face work
- Special arching
- Vaulting
- Inverted arches
- .17 WATERPROOFING**
 - Cold, bituminous, damp-proof paints
 - Waterproof brick and cement coating
 - Waterproof compounds
 - Paraffin compounds
- .18 WELLS, TANKS, ETC.**
 - Water
 - Sewage disposal
 - Drainage system
- 5—9. FACE BRICK WORK**
 - Finish of face brick
 - enamel
 - fire
 - glass
 - glass faced
 - glazed
 - mat
 - moulded
 - opal faced
 - ornamental
 - porcelain faced
 - pressed
 - rock faced
 - rough faced
 - salt glazed
 - satin
 - vitrified
 - wire cut
 - Size
 - brickettes
 - common brick
 - face brick
 - Norman
 - Pompeian
 - Roman
 - special
 - Shape
 - arch
 - moulded, ground
 - architrave
 - bead mould
 - beam covers
 - bullnose
 - cap mould
 - chamfer
 - chimney—radial
 - cove
 - gutter
 - swinging-tank
 - header, on edge
 - mitre
 - moulded
 - octagon
 - ogee
 - plain
 - quoin
 - sanitary base
 - skew back
 - soffit blocks
 - starter
 - stop
 - Mortar—kind
 - filling joints
 - grouting interstices
 - Wetting brick in warm weather
 - Drying brick in freezing weather
 - Laying brick plumb, level and true
 - Bedding in full bed of mortar
 - Stopping work when thermometer is below 28° Fahr.

Protecting work
Frozen materials

Laying up
cornices
moulding
corbels
panels

Storing and handling brick to prevent injury

CLEANING

(See 4—0. Cleaning Work)

SAMPLES

Methods of laying, jointing, etc.

.1 FENCE

.2 FIREPLACE LINING

Iron throats operated by a ratchet device
Hearths

.3 MACHINERY FOUNDATIONS

Sewage, house and fire pump
Drinking water machinery
Ventilating machinery
Elevator machinery
High pressure heating machinery
Mechanical cleaning apparatus
Anchors for machinery
Cap stones

.4 MANTELS

(See 10—6.5 Fireplace Accessories)

.5 PAVING

(See 5—25. Paving)

.6 WALLS—EXTERIOR

Kind of brick
Kind of bond
Type of joints
Moulded work
Work in pattern
Inlaying of marbles, etc.
Facing concrete, tile, or wood walls
Mortar
non-staining
Setting iron work for timbers
(see 5—7. Masons Iron Work)

ARCHES

Types of arches
elliptical
flat
Gothic
segmental
semi-circular
three-centered
Special arching
Vaulting
Inverted arches

.7 WALLS—INTERIOR

5—11. RUBBLE STONE MASONRY

Using field stone on property
Quarried stone
Tests of stone
Durability of stone to withstand action of ground and weather
Cutting stone
beds, tops
Bedding in full bed of mortar
Joints

BONDING

Headers through wall
Amount of header visible on face of wall
Distribution of headers through wall
Laying stones on natural bed
Wetting stones in hot weather
Drying stones in freezing weather
Stopping work when temperature is below 28° Fahr. or if exposed to rain

Protecting work from injury
Frozen materials

CLEANING

(See 4—0. Cleaning Work)

SAMPLES

(See 1—2.2 and 5—9. Sample)

.1 CHIMNEYS, FLUES AND FIRE-PLACES

Must not be started upon floor or wood-work

Corbeling

BOILER FLUE LINING SMOKESTACK

Double walls
Fire brick
Custodi's system
Steel stack
Tall independent chimney
Extending chimneys of adjoining property
Chimney caps

FLUES

Ventilating flues
Fireplaces
ash and cleanout doors
frames for smoke-pipes
thimbles
Anchors and supports for boiler flue

FLUE LINING

Terra Cotta pipe
Fire brick
Steel lining
Thimbles to smoke inlets
Underground flue

FIREPLACES

Ledged throats of brick
Withes of fire brick
Iron throats with ratchet device
Fire brick lining
Filling solidly behind facings
Arches under hearths and fireplaces
Ash drops
Fireplace accessories
(See 10—6.5 Fireplace Accessories)

.2 CHUTES

Ash
Clothes
Coal
Garbage
Manure

.3 FENCE

.4 FOOTINGS

.5 FIRE STOPS

Exterior walls
Interior walls
Drop girths
Girders
Partition caps
Sills and wall plates
Roof sill to roofing
Thickness of fire stops
Mortar

.6 PROTECTING STRUCTURAL WORK

(See 5—15.4 Protecting Structural Work)

.7 RETAINING WALLS

.8 WALLS, PIERS, ETC.

Classification of rubble masonry
Kentish rag or random with dressed joints
random rubble in course
random rubble set dry
random rubble set in mortar
regular coursed rubble
squared rubble built in courses
uncoursed, squared or snecked rubble
undressed rubble

ANCHORS

Kind of anchors
box
hook
screw
spear
star
clamps, rods, bolts, straps

BRACING WALLS DURING ERECTION

HOLLOW BRICK FURRING DAMP COURSE

Slate
Lead
Felt

PROTECTING WATERPROOFING VENTILATING OPENINGS

BACKING FOR DAMP-PROOFING

Cement

Independent walls

CORBELS

Chimney breasts
Cornices
Fireproof floors
Wood floors

PIERS

CHASES

Plumbing and heating pipes
Electric work
Ventilating flues
Filling solidly at floor levels
Chases not to exceed 1/3 thickness of wall
Horizontal chases not to exceed 4 feet long
Aggregate area in wall not to exceed 1/4 whole area of solid wall on story
Chases not less than 6 feet apart or from other openings

BEARING PLATES

WALL PLUGS

Wood
Metal

WORK BUILT IN WALLS

(See 5—7. Masons Iron Work)
Frames for direct and indirect heating system
Shutter eyes
Structural iron for timbers
Window cleaners' device

DAMP-PROOFING

Felt
Cement
Waterproof, mortar or concrete

ROOF SUPPORTS

Partitions to roof

CAULKING FRAMES, ETC.

Setting and bedding frames
Removing staff beads and caulking to make weather-tight

HOLLOW WALLS

Exterior
Vault

WALLS OF ADJOINING BUILDINGS

PARTY WALLS

BONDING OF PIERS

Bonding stones
Metal plates

ARCHES

Type of arches
elliptical
flat
Gothic
Segmental
semi-circular
three-centered
Artificial provision for stability
tie rods
anchors
buttresses

Where required
relieving arches
for openings over pipes, ducts, conduits, etc.
through walls
face work
Special arching
Vaulting
Inverted arches

.9 WATERPROOFING

Cold, bituminous, damp-proof paints
Waterproof brick and cement coating
Waterproof compounds
Paraffin compounds

.11 WELLS, TANKS, ETC.

Water
Sewage system
Drainage system

5—12. CUT STONE MASONRY

Defects for discoloring, impurities tending to weaken durability, strength or appearance

Seasoning

Quarrying by blasting or by means weakening durability and strength not permitted

Approval of quarry

DEFECTIVE WORK

Stone cutting
Stones damaged before acceptance of building

DRAWINGS

Working drawings showing jointing, bonding, anchoring and constructive features

Serial number of stones, etc.

MODELS

Full size plaster models for carving and ornamental work

Preserving and disposing of models

Producing at building

Photograph of models

Cast of models

Provisional amount for models

CARVING

Conform to full sized details and models

Protecting from injury

Working at building from enclosed scaffold

Models on scaffolds

PROTECTION

From discoloration or injury

Store on wooden platforms

Boxing in

CLEANING

Stiff brushes and water

Steel brushes

Acid

POINTING**SAMPLES**

Showing cutting

CUTTING AND FITTING

No cutting on premises except carving

Cutting stone on premises

Templates

Wash on top, drip underneath

Cut to lay on natural bed except for carved or moulded stone

Beds

straight and level

Builds—straight and level 4 inches back from face

Beds—full, true and square

Joints

raised water joints

Cut reveals and heads in single stones

Intersecting profiles

Cut re-entering angles from solid

Cutting and fitting for other trades

Raggles for flashing, etc.

Lighting outlets, etc.

SETTING

Hoisting plant for stones exceeding 80 pounds

Joints

Cleaning and wetting stones before setting

Non-staining mortar

Bedding stones under center

Bedding stones in sheet lead

Protecting backs of limestone and marble with non-staining cement

Waterproofing backs of stones

Bedding anchors in non-staining cement

Supporting projecting stones on wooden props

BONDING**ANCHORING**

Kind of anchors

box

hook

screw

spear

star

Clamps, rods, bolts, straps

Anchoring cornices

Anchoring ornamental work

Anchoring projecting stones with projection greater than beds

Submitting detailed drawings anchoring for approval

.1 EXTERIOR CUT STONE

Kind of stone

blue

gneiss

granite

limestone

marble

sandstone

trap rock

Classification of cut stone masonry

block in courses

ashler

broken (3 sizes)

broken (6 sizes)

coursed

dimension

random coursed

Finish of face

axe

boasted or droved

bush hammer

broached

chiseled draught margins

combed or dragged

crandled

fish scale

furrowed

hammer dressed

patent hammered

pointed

polished

quarry or rock faced

quarry polished, hammer faced or hammer blocked

rubbed

rusticated joints

saw faced

tooled

vermiculated

Uses of cut stone—ornamental

altars

arches

ashler facing

balconies

balustrades

baptistry fonts

bas-reliefs

bases

plinth blocks

beams

belt courses

bosses

brackets

bridges

buttresses

capitals

ceilings

chimneys

chimney caps

colonnades

columns, monoliths

copings

corner stones

cornices

counters

crockets

finals

flooring

borders

fountains

founts

gargoyles

grotesques

jardiniers

key-stones

lamp standards

lintels

mantels

facings, hearths

modillions

mouldings

newels

panels

parapets

pediments

pedestals

pergolas

pilasters

porches

quoins

saddles, sills

seats

sill courses

sills, window

stairways

platforms, treads

statuary

steps

platforms

tablets

terraces

transoms

trim

vases

walls

wainscoting

facings

panels

water table

wheel guards

Uses of cut stone—structural

base stones

bearing stones

bond stones

cap stones

trench covers

Uses of cut stone—special

billiard table tops

blackboards

bowling alleys

bulletin boards

curb

dissecting table tops

fence

flagging

garden accessories

(See 27—0.)

gutters

paving

posts

Work to be of cut stone

Kinds of stone to be used

Tests of stone

Limestone must be quarried between

April 15th and September 15th

Finish of face of stone

Thickness of ashler

Lettering

Mortar

non-staining for limestone

pointing

backing stones with non-staining cement

backing with damp-resisting paint

ARCHES

Type of arches

elliptical

flat
 Gothic
 segmental
 semi-circular
 three-centered
 Artificial provision for stability
 tie rods
 anchors
 buttresses
 Special arching
 Vaulting
BALUSTRADES
CEILINGS
CHIMNEYS
COLONNADES
COLUMNS
COPING
 Wall copings
 street fronts of buildings
 side walls
 yard walls
 retaining walls
 Cutting stones with a wash
 Beveling joints and caulking with oakum
 and cement
 Clamping joints
 Area coping
 Coping on streets
 Other areas
 Clamping coping
 Joggle joints
CORNERSTONE
CORNICE
LINTELS
PANELS
PEDESTALS
PEDIMENTS
SILLS
 stools, washes, drips
 Projection of sills
 Sills on party line, flush with wall
 Bedding sills under ends only
 Door sills
 wash and beveled saddle
STEPS
 In one piece
 Wash and beveled saddle
 Bedding at ends only
WATER TABLE
.2 INTERIOR CUT STONE
 (See 5—12.1 Exterior Cut Stone)
CEILINGS
 Vaulting
COLUMNS
COUNTER
FOUNTAINS
MANTELS
 (See 10—6.5 Fireplace accessories)
SADDLES
SEATS
STAIRS
 circular stairs
TRIM
 (See 8—8.38 Trim)
 Door and window
 Wainscoting
WALLS
.3 MISCELLANEOUS CUT STONE
WORK
 (See 5—12.1 Exterior Cut Stone)
 Mortar
 Joints
BEARING STONES
 Columns, girders and beams
 Kind of stone
 Cutting beds
 Anchors
 Holes for anchor bolts
CAP STONES
 Pump foundations
 sewage
 fire house

Chimney caps
 Pier caps
 Trench covers
COUNTER
CURB
 Size
 Joggle joints
 Foundation and backing
 Receiving basins
 caps
 iron covers
 iron crate bars, etc.
FENCE
GARDEN ACCESSORIES
 (See 28—0. Landscape Architecture and Gardening)
GUTTERS
HEARTHES
LAMP STANDARDS
PAVING
 (See 5—25. Paving)
 Exterior
 Interior
 Flagging
 Paving blocks
POSTS
 Hitching
 Lamp
 Metal box
STATUARY
TERRACE
VASES
WHEEL-GUARDS
5—13. ORNAMENTAL TERRA COTTA
WORK
 Quality of material
 Defects and imperfections impairing
 strength and durability
 Tests
 uniform fracture hard enough to resist
 scratching by knife
 Qualifications for strength
DEFECTIVE WORK
 Moulding of blocks
 Finishing of surface
 Damaged after installation, before ac-
 ceptance
DRAWINGS
 Showing jointing, bonding, anchoring and
 other constructive features
 Serial numbers of blocks, etc.
MODELS
 Full sized plaster
 Preserving models and disposal
 Producing of building
 Photograph of models
 Cast of models
 Provisional amount for models
 Half size models by expert
PROTECTION
CLEANING
 Stiff brushes and water
 Steel brushes
 Acid
 Starting at top and working down
JOINTING
 Raking out joints
 Wetting joints
SAMPLES
 Cutting
 Pointing
MOULDING AND FITTING
 Templates according to details and
 models
 Carving and moulding work sharp,
 straight and true and well under-
 cut
 Blocks straight, true and out of wind
 Additional block to prevent delay from
 defective materials or injury
 Fitting material at factory, grinding
 joints

Washes and drip for projecting courses
 Raised, filleted, horizontal joints
 Raglets to receive flashing, etc.
 Provision for anchors, tie rods, etc.
 Thickness of ribs, etc.
 work extra strong
 Tests for strength
SETTING
 Hoisting plant for blocks weighing over
 80 pounds
 Cleaning and wetting blocks before set-
 ting
 Mortar—non-staining
 Colored mortar
 Filling blocks with masonry and bonding
 to walls
 Cutting and fitting to accommodate other
 trades
 Man at building to facilitate erection and
 do fitting
BONDING
ANCHORING
 Kinds of anchors
 box
 hook
 screw
 spear
 star
 Anchoring cornices
 Anchoring column caps
 Anchoring blocks with projection greater
 than beds
 Detailed drawing of anchoring
.1 EXTERIOR TERRA COTTA
 Work to be done
 (See 5—12.1 Uses of Cut Stone)
 Finish of face
 (See 5—12.1 Finish of Cut Stone)
 Colored terra cotta work
 Work in color design
ARCHES
 Type of arches
 elliptical
 flat
 Gothic
 segmental
 semi-circular
 three-centered
 Artificial provision for stability
 tie rods
 anchors
 buttresses
 Special arching
 Vaulting
BALUSTRADES
CEILINGS
CHIMNEYS
 Chimney pots
COLONNADES
COLUMNS
COPING
CORNERSTONE
CORNICE
CRESTING AND FINIALS
 Hip rolls
 Hip starters
LINTELS
PANELS
PEDESTALS
PEDIMENTS
SILLS
STEPS
WATER TABLE
.2 INTERIOR TERRA COTTA
 (See 5—12.1 Uses of Cut Stone)
CEILINGS
 Vault
COLUMNS
COUNTERS
MANTELS
 (See 10—6.5 Fireplace Accessories)
SADDLES

SEATS

STAIRS

Circular stairs

TRIM

(See 8—8.34 Trim)

Door and window trim
wainscoting

WALLS

3 MISCELLANEOUS TERRA COTTA
(See 5—12.1 Uses of Cut Stone)

COUNTERS

FENCE

GARDEN ACCESSORIES

(See 28—0. Landscape Architecture and Gardening)

GUTTERS

LAMP STANDARDS

PAVING

(See 5—25. Paving)

POSTS

Hitching

Lamp

Metal box

STATUARY

TERRACE

VASES

WHEEL-GUARDS

5—14. FIREPROOFING (TERRA COTTA)

Semi-porous or porous

Density and hardness of burn

Texture to hold nails firmly without cracking

Percentage of hollow spaces in blocks

Thickness of webs

Tests for strength

Detailed specification for characteristics and strength, etc.

SPECIAL SHAPES

DRAWINGS

Contractor's drawings showing

special shapes

column covering, lintel and girder covering

types of arches

SETTING

Cement mortar

Wetting blocks

Bedding with full joints completely filling crevices between steel and tile

Setting partitions, etc., plumb with broken joints and starting on beams or floor arches

.1 BOOK TILE

Rebated

.2 CEILINGS

Guastavino ceilings

Timbrel arches

.3 CHIMNEY CAPS**.4 CHUTES**

Ash, clothes, coal, garbage, manure

.5 COPING

Vitrified tile

.6 DOMES

Guastavino system

.7 FLOOR CONSTRUCTION

Flat arch system

Segmental arch system

Side construction arches, end construction arches

Arches for buildings over 100 ft. in height (New York Law)

Arches for buildings less than 100 ft. in height (New York Law)

Tile and concrete systems

Guastavino system

Crowning arches

Tests for strength

.8 FURRING

Hollow blocks, securing in place

Special recessed blocks for pipe chases

.9 PARTITIONS

Special recessed blocks for pipe chases

Encasing plumbing pipes, etc.

Reinforced tile partitions

"Phoenix" partitions

"New York" partitions

.11 PROTECTION OF STRUCTURAL WORK

Filling solidly around metal with masonry

Securely anchoring blocks to structural work

Protection for buildings over 100 feet high (New York Law)

Protection for buildings less than 100 feet high (New York Law)

.12 STAIRS

Guastavino system

.13 WALLS, PIERS, ETC.

BONDING

STEEL REINFORCED WALLS

SPECIAL SHAPED TILE

Jambs for windows, doors, etc.

Lintels

FACING WALLS WITH BRICK

BRACING WALLS DURING ERECTION

CHASES

Allowable depth

Allowable horizontal length

Allowable aggregate area of recesses in walls

Allowable minimum distance apart of chases and openings

BEARING PLATES

WORK BUILT IN

(See 5—7. Mason's Iron Work)

Flashings

DAMP-PROOFING

Cement

Felt

Waterproofed paints

Waterproofing concrete

PARTITIONS TO SUPPORT ROOF

CAULKING FRAMES, ETC.

Removing staff-heads and caulking around frames to make weather tight

WINDOW SILLS

Concrete, stone, tile

LINTELS

ANCHORING FOR ROOFS

ARCHES

Types of arches

elliptical

flat

Gothic

segmental

semi-circular

three-centered

Artificial provisions for stability

anchors

tie rods

buttresses

Set arching

Vaulting

.14 WATERPROOFING

(See 5—2. Waterproofing and Damp-proofing)

5—15. FIREPROOFING (CONCRETE)

(See Requirements under 5—3. Mortar and Concrete)

Proportion of concrete

STONE CONCRETE SYSTEMS

CINDER CONCRETE SYSTEMS

.1 FLOOR CONSTRUCTIONS

Systems for buildings over 100 ft. in height (New York Law)

Systems for buildings less than 100 ft. in height (New York Law)

SEGMENTAL FLOOR ARCHES

Rapp system

Roebbling system

White system

FLAT FLOOR ARCHES

Beyer system

Columbian system

Expanded metal systems

Ferrocement systems

Lock-woven fabric systems

Merrick system

Roebbling system

Steel wire or mesh reinforcement systems

White system

SECTIONAL FLOOR CONSTRUCTION

Hollow concrete I-arches

Thacher system

TESTS

Strength equal to strength of structural work

Live load test

Deflection allowed

.2 HANGING CEILING

(See 5—19.1 Furring)

.3 PARTITIONS

Concrete partitions

solid, molded blocks

Gypsumite stud partitions

Plaster block partitions

Wall-board partitions

Metal and plaster partitions

Beyer studs

Rib studs

"All-United" steel studs

Solid studless metal and plaster partitions

.4 PROTECTION OF STRUCTURAL WORKCompletely encase steel members
thickness of concrete for various members

Anchors

Protection for buildings over 100 ft. in height (New York Law)

Protection for buildings less than 100 ft. in height (New York Law)

5—16. PLAIN SHEET METAL WORK

Kinds of metal

aluminum

brass

bronze

copper

iron and steel

lead

tin

zinc

Weight and characteristics of metal

Bracing, soldering, riveting joints to make water tight

Copper or other non-ferrous nails or rivets to secure work

Composition of solder

Painting or oiling metal before erection

WARRANTY

.1 AWNINGS**.2 CEILINGS**

Stamped metal

.3 CONSERVATORY**.4 FLASHINGS**

For pitched roofs, etc.

Intersections of roofs with masonry, skylights, scuttles, vents

Pipes passing through roof and elsewhere to make water tight

Properly connect to roof covering

Length turned out on roof and up against vertical surfaces

Cap flashing through entire thickness of wall

Distance extending into masonry

Copper turn-out

Flashing for leaders

- Flashing under window sills, string courses, etc.
- Nosing and ridge covering
- Covering terra cotta joints
- Flashing waterproofing above grade
- Covering band courses and lining gutters
- Flashing walls of adjoining buildings
- Pans under column bases
- .5 FUNNELS**
 - For ventilation
- .6 GUTTERS**
 - Hanging
 - plain
 - moulded
 - Fastening gutters
 - Reinforcing rod along edge
 - Trough gutters
 - Snow boards
- .7 HOOD FOR FIRE OUTLET**
 - Outlet on roof
- .8 LEADERS**
 - Moulded, plain
 - Method for fastening
 - Ornamental bands
 - Connect leaders at foot to drain pipe
 - Cast iron moulded terminals at bottom for surface drainage
 - Wire basket strainers on roof
 - Shoes
- .9 LEADER BOXES**
 - Covering with grating at top
 - Basket strainers
- .11 ROOFS**
 - (See 5—18. Roofing)
- .12 SCUTTLE, ETC.**
- .13 SIDING**
 - Clapboard siding
 - Corrugated siding
 - Plain metal siding
 - Moulded cornice
 - Door and window trim
 - Moulded courses
 - Method of securing to masonry
- .14 SKYLIGHTS**
 - Kinds of skylights
 - Monitor skylights—ventilators
 - flat skylights
 - single or double pitch skylights
 - hipped, louvered, ventilated skylights
 - sash on end skylight
 - sheet metal enclosures
 - louvers
 - Construction of skylights
 - Weight and characteristics of metal
 - Condensation bars
 - Gutters
 - Ventilating sash
 - Leaders to roof
 - Steel frame work, stiffening bars, etc.
 - Operating devices for ventilating sash
 - Hinged sash to permit access
 - Make skylights water tight
 - Interlocking and riveting work to comply with fire insurance regulations
 - Glazing
 - with wire glass
 - for elevators, stairways, dumbwaiter shafts, well holes, chutes, other continuous openings through floors
 - ventilating sash at sides of skylight
 - with plain glass
 - Bedding glass
 - Puttyless systems of bedding glass
 - Wire screen over skylights
- .15 VENTILATORS**
 - Vent monitors
 - Slat
 - Peak or rigid
 - Tubular
 - Revolving
 - Rotary

- Self lubricating
- Louver
- Dampers
- Glazing
- Operating devices and ventilating frames
- 5—17. ORNAMENTAL SHEET METAL WORK**
 - Kinds of metal
 - aluminum
 - brass
 - bronze
 - copper
 - iron
 - steel
 - lead
 - tin
 - zinc
 - Weight and characteristics of metal
 - Erection
 - straight and true
 - soldered and riveted joints
 - sharp and clean cut work
 - Reinforcing work
 - Stiffening work by molten lead, etc.
 - Riveting and soldering work to make water tight
 - Leading joints into masonry
 - Painting or oiling work before erection
 - MODELS**
 - (See 5—13. Models)
 - WARRANTY**
 - Term of years
 - .1 AWNINGS**
 - .2 BAY WINDOWS**
 - .3 CEILINGS**
 - .4 CHIMNEY CAPS**
 - .5 COLUMNS**
 - Capitals
 - Bases
 - Pedestals
 - .6 CORNICES**
 - .7 CRESTINGS AND FINIALS**
 - Weather vanes
 - Hip caps
 - Deck crestings
 - Cresting blocks
 - Ridging
 - Eave closers
 - .8 CUPOLAS**
 - .9 DOMES**
 - .11 DORMERS**
 - .12 FLECHES**
 - .13 LANTERNS**
 - .14 LEADERS**
 - Ornamental—heads, elbows, shoes, bands
 - .15 MARQUISE**
 - .16 MOLDED COURSES**
 - Band
 - Lintel
 - Belt
 - .17 ORIEL WINDOWS**
 - .18 ROOFS**
 - Mansard
 - .19 TRIM**
 - Window and door trim
 - Wainscoting
 - Corner boards
 - Paneling
 - .21 SIGNS**
- 5—18. ROOFING**
 - KIND OF ROOFING**
 - Metal
 - copper
 - tin
 - lead
 - zinc
 - iron
 - steel
 - asbestor protected metal
 - corrugated
 - Shingle
 - Tile
 - Slate

- Tar and gravel
- slag finish
- gravel finish
- brick finish
- tile finish
- Composition
 - tile or shingle laid in design
- For pitched roofs exceeding 3 inches to foot
- Covering wood sheathing
- WARRANTY**
 - Term of years to remain water tight
 - Repairing damage to building as well as roofing
- .1 SKYLIGHTS**
 - (See 5—16.4 Skylights)
- .2 SNOW GUARDS**
 - Pipe guards
 - Sheet metal guards
 - Wire guards
- .3 VENTILATORS**
 - (See 5—16.13. Ventilators)
- .4 WEATHER VANES**
 - Interior indicator
- 5—19. FURRING, LATHING, ETC.**
 - Wood
 - Metal
 - Plaster-board
 - Asbestos block
 - Sheathing lath
 - Painting
 - Securing in place
- 1. FURRING**
 - Thickness and characteristics of furring
 - Securing in place by expansion bolts
- CEILINGS—HANGING**
 - Light construction
 - Heavy construction
- MOULDED AND ORNAMENTAL WORK**
 - For cornices, girders, ceilings and elsewhere required
 - Characteristics and sizes of material
- WALLS**
 - Characteristics and sizes of material
 - Roebling system
 - Furring chases
- MISCELLANEOUS**
 - Wooden studs for doors and partition sash
 - Window lintels
 - Iron vent ducts
 - Electric conduits
 - Pipes
 - Elsewhere not otherwise protected
- .2 LATHING**
 - Characteristics and size of material
- .3 METAL BEAD**
 - Corner bead
 - Angle bead
 - Ground bead
 - Moulded bead
 - Base and wainscot bead
- .4 PARTITIONS**
 - Metal and plaster partitions
 - Beyer stud partitions
 - Rib-stud partitions
 - "All-united" steel stud partitions
 - Solid studless, metal and plaster partitions
- 5—21. PLASTER WORK (INTERIOR)**
 - Places not to be plastered
 - Places to be plastered
 - Kinds of plaster
 - plaster-board work
 - two-coat lime work
 - three-coat lime work
 - special ornamental work
 - fibrous plaster slabs for rapid erection
 - three-coat Keane cement work
 - cast work
 - Portland cement work

WARRANTY

Term of years

.1 MATERIALS AND FINISH**LIME PLASTER**

Brand of plaster

Ready mixed plaster

proportion of materials for first and second coats, for third coat, quick setting

Hand mixed plaster

proportion of materials for first and second coats, for third coat, quick setting

NATURAL CEMENT PLASTER**PATENT PLASTER****FIBROUS PLASTERS****CARTON-PIERRE****ASBESTOS PLASTER****TWO-COAT WORK**

Special sand finish

PLASTERING ON PLASTER-BOARD**SLABS FOR RAPID ERECTION****KEANE'S CEMENT PLASTER**

Proportions and materials

PORTLAND CEMENT PLASTER

Proportions and materials

.2 WORKMANSHIP

Straight, smooth, level and plumb work

Plumb and square jambs and angles

INSPECTING WORK

Before starting plaster

Notify architect of defects

MIXING**TWO-COAT WORK****THREE-COAT WORK****PLASTER-BOARD WORK****SLABS FOR RAPID ERECTION****KEANE'S CEMENT FINISH****FINISH OF ARRISES, ETC.****MOULDED WORK****CAST WORK****CEILINGS****MODELS**

(See 5—12. Models)

PREPARATION FOR PLASTER

Damp-resisting paint before plastering on masonry

Plastering directly on brick or masonry

Protecting terra cotta from staining plaster

PROTECTING, PATCHING, ETC.

By boards, building paper, burlap

Repairing work injured or discolored

5—22. PLASTER WORK (EXTERIOR)

Contemplated work

WARRANTY**.1 MATERIALS AND FINISH****STUCCO**

Pebble dash

Colored work

Trowel finish

ROUGH CAST

Colored work

STAFF WORK

Moulded work

.2 WORKMANSHIP**MODELS****PREPARATION FOR PLASTER****PROTECTION, PATCHING, ETC.****WATERPROOFING****5—23. ARTIFICIAL MARBLE WORK (SCAGLIOLA)**

Where required

Marbles to be imitated

Workmanship and finish

Materials

PROVISIONAL AMOUNT FOR ARTIFICIAL WORK**SAMPLES****MODELS****WARRANTY****5—24. ARTIFICIAL STONE WORK (INTERIOR)**

Work to be done

Stone work to be imitated

Responsibility or reputation of contractor

Experience of mechanics

Provisional amount for artificial stone work

SAMPLES**MODELS****WARRANTY****.1 MATERIALS**

Artificial lime stone

Caen stone

.2 WORKMANSHIP AND FINISH

Work straight, smooth, level and plumb

Jambs and angles plumb and square

Inspecting work before installation

Finish of last coat

Jointing work—width of

MOULDED WORK**CASTINGS****TOOLING SURFACES IN PLACE****SECURING ORNAMENTAL WORK IN PLACE****5—25. PAVING**

Foundation

(See 5—4.3. Floor Filling)

Waterproofing under floors

Protection of work

Cleaning work

Making paving stain and acid proof

TESTS**WARRANTY****.1 ASBESTOS PAVEMENT****.2 BRICK PAVEMENT**

(See 5—8.9 Paving)

.3 CEMENT PAVEMENT

(See 5—4.4 Floors)

.4 COMPOSITION PAVEMENT**.5 GRANOLITHIC PAVEMENT**

(See 5—4.4 Floors)

.6 MARBLE PAVEMENT

(See 5—20.6 Pavement)

(See 5—27.5 Mosaic Floors)

.7 PATENT PAVEMENT

Asbestolith

Wood

interlocking

"Crown"

.8 STONE PAVEMENT

(See 5—12.3 Pavement)

.9 TERRAZZO PAVEMENT

(See 5—27.5 Terrazzo Floors)

.11 TILE PAVEMENT

(See 5—27.5 Tile Floors)

.12 WOOD PAVEMENT**5—26. INTERIOR MARBLE AND SLATE WORK**

Structural glass in place of marble

CUTTING

Conform to details

Mouldings and joints straight and true

Work set accurate and plumb

Cut returns on solid, no joints at mitres

Slightly rounding exposed edges

Take measurements at building to accurately fit work in place

Templates required by other contractors

MATERIALS

Kinds of marble

Kinds of slate

Defects and imperfections, thickness of slabs, etc.

SAMPLES**SETTING**

Mortar—non-staining cement

backing up with masonry

Secure work with brass anchors, clamps, knees and dowels

POINTING JOINTS**MATCHING MARBLE SLABS, ETC.****FINISH**

Honed for surfaces walked on

Putty polish

High gloss

PROTECTION OF WORK

Repairing damaged or defective work

CARVING**.1 BASES**

Where located

Sanitary shoe block

Cutting exterior and interior angles to a radius

PLINTHS

To suit trim and bases

.2 COLUMNS**.3 COUNTER****.4 HEARTHES AND FACINGS**

(See 10—6.5 Fireplace Accessories)

.5 MANTELS

(See 10—6.5 Fireplace Accessories)

.6 PAVING

(See 5—2.5 Pavement)

Borders for floors recessed

Recessed frame for mat

.7 SADDLES

Beveled, flush

.8 SHELVING**.9 SILLS****.11 STAIRS****.12 STAIR TREADS**

Platforms

.13 TOILET ROOMS, ETC.

Material for

Partitions, backs, jambs, etc., for fixtures

Wainscot

CLOSETS

Partition

size and thickness, height above floor, anchoring

Backs

size and thickness

Jambs

size and thickness

support from floor

Sanitary shoe block

Cap along front of stalls

Cap along back of stalls

URINALS

Backs—size

Stalls—size

Cap along back—size

Floor slabs—size

Porcelain urinals

(9—4.15 Urinals)

FLOOR SLABS

Slop sinks

Water closets

Size

SHOWER BATH**STEPS**

Rises and treads

.14 TRIM

(See 8—8.34 Trim)

Architraves

Door and window trim

Wainscot

5—27. TILE AND MOSAIC WORK

Kind and finish

aseptic

ceramic

embossed

enamel

fibre

glass

glazed

grip-back

hand made

antique

painted

lustrated

matt glazed

marble

mosaic

onyx

opal

over glazed

pebble ceramic mosaic

plain unglazed

Roman
Spanish
semi-vitreous
terrazzo
terra-vitreae
vitrified vitreous
Welsh quarry
Setting work
Jointing
Mortar
non-staining
Joints
Bedding tile, floating
Defects in tile
WARRANTY
Term of years
Crazing, coming loose or developing defects

.1 BASES

Sanitary shoe block

.2 CEILINGS

Guastavino ceilings

.3 FIREPLACES

(See 10—6.4 Fireplace Accessories)

.4 MANTELS

(See 10—6.4 Fireplace Accessories)

.5 PAVING

Securing work to its foundation
Mortar
Grout
Rubbing down
Cleaning
Repairing damaged work

MOSAIC FLOORS

Kind and size
Design, border
Recessed frame for mat
Marble borders

TERRAZZO FLOORS

Size of marble chips
Kind and composition of mortar
Design
Colored border
Marble border
Jointing work
Recessed frame for mat
Rubbing down
machine, hand

BASE

Sanitary base
Finishing exterior and interior angles to a radius

PLINTHS**TILE FLOORS**

Kind and size
Mortar
Design, and border
Recessed frame for mat

KINDS OF TILE

German art ceramic mosaic
Ceramic mosaic
Vitrified
Fiance tile
Quarry tile
Hexagonal encaustic tile
Marble border

.6 ROOF TILE

(See 5—18. Roofing)

.7 TRIM

(See 8—8.34 Trim)
Door and window trim
Wainscot

.8 WALLS

Ornamental work
frieze
panels

6—o. STRUCTURAL STEEL AND ORNAMENTAL IRON CONTRACTOR'S WORK

(See 2—2. Schedule of Conditions of Contract)

(See 3—0. General Conditions)

(See 4—0. General work)

Contemplated work

CUTTING AND PATCHING

Each trade cuts and patches own work for other trades

Each trade cuts and patches all work for installation of own work

DRAWINGS

Shop drawings, by contractor

INSPECTION AND TESTING

Provisional amount for expert testing
Submission of test reports
Contractor furnish facilities for inspection and testing, weighing
Quality of material and workmanship
Furnish suitable testing machine for testing
Preparing suitable material for testing
Requirements to be fulfilled

.1 MATERIALS

Work to be rolled steel
structural framing, except where of cast iron or cast steel
Work to be of cast iron or cast steel
columns, column bases, bearing plates
separators
Work to be wrought iron
tie rods, bolts and anchors
Defects of material
weak spots and brittleness, cracks or other imperfections or injurious defects
finished material to be free from injurious seams, flaws, cracks, defective edges

MARK MATERIAL BEFORE SHIPMENT

Weight, dimensions, setting number

CAST IRON

Structural
characteristics and defects
Ornamental
characteristics and defects

STEEL

Bessemer and open hearth

PROPERTIES OF STRUCTURAL RIVET AND CAST STEEL

Phosphorous, maximum
basic
acid
Sulphur, maximum
Ultimate tensile strength in pounds per sq. in.
Elongation, minimum percentage
Elongation, minimum percentage in 2 inches

Character of fracture
Cold bends without fracture

CHEMICAL ANALYSIS

By manufacturer
By independent expert

TESTS REQUIRED**MARKING STEEL WITH MELT NUMBER AND MANUFACTURERS' NAME****WROUGHT IRON**

Structural
characteristics, strength, tests
Ornamental
characteristics and appearance

.2 WORKMANSHIP AND CONSTRUCTION**STRAIGHTENING MATERIAL****FITTING MATERIAL****ANNEALING****PUNCHING****RIVETS AND BOLTS**

Field and shop
Driving by pneumatic hammers
Driving by hand
Size of rivet—actual size cold
Rivets completely fill holes and grip pieces
Recupping and caulking not allowed
Drilling out defective rivets
Pitch of rivets

BOLTS

Thread and nuts
Bolts transmitting shear

6—I. STRUCTURAL STEEL WORK

Contemplated work

ERECTION OF WORK

Alignment of bases and columns
variations allowed
Cutting material
Bracing during erection

.1 ANCHORS

(See 5—7.1 Anchors)

SPECIAL ANCHORS**.2 BEARING PLATES**

Beams and girders
In wall to carry concrete floors

.3 BULKHEAD FRAMING**.4 COLUMN AND BASES**

Cast iron
Steel
facing ends
wedging or shimming not allowed
connections between columns and splice plates
filling plates
minimum thickness of any part of column
Provision for future stories
Wall columns
COLUMN BASES
Cast iron
Cast steel
Steel
Facing tops
Arrangement of ribs
Bolt holes
Bedding and wedging
Protection from electrolysis
(See 5—2. Waterproofing)
ANCHOR BOLTS
To hold down column bases

.5 CORNICE BRACKETS**.6 FLOOR AND ROOF FRAMES**

Connections
TIE RODS
ANCHORS FOR WORK BEARING ON MASONRY
BEARING ON WALLS
Size of bearing
Set bearing higher than for columns to allow settlement of masonry
SPECIAL FRAMING
Openings in floors for stairs, etc.
Wall supports in skeleton construction
Spandrel supports
Steel lintel supports
Cornice supports
Bay window supports
Elevator sheave supports
Framing for galleries, balconies, etc.

GIRDERS

Built up
Separate beams, connected
Cast iron arch girders
Girders for special purposes
TANK SUPPORTS
Roof tank in pent house
Tanks on roofs
Sprinkling system
Water supply system

.7 FOUNDATION WORK

(See 5—2. Waterproofing)
Protection from Electrolysis
Cantilever construction
Grillage beams

.8 HANGING CEILING**.9 LINTELS**

Steel shapes
Built up lintels
Cast iron lintels

.11 PARTITION FRAMING**.12 PENT HOUSE AND BULKHEAD FRAMING**

Roof bulkheads
Window bulkheads

.13 ROOF FRAMING

(See 6—1.6 Floor and Roof Framing)
Special construction for roofs
Mansard roof
Domes

.14 SKYLIGHT CURBS

For small skylights
For large skylights

.15 SMOKE FLUES

Size and material
Connections to boiler flue and clean-out door
Clean-out door and frame

- Anchoring flue and arranging for expansion
Bottom section of flue water tight
Hood over flue
- .16 TRUSSES**
Riveted trusses
Pin connected trusses
- 6—2. ORNAMENTAL IRON WORK**
Workmanship and construction
Accurate jointings
Smooth surfaces
Fitting and bracing exterior work to prevent leaks
Fastening and anchoring work to insure stability
Thickness of work for proper strength
Leading exposed work connecting with masonry
Lead protection for work coming against masonry to prevent contact with stone
- MODELS**
- .1 ASH HOIST**
Wrought iron crane with pipe standard and extension arm
Revolving jib crane
Platform hoist
(See 21—3. Lifts)
- .2 AWNINGS**
- .3 BALCONY**
- .4 BALUSTRADE**
- .5 BOX SLIDE**
- .6 BULLETIN BOARD**
- .7 CANOPIES**
- .8 CESSPOOL COVERS, ETC.**
Cast iron covers
Covers recessed to contain flooring
- .9 CHIMNEY BRACES**
- .11 CHIMNEY CAPS**
- .12 CHUTE**
Patent door and chute
Chute for ash, clothes, coal, garbage, ice, manure
- .13 CLEAN-OUT DOORS**
Fireplace
Smoke flue
- .14 COAL BOX, ETC.**
- .15 COAL CONVEYOR**
- .16 COAL HOLE**
Solid iron
Patent light
Counter sunk lifting handles
Galvanized chain and brass padlock
- .17 COLUMN CASINGS**
Ornamental casings
Plain casing to protect fireproofing, etc.
- .18 CORNICE BRACKETS**
- .19 COUNTER**
- .21 COUNTER SCREENS**
- .22 COVERS**
- .23 CRANES**
(See 6—2.1 Ash Hoist)
- .24 CRESTINGS AND FINIALS**
- .25 DOOR JAMBS**
Where required
openings to corridors and stair enclosures
all elevators
fire doors
fire resisting doors
iron doors
- .26 DOORS**
Swinging doors, sliding doors
BULKHEAD DOORS
ELEVATOR DOORS
Ornamental doors
(See 6—2.29 Elevator Enclosure)
Plain doors
Counterbalanced doors
Fire doors
(See 8—7. Fire Resisting Work)
ROLLING DOORS
SCUTTLE
Device for opening and holding open
SIDEWALK DOORS
Solid metal
Patent light
(See 6—3.3 Patent Light Work)
- .27 DOORS—REVOLVING**
- .28 ELECTROLIERS**
- .29 ELEVATOR ENCLOSURE**
Frames
Ornamental grilles
wire glass panels
Doors
sliding
sliding and swinging for freight
locking device, hardware
- .31 ELEVATOR GRATINGS**
Live load
Opening for cables, etc.
Independent supports to structural framing
- .32 ELEVATOR PITS**
Openings for cables, etc.
Angle for tile lining
- .33 ENTRANCES**
- .34 FACIAS, FLOOR**
- .35 FENCE AND GATES**
Ornamental fence
Ornamental posts
Wire fence
- .36 FINIALS**
- .37 FIRE ESCAPES**
Balcony fire escapes
Fire chutes
Patent fire escapes
- .38 FIRE STAIRS (OUTSIDE)**
Sizes of materials
Strength required
- .39 FIREPLACE ACCESSORIES**
(See 10—6.5 Fireplace Accessories)
- .41 FLAG STAFF**
- .42 FLAG STAFF BRACING**
- .43 FOUNTAIN**
- .44 GARDEN AND LAWN ACCESSORIES**
(See 28—0. Landscape Architecture and Gardening)
- .45 GATES**
Swinging
Folding
Extension
Turnstiles
- .46 GRATINGS**
Styles of materials
Openings, fastenings
- .47 GRILLES**
Plain
Ornamental
Wire
- .48 GUARDS**
Plain
Ornamental
Wire
Uses
windows, trees, flower beds, lawn, wheel, area
- .49 GUTTERS**
Sidewalk
Stable
- .51 HANGING CEILING**
(See 6—1.8 Hanging Ceiling)
- .52 ICE CHUTE**
- .53 LADDER**
Swinging, drop
Uses
tall chimneys
basement to sidewalk
pent houses on roof
to tanks
- .54 LAMPS**
Standard, posts
- .55 LANTERNS**
- .56 LETTERING**
- .57 MARQUISE**
- .58 MEZZANINE PLATFORM**
To basement piping
- .59 MULLIONS**
Holes for window cleaning device
- .61 PARTITIONS**
Expanded metal
Steel
Wire
- .62 PORTE-COCHERE**
- .63 PORTICO**
- .64 POSTS**
Fence posts
Hitching posts
Mail box posts
Sign posts
- .65 RAILINGS**
Goose-necks
Bank railings, etc.
Portable railings
Kind of railings
pipe railings
wrought iron railings
cast iron railings
BALCONY RAILINGS
Balconettes to windows
RAILING TO STEPS
- .66 REGISTER**
Ceiling
- .67 SADDLES**
For elevator doors
For exterior doors
For fire and fire resisting doors
Safety treads
Brass saddles
Socket for door bolts
- .68 SASH**
- .69 SCREENS**
Counter screening
- .71 SCUTTLE**
(See 6—2.2 Scuttle)
- .72 SHIPPING PLATFORM**
- .73 SHOW WINDOW**
- .74 SHUTTERS**
FIRE SHUTTERS
Iron fire shutters
size of material and construction
framing
opening device
hinges
conforming to Fire Underwriters' regulations
Metal covered wood shutters
(See 8—7. Fire resisting work)
Sliding shutters
Rolling shutters
- .75 SHUTTER EYES**
Distance apart
Construction
- .76 SIGNS**
- .77 SILLS**
- .78 SKYLIGHTS**
- .79 STAIRS, BASEMENT**
- .81 STAIRS, MAIN**
Strings
plain, moulded
Platforms
Supports
Allowable live load
Panels
plain, moulded
Facies along well holes
plain, moulded
Newels
Safety treads
hard and soft steel
dovetailed brass
carborundum
lead, steel, rubber
Plates under stair treads and platforms
RAILING
Cast iron, wrought iron
Railing on exterior stairs
- .82 STEPS—SPIRAL**
- .83 STEPS**
- .84 STORE FRONTS**
- .85 TABLETS**
- .86 TRENCH COVERS**
Steel, cast iron
- .87 TRIM**
Metal trim (New York Law)
(See 8—7. Fire Resisting Work)
- .88 WATER TOWERS**
- .89 WEATHER VANE**
- .91 WHEEL GUARDS**
- .92 WINDOW PANELS**

.93 WINDOWS

Casement windows
 pivoted windows
 ratchet opening device
 Large windows

6-3. MISCELLANEOUS STEEL AND IRON WORK**.1 DOME LIGHT****.2 GARDEN ACCESSORIES**

(See 28-0. Landscape Architecture and Gardening)

.3 PATENT LIGHT WORK

Types or makes
 cast iron frames set with prism lights
 concrete frames with prism lights
 Special prism lighting
 Coal hole covers
 Safety treads, borders
 Folding doors
 solid metal doors
 patent light doors
 countersunk lifting handles
 devices for locking, holding open and guarding shaft when open
 automatic lifting doors over sidewalk elevator
 Ventilating shaft
 Small sidewalk ventilator
 Warranty
 term of years

.4 PLATFORM ELEVATOR

Electric elevator
 Hand power elevator
 (See 21-3. Lift)

.5 PRISM LIGHTS**.6 SAFE FOR SILVER****.7 SUMPS****.8 TANKS**

Material of tanks
 brick
 concrete
 steel
 wood

Uses of tanks

acid
 annealing
 blow-off
 cold storage
 condensor
 cooling
 dipping
 drainage
 elevator
 filter
 gas engine
 grain
 hydrolizing
 ice
 molasses
 outfall
 oil
 ore
 paint
 paint stocks
 pneumatic
 rendering
 refrigerator
 sand
 scale
 septic
 sewage
 slurry
 soap
 sprinkler
 standpipes
 storage—grain, etc.
 suction
 sugar
 tar
 varnish
 vinegar
 vitreol
 water supply
 water towers
 Construction of tanks
 Closed tanks
 size
 thickness of material
 pressure to withstand, per square inch
 method of stiffening and riveting

dividing into two parts

manhole

connections for supply, suction, sub-soil drainage, vent, automatic control pipes, etc., for each compartment

gratings in bottom of compartments
 iron saddles to support tank

Open tanks

size

thickness of materials

dividing into two parts

method of stiffening, bracing, etc.

drip pan underneath, waste connection
 connections for discharge, overflow, waste pipes, etc., for both compartments

Cast brass strainers for tank outlets

.9 VAULT DOORS

(See 19-0. Vault Contractors' Work)

6-4. PAINTING AND FINISHING OF STEEL AND IRON WORK

No painting in wet or freezing weather

Painting on dry surfaces

Brushes to be used

Cleaning

scales, grease, dirt, rust, acid, etc.

by wire brushes

by sand blast

by pickling

Bills

showing material delivered, purchased, etc., to enable determining character, brand and quality of material

Substitution of materials

sufficient grounds for removal of painting and finishing contract and condemnation of work executed with other than proper materials

ORNAMENTAL WORK

Electroplating

shade and finish

lacquering and greasing

Cleaning material of defects, tool marks, scales, etc.

Pickling

Plating with statuary bronze metal

Painting

kind of paint

number of coats

STRUCTURAL WORK

Brand and make of paints

red lead paints

graphite paints

carbon paints

cement paints

coal tar paints

Composition and testing paints

Number of coats of paint

after cleaned and before shipment

after punched and before assembled

after erected at building

Cast iron work

after inspection at building

Planed or finished surfaces

before leaving shop

7-0. BRONZE AND BRASS CONTRACTOR'S WORK

(See 2-2. Schedule of Conditions of Contract)

(See 3-0. General Conditions)

(See 4-0. General work)

Work to conform to details and models

Edges and mouldings sharp and true

Joints to match

Roughness and irregularities to be removed

Exposed surfaces to be milled and buffed smooth and true

Ornaments clean cut, sharply cast

Strength

thickness to give proper stiffness

bracing and framing

Composition of bronze

drawn or rolled bronze

castings

free from imperfections impairing strength or appearance

Finish—exterior

Finish—interior

Samples

to architect showing finish, polishing, burnishing, etc.

CUTTING AND PATCHING

Trades to cut and patch own work for installation by other trades

Trades to cut and patch all work for installation of own work

MODELS

Full size plaster

Preserving and disposing of models

Casts

Photographs of models

Provisional amount for models

TEMPLATES

Required to fit work together

.1 BAS RELIEFS**.2 BULLETIN BOARDS****.3 CAGES**

Construction of frame work and grilles

Doors—sliding

Tops over cages

.4 CANOPIES**.5 CAPITALS****.6 COUNTER****.7 COUNTER SCREEN**

Construction, bracing, stiffening, etc.

Glass work, locks, catches, hinges, lettering, anchors, hold fasts, etc.

Grilles and gates

Chase in cornice for electric conduit

Lamp standards on pilasters and cages

.8 DOMES**.9 DOORS**

Bronze

Elevator

(See 8-7. Fire Resisting Work)

Grilles for doors

Bolts, rosettes, etc.

Transoms

.11 DOORS—REVOLVING**.12 ELECTROLIERS****.13 ELEVATOR ENCLOSURES****.14 ENTRANCE****.15 FENCE****.16 FINIALS****.17 FOUNTAINS****.18 FIREPLACE ACCESSORIES****.19 FLOOR SLABS****.21 GATES****.22 GRILLES****.23 GUARDS****.24 LAMPS****.25 LETTERING****.26 MARQUISE****.27 NAME PLATES****.28 PARTITIONS****.29 PORTE COCHERE****.31 PORTICO****.32 RAILING****.33 SADDLES****.34 SIGNS****.35 SKYLIGHTS****.36 STAIRS****.37 STATUES****.38 STORE FRONTS****.39 TABLETS****.41 TRIM**

(See 8-8.34 Trim)

Metal trim (New York Law)

.42 WEATHER VANE**.43 WINDOW PANELS****.44 WINDOWS****8-0. CARPENTER CONTRACTOR'S WORK**

(See 2-2. Schedule of Condition of Contract)

(See 3-0. General Conditions)

(See 4-0. General Work)

Contemplated work

Grading, classification, etc., of timber

Grading, classification, etc., of finishing woods

Fireproof wood
Measurements of buildings to fit work
CUTTING AND PATCHING
Trades to cut and patch own work for all other trades
Trades to cut and patch all work to install own work

FORMS
(See 5—5.2 Forms)

8—1. STRUCTURAL FRAMING

Type of building
General details of construction
Trussed work
Description of special framing
Creosoting or treating timbers
Bedding sills, etc., on walls
Damp course under sills
slate, lead
painting
Anchoring sills
Work mortised and tenoned
Size of timbers for full framed construction
Size of timbers for part framed construction
Size of timbers for mill construction

TIMBERS

Straight grained, straight, square edged, mill sawed
Thoroughly seasoned material
Defects—large or loose knots, sap, ring shakes, splits or other imperfections impairing strength or durability
Grading, classification, defects, etc., according to standard rules specified
Enumeration of kinds of timber
Standard size
Standard bracing
Kinds of timber and places where used
Strength of timber
List of kinds of timber and allowable stresses

.1 COLUMNS AND POSTS

Timber posts
iron caps
bases
connections, etc.
Iron posts

.2 FLOOR AND ROOF FRAMING

Separate beams by masonry
Trimmers and headers
Bearings of timbers
wall boxes
bearing plates
Beveling ends of timber
Structural framing must not rest on non-bearing partition
Bridging
Framing
around flues and chimneys
around smoke flues of boilers and furnaces
around fireplaces
Joist hangers
Built up girders
Trussed beams
Girders for special locations
Provision for deafening
Provision for insulation
Special floor constructions
Framing for platforms
Framing for galleries, seats, etc.

ROOF FRAMING

Special construction for roofs
Battens for slate, shingle, tile roofs, etc.
Special framing
observatory
dormer windows
parapets
projecting eaves
gables
cornices
gutters
ornamental exposed work of exterior

ANCHORS AND TRAPS

Kinds of anchors
box
hook
screw
spear
star

Clamps, rods, bolts, straps
Sizes and kinds of anchors
Special anchoring

PARTITION FRAMING

Bearing partitions on walls, girders or partition plates
Insulating methods
Fire stops
Methods of framing members together
Bridging
Anchoring
Sliding door box
Plaster board partitions
Bricknogged partitions
Metal lath partitions
(see 5—19.4 Partitions)

.4 PIAZZA AND PORCH FRAMING

.5 ROOF TRUSS

Special truss framing
Kinds of trusses

.6 SHEATHING

Methods)
(See 8—11.16 Insulation and Deafening)

.7 SHIPPING PLATFORM

.8 SLEEPERS

For fireproof floors
Wood nail strips in concrete floors, etc.

.9 STUDS

For fireproof construction

8—2. CARPENTERS' IRON WORK

Work to conform to requirements under 6—0. Structural and Ornamental Steel and Iron Work

Work to be set
Work to be furnished and set
anchors and straps
chimney brace
clamp caps and busts
clamps—pipe
cornice brackets, etc.
ventilating brick
wall boxes
garbage
ventilating
coal opening

8—3. EXTERIOR WOODWORK

Classifications of material for strength and durability or appearance
soundness
thoroughly seasoned
free from large or unsound notches, sap, shakes, or other imperfections
milling exposed surfaces
Fitting and connecting work
Zinc coated nails for exterior woodwork
Material for bond courses, posts, railing, water table, cornice, window and door trim, etc.
Standard dressing
Half timber work
Composition ornament
Priming work for erection

CARVING

.1 CORNICE

.2 DOME AND CUPOLA

.3 LATTICE WORK

.4 PERGOLA

.5 PORCH

Front
Rear

.6 PIAZZAS

.7 ROOFS

Canvass roof
Thatched roof
Other roofings—(See 5—18. Roofing)
Overhanging roof
Turret roof and roof crestings and finials
Pent roofs over doors
(See 8—11.16 for Insulation, damp-proofing methods and sheathing)

.8 SCUTTLE

Operating and locking device
Ventilator

.9 SHUTTERS—EXTERIOR

Venetian shutters

.11 SIDING

Clapboarding
Novelty siding
Shingle siding
(See 8—11.16 Insulation, deafening methods and sheathing)

.12 SKYLIGHT

.13 STORE FRONTS

.14 TRELLIS

.15 WINDOWS

Wooden windows
Metal windows
(See 8—7. Fire Resisting Work)
Iron windows
Bronze windows
Material for wooden windows

FRAMES

DOUBLE HUNG WINDOWS

Segmental frames
Bay windows
Frames for exterior shutters
Frames for interior shutters
Double frames
Reinforced large frames
Size and construction of double hung windows

CASEMENT AND PIVOTED WINDOWS

Double casements
Frames with sliding panels
Pivoting sash
Hinges sash
Transoms
Size of materials and construction of casement and pivoted windows
Arrangement for screens
Arrangements for weather strips
Setting frames as work progresses
Protecting frames from injury
Pointing
Caulking around frames and making weather tight
Painting

SASH

Double hung frames
Casement sash
Pivoted sash
Sash for show windows
Storm sash
Size of materials and construction of various sash
Wood beams to secure glass
Painting
Weather strips
Ventilators for sash

8—4. PLAIN SHEET METAL WORK

(See 5—16. Plain Sheet Metal Work)

8—5. ORNAMENTAL SHEET METAL WORK

(See 5—17. Ornamental Sheet Metal Work)

8—6. ROOFING

(See 5—18. Roofing)

8—7. FIRE RESISTING WORK

Conform to regulations of insurance authorities
Conform to approved details
Painting and finish
Kalamín metal—composition
Copper covering—composition
Steel covering—composition

.1 FIRE DOORS

Swinging
Sliding

.2 FIRE RESISTING DOORS

All metal doors
Composition doors
wood
metal covered
Where located
corridors and stair enclosures
all elevators
automatic doors
self-closing doors
safety doors
hatch doors
Detailed construction of doors

.3 PARTITION SASH

Metal covered sash
All metal sash

.4 SHUTTERS

Swinging
Sliding

.5 TRIM

(See 8—8.34 Trim)
Metal covered trim
All metal trim
Exterior ornamental work

.6 WINDOWS

All metal windows
Composition windows
Wood metal covered windows
Materials and construction

8—8. INTERIOR WOODWORK

Requirements for durability or appearance

FINISHING WOODS

Kinds of wood and where used
Schedule of interior woodwork
Grading, classification, etc.

CONSTRUCTION

Measuring building to properly fit work
Set work with level and horizontal lines, plumb vertical lines
Precaution against shrinkage and warping
hollowing back of trim
planing, rebating, etc., to permit free expansion

Braces, etc.

Secure work by screws

Assembling work at shop

Backing up, blocking, mortising and tenoning, gluing and screwing work together

PANELS, ETC.

Framing and assembling to permit expansion and contraction
Matching grain and assembling

CURVED WORK

Spring work from solid, not kerf-sawed

VENEERING

Selecting for coloring, graining and marking
Matching jointing
Reversing veneer to form crotch veneer
Thickness of veneer for exterior and interior doors
Veneer exterior angles to conceal end grain of veneer
Backing for veneer

DRAWERS

Dovetailing together
Drawer slides
Drawer rollers

PROTECTION

Between kiln and delivery at building
After delivery and until completion of work

PREPARATION FOR FINISHING

Sand-papering, smoothing and cleaning surfaces

PAINTING

Priming and painting backs before leaving shop or exposed to weather

COMPOSITION ORNAMENT**WARRANTY**

Term of years

CARVING

Experienced carvers
Models
Photographs of models
Provisional amounts for carving

.1 BLINDS—VENETIAN

(See 8—8.28 Shutters—inside)

.2 BOOKCASES

Construction
Adjustable shelving
Cupboards with panel doors

.3 CHINA CLOSET

Construction
Drawers
Cupboards, shelving, etc.
Doors
swinging
sliding

Plain glass
Leaded glass

.4 CLOSETS

Kind of closets
bedroom
linen closet
sewing room closet
toilet and bathroom closets
medicine closet
cedar closet
broom closet

Construction of closets
shelving

hooks

Wardrobes

Drawers

Enclosed shelves

.5 COUNTER**.6 DOORS**

Doors other than wood

iron

fire

fire resisting

bronze

Where located

Construction and size of members of wood doors

Glass panel doors

Transoms over doors

Kind of doors

hinge

folding

sliding

baize

leather covered

secret

batten

framed and brazed

trap doors

loop hole doors

counter-balanced doors

dumbwaiter

clothes chute

double acting doors

Dutch doors

dwarf doors

elevator trap doors

screen doors

slat doors

toilet stall doors

.7 DOORS—BALANCED

Balance doors

Lifting doors

hand lift

chain hoist

automatic closing

crank

special

.8 DOORS—REVOLVING**.9 DOOR JAMBS**

Wood

Iron

Bronze

Size and construction

Moulded and paneled jambs

Method of fastening jambs

.11 DRIP BOARDS

Wash tray covers

Drain boards

.12 GRILLE WORK**.13 HAND RAIL ON STAIRS**

Rail on brackets in walls

.14 KITCHEN FITTINGS**.15 LADDER****.16 LATTICE WORK****.17 MANTELS**

Furnished by owner

Provisional amount for mantels

.18 PANTRY SLIDE

Sliding

Revolving

.19 PANTRIES

Butler's pantry

Kitchen pantry

.21 PARTITIONS

Flexible

Folding

Rolling

Sliding

Glazed

.22 PARTITIONS—TOILET**.23 PLUMBING SUPPORTS**

Water closet tanks
Basins
Exposed piping
Other plumbing fixtures

.24 SADDLES

Beveled
Flush

.25 SASH

(See 8—2.15 Windows)

SASH—DOME

Under skylights
Reinforcing sash
Ventilating panels
Hinged sash

SASH—PARTITION

Stationary
Sliding

.26 SCREENS**.27 SHELVING****.28 SHUTTERS—INSIDE**

Hinged shutters
Sliding shutters
Revolving shutters

.29 STAIRS

Construction
carriages
self supporting
angle posts
tongued and grooved treads and risers, housed into wall strings, wedged and glued
house landings into treads
secure work to wall frame work, etc.
live load sustained

Furring under side of stairs

Hand rail

Balusters

Newels

Safety treads

hard and soft steel

dovetailed brass

carborundum

lead and steel

rubber

Paneling under stairs

Circular stairs

Attic stairs

Outside stairs

.31 STORE BULKHEAD**.32 STORE FRONTS****.33 TELEPHONE BOOTHS****.34 TRIM**

Wood trim

Fire resisting trim (see 8—7.5 Trim)

Construction of trim

Paneling

construction, thickness of veneer
matching veneer

WAINSCOTING, ETC.

Moulded base, rail, field

Wood rails on plaster walls

Moulded cornice

Columns

Papier mache ornament

CEILING

Moulded beams

Panels

Carved and ornamented

Wood rails on plastered ceiling

Papier mache ornament

Beam casing

CASINGS

Doors and windows

moulded, full length

plain, full length

Sanitary window trim

BASE

Moulded

Plain

Screwing to permit ready removal

Install base before laying floor

Moulded cap on marble base

Base for columns

Bedboards

Carpet strips

CHAIR RAIL

Plain

Moulded

PICTURE MOULDING

Plain
Moulded

PLATE RACK**PLATE RAIL****MOULD FOR WIRES****ARCHES****SEATS****SIDEBOARD****COVER FOR WIRE CHASES****SCREENS****CASING PLUMBING PIPES****.35 WARDROBES****8-9. FLOORING**

Floors not of wood

Floors, wood

Quality and appearance of floors

allowable defects

hollowing under side to prevent warping

Kinds and size of flooring

oak

spruce

maple

cherry

pine

birch

mahogany

Hardwood borders

for floors around hearths, registers, vents or other openings

Kiln drying flooring

Laying and nailing flooring

Breaking joints

Paneling over pockets and pipe trenches

Preparation for finish

planing, scraping, sand-papering

Protecting floors

Deadening for floors

FLOOR LINING

Felt

Paper

.1 BLOCK FLOORING

Interlocking block flooring

.2 PARQUET FLOORING**.3 RUBBER TILE FLOORING****.4 UNDERFLOORING****8-11. MISCELLANEOUS CARPENTERS' WORK**

(See general requirements 8-2. Exterior Woodwork and 8-8. Interior Woodwork)

.1 ARBOR**.2 BIN**

Ash

Coal

Wood

.3 BULKHEAD

Over cellar stairs

.4 CLOTHES DRYING RACKS**.5 CLOTHES CHUTE****.6 COLD AIR DUCT**

For hot air heating system

.7 DUMBWAITER

Hand power

Electric lift

(see 21-3. Lifts)

.8 FENCE

Picket fence

Rail fence

Ornamental fence

Wire fence

.9 FLAG STAFF**.11 FLOWER BOXES**

For porches

For windows

For gardens

.12 GARDEN ACCESSORIES

Pergola

Seats

Lattice work

Trellis

Clothes posts and racks

Flower boxes

Arbor

Summer house

Swings

Rustic work

.13 GATES

Framed and braced

Sliding gates

.14 GROUNDS AND FURRING

Around trimmed openings

For base, chair rail, picture mould, wainscoting, etc.

Exterior walls

For wood and plaster cornices, ornamental work, etc.

Furring out walls, etc., and finish portions of attic to give sizes required

Furring for metal roof

.15 ICE CHUTE**.16 LIGHTNING CONDUCTORS**

(See 11-4. Lightning Conductors)

.17 INSULATION AND SHEATHING

Floors

Partitions

Walls

Types of insulation and sheathing

asbestos

composition

compounds

cork

felt

fibrous

paints

papers

special

Commercial forms

block

boards

bulk

liquid

rolls

sheets

.18 MAIL CHUTE**.19 PARTITIONS—WOOD****.21 PERGOLA****.22 PRIVY****.23 REFRIGERATOR****.24 SCREENS**

For doors and windows

exterior

interior

.25 SHELVING**.26 STAIRS—TEMPORARY**

Construction and sizes

.27 STORM VESTIBULE**.28 SUMMER HOUSE****.29 TANK**

Lead lined wood tank

.31 TANK COVERS**.32 TRELLISES****.33 TRUNK LIFT**

Hand power

Electric lift

(see 21-3. Lifts)

.34 VENTILATING APPARATUS**.35 WALKS**

Yard

On roof or around skylights, etc.

.36 WEATHER STRIPS**.37 WOOD BRICKS****.38 WOOD SHED****8-12. GLAZING**

Kinds of glass and finish

American

applied decoration

art glass

bead

bend

beveled

blackboard

chipped

clear crackle glass

clear iridescent

clear rippled

corrugated

crystallized

crystal onodynt

cut jeweled

enameled

embossed

etched

fluted

ground

hammered

leaded

lettered

marbleized

maze

mosaic

opalescent

ornamental

painted

pressed

ribbed

sand blasted

silvered

stained

structural

Venetian

wheel cut

Securing glass

puttying and glazier's points

wood beads

leading

Samples of glass

Cleaning and repairing glass on completion

Where used

doors

entrance

vestibule

transoms over

to corridors and stair enclosures

to elevators

hall doors

mirrors

pavement lights

(see 6-3.3 Patent Light Work)

sash

to corridors and stair enclosures

front sash

sides and rear sash

show windows

toilet room sash

dressers and china closets

storm sash

segmental sash

ventilator in sash

Prism glass

Leaded glass

Special setting for show windows

Skylights

Dome sash

Structural glass

8-13. HARDWARE**.1 ROUGH HARDWARE**

Nails, screws, screw bolts, sash weights

Window pulleys

side pulleys

overhead pulleys

Sash chains

Sash cords

Sash ribbons

Weights

iron

lead

Sliding door hardware

elevator

fire

other sliding doors

Hardware Underwriters' standard fire door

.2 FINISHING HARDWARE

Hardware furnished by owner

Provisional amount for hardware

Kind and make of hardware

Designation of hardware

by weight

by manufacturers' number

Quality and material

Quality and finish

Kind of finishes

Schedule of hardware required

AWNINGS

Store front

Window

CLOSETS, ETC. (SMALL)

Kinds of closets

bedroom

china closet

electric cut-out and distributing boxes

medicine closet

pocket for gas valve

secret closet
storage closets
Hardware required
baggage hooks
catches
coat and hat hooks
hinges
latches
locks
pulls
BATHROOM ACCESSORIES
Coat and hat hooks
Comb and brush holders
Match and cigar holders
Medicine closets
Mirror frames
Mirrors
Paper holders
toilet
shaving
waste
Plate glass shelves
Seats
Soap trays
Soiled towel boxes
Sponge trays
Tooth powder holders
Towel rack and shelves
Tumbler holders
Whisk broom holders
DOORS
Kind of boards
batten
communicating
counter-balanced
clothes chute
dumbwaiter
double acting
Dutch
elevator
entrance—exterior
main
others
fire doors
fire exit
fire resisting
folding
framed and braced
hall doors
scuttle
screen
secret
sliding
store
toilet
trap
Hardware required
alarms
bars
bells
bolts
bumpers
butts
check and spring
escutcheons
fasteners
guards
handles
hangers
holders
hinges
knobs
knockers
latches
letter plates
lock-sets
numbers
openings, electric
pulls
push buttons
push and kick plates
rail, sliding
rollers
sets, mortise, screen
sheaves
springs
stays
stops
stops and holders
GATES
Kind of gates
sliding
swinging

Hardware required
alarms
bars
bolts
bumpers
butts
catches
check and spring
fasteners
handles
hangers
hinges
latches
letter plates
lock-sets
openers, electric
pulls
push buttons
push and kick plates
railing, sliding
rollers
sheaves
springs
stays
stops
stops and holders
MISCELLANEOUS
Bookcases
Clothes line hooks
Cupboards
Dressers
Hand rail brackets
Letter boxes
Pantries
Screens
door
window
SASH
Kind of sash
casement
dome
double hung
fire exit
French
partition
pivoted
show window
skylight
sliding
storm
transom
ventilating
Hardware required
adjusters
balances
bolts
centers
counter-balance weights
fasteners
greenhouse devices
hinges
knobs
lifters
lifts and locks
lifts
locks
openers
props
pulls
rollers
sheaves
sockets
sockets and locks
stop beads
transom rods
ventilators
ventilating bolts
SHUTTERS AND BLINDS
Kind of shutter
fire shutters
hinged
rolling
sliding

Hardware required
adjusters
bars
bolts
butts
fasteners
handles
hinges
hooks
knobs
lifts
sheaves
WINDOW CLEANING DEVICE
3 KINDS OF HARDWARE
ADJUSTERS
Blind
Casement
Sash
Stop bead
AWNING
Cleats
Pulleys
BAGGAGE HOOKS
BALL BEARING
Butts
Cylinders
Floor hinges
Pivots
BAR SASH LIFTS
BARS
Espagnolette
Push
Shutter
BASE KNOBS
BELL
Crank
Levers
Pulls
Pulls, slide
Turns
BELLS
Alarm door
Door
Double stroke door
Electric ring
House
Lever and pull
Push and pull
Rotary stroke for bell turns
Rotary stroke for push buttons
BOLT PLATES AND STAPLES
BOLTS AND LATCHES
Half-mortise
Mortise
BOLTS
Barrel
Bottom
Bottom and top
Bookcase
Cased
Casement
Chain
Cremorne
Cupboard
Double mortise extension
Dutch door
Espagnolette
Expansion
Extension flush
Flat spring
Flush
Foot
French window
Half mortise
Indicator, water closet
Lever flush
Mortise door
Mortise door extension
Mortise flush
Mortise turn buckle and extension
Mosquito bar
Necked spring
Sash ventilating

Ship
 Shutter
 Side flush
 Spring
 Spring, flush
 Square spring
 Surface door
 Surface extension
 Surface for windows
 Toggle
 Top
 Water-closet door
 Water-closet indicator
 Window spring
 With knobs
BOX CORNERS
 Handles
BOXES FOR FLOOR SPRING HINGES
BRACKETS
 Hand rail
 Pew rack
 Shelf
 Window and door screen
BRAIDED SASH CORD
BUTTONS
 Electric push
 Electric push and card plates
 Electric push with mouthpieces
 Push, for gas lighting
 Push, for rotary stroke bells
 Turn
BUTTS
 Ball bearing
 Blind
 Desk
 Fast joint
 Inside blind
 Loose joint
 Loose pin, ball bearing
 Organ
 Pianoforte
 Screen
 Shutter
 Spring
 Stop
 Surface
 Table
 Transom
 Water-closet
 Wash tray
CABIN DOOR HOOKS
CARD PLATES
CARRIERS, PARCEL
CASEMENT
 Bolts
 Plates
 Adjusters
 Fasteners
CASTERS
CATCHES
 Bookcase
 Cupboard
 Elbow
 French window
 Gate
 Lever cupboard
 Quadrant
 Refrigerator
 Screen door
 Secret gate
 Showcase
 Table
 Transom
CEILING HOOKS
 Pulleys
CELLAR WINDOW FASTENERS
CENTERS, SASH OR TRANSOM
CHAIN DOOR FASTENERS
CHAINS
 Transom
 Sash
CHECK AND SPRING, LIQUID AND AIR DOOR

CHECK SPRINGS, HOUSE BELL
CHEST HANDLES
CIGAR HOLDERS
CLEANING DEVICE, WINDOW
CLEATS, LINE
CLOTHES-LINE HOOKS
 Line pulleys
COAT AND HAT HOOKS
COIL DOOR SPRINGS
COLLAR HOOKS
COMMUNICATING DOOR LOCK SETS
CORNER BRACES, WATER-CLOSET PARTITION
CORD
 Bell
 Clothes lines
 Curtain
 Irons, sash
 Lines
 Picture
 Sash
 Signal
 Shade
CRANK HANDLE KNOBS
 House bell
CRATE HASPS
CREMORNE BOLTS
CUP AND DROP RING
 Handles
CUP AND T HANDLES
 Escutcheons
CUPBOARD
 Catches
 Turns
CUP
 Escutcheons and thumb knobs
 Escutcheons, flush
 Handles, flush
CURTAIN PINS
CYLINDERS
DEAD LOCKS
 Mortise
 Rim
 Sliding door
 Store door
DOOR
 Alarms
 Bells
 Bumpers
 Check and spring
 Fasteners
 Guards
 Handles
 Hangers
 Holders
 Knobs
 Knockers
 Lock sets
 Openers, electric
 Pulls
 Rail, sliding
 Rings, lift
 Rollers
 Sets, mortise screen
 Sheaves
 Springs
 Stays
 Stops
 Stops and holders
DRAWER
 Escutcheons
 Handles
 Handles, flush
 Knobs
 Pulls
 Slides
DROP
 Escutcheons
 Handles and flush cup
 Handles, drawer
 Handles, flush
 Rings
 Rings and knobs

DRUGGIST
 Drawer pulls
 Label plates
DUTCH DOOR BOLTS
ELBOW CATCHES
ELECTRIC DOOR OPENERS
 Push buttons
ELEVATOR DOOR LOCKS
ESCUTCHEONS
 Drop rings
 Lever handles
 Pulls
 Thumb knobs
 Cabinet
 Cup
 Drawer
 Drop
 Flush cup
 Plain
 Plate
 Sunken key hole
 Thread
ESPAÑOLETTE BOLTS AND BARS
FASTENERS
 Blind
 Cab
 Casement
 Cellar window
 Chain door
 Door
 Ice box
 Sash
 Sash chain
 Scuttle
 Shutter
 Side sash
 Storm window
 Table
FIGURES
FINGER PLATES
FINISHES, DESCRIPTION OF FLOOR
 Plates, bolt
 Stops
 Spring hinges
FLUSH
 Cup and drop handles
 Cup escutcheons
 Cup handles
 Rings
 Sash lifts
FRENCH WINDOW CATCHES
GATE CATCHES
GLASS
 Door knobs
 Drawer knobs
 Mortise bolt knobs
 Push plates
 Shutter knobs
GRIPS
GUARDS, SAFETY WINDOW CLEANING HANDLES
 Chest
 Crank and knob
 Cup and drop
 Door
 Drawer
 Drop
 Flush cup
 Flush drawer
 Flush cup and drop
 Flush cup and T
 Lever
 Lifting
 Ring drop
 Shelf box
 Shutter
 Store door
 Tee
 Tee and knobs
 Tub
HAND OF, DOOR LOCKS
HAND RAIL BRACKETS

HANGERS

Clothes
Door
Pole

HARNESS HOOKS**HASPS**

Hinge
Padlock

HAT AND COAT HOOKS**HINGE**

Plates
Straps

HINGES

Back flap
Blind
Conical joint
Desk
Crate
Gate
Flap
Floor
Paper file
Hook and eye
Pianoforte
Pin or center
Quadrant
Refrigerator
Screen
Scuttle
Showcase
Shutter
Shutter, inside
Spring
Stay or support
Strap and T
Surface
Suspension
Trap door
Ventilating
Water-closet
Wash tray

HITCHING RINGS**HOLDERS**

Cigar
Door
Door Stop and

HOOK

Baggage check
Bird cage
Cabin door
Ceiling
Chandelier
Clothes-line
Coat and hat
Coat and hat for marble
Fire-pail
Harness
Hotel
Moulding
Lamp
Pantry
Picture
Sash lifts
Schoolhouse
Screw
Shutter
Sliding shutter
Towel
Wardrobe

HOOKS

Desk
Door
Hall stand

HOOKS AND STAPLES**HORIZONTAL TYPE UNIT LOCK****HOTEL LOCKS****INSIDE DOOR SETS****IRONS, SASH CORD****KEYS****KICK PLATES****KNOB**

Parts
Plates

Screws

Spindles

Washers

KNOBBS

Base and crank handles
and drop rings
and Tee handles

Half

Kettle

Closet

Drawer

French window

Glass

Sash

Mortise bolt

Metal

Picture

Porcelain

Screwless

Screwless, spindle

Thumb

Wood

KNOCKERS, DOOR**LABEL**

Drawer pulls

Plates

LATCH AND BOLT

Half mortise

Mortise

LATCHES

Apartment house

Barn door thumb

Cupboard

Elevator

Gate

Half mortise

Half mortise bolts and

Half mortise elevator sliding door

Mortise

asylum

communicating

elevator sliding door

knob

night

office

office gate

rim knob

stable sliding door

screen door

store door

vestibule door

Rim elevator sliding door

Rim knob

Rim night

Sliding door

Store door thumb

Thumb

Unit

Unit, night

Unit, office

Unit, vestibule

Water-closet door

LATCH SETS

Inside door with thumb latch

Store door

LETTER-BOX PLATES**LETTER-BOXES, APARTMENT HOUSE****LETTERS****LEVER HANDLES AND ESCUTCHEONS**

Auxiliary spring attachment for

LEVERS, DOUBLE STROKE BELL**LIFTERS**

Skylight

Transom

Transom concealed

LIFTING HANDLES**LIFTS AND LOCKS, SASH****LIFTS**

Bar sash

Flush sash

Hook sash

Pivot

LINE CLEATS**LIQUID DOOR CHECK AND SPRING****LOCKER RINGS****LOCK SETS**

Apartment house

Bathroom door

Front door

Rim knob

Safety exit door

Store door

Strikes

LOCKS

Unit bathroom door

Communicating door

Cupboard

Cylinder

Dead

Desk

Elevator

gravity locks and bars

walking beam

Entrance doors

Front door

Hotel

Lockers

Master-keyed

Mortise

Pin tumbler

Office

Rabbeted

Residence room door

Reverse bevel

Rim

Sash

Shutter

Transom

Vestibule door

Wardrobe

Half mortise

cupboard

dead

elevator sliding door

knob, stable sliding door

Special

asylum

prison

bank

time

combination

burglar proof

fire-proof

safe deposit

"sub treasury"

bolt motor

MORTISE

Bell crank

Bolts

Door bolts

Extension bolts

Flush bolts

Latches

Locks

Turnbuckles

Turnbuckles and bolts

PLATES

Finger

Handrail

Hinge

Key

Kick

Label or card

Name door

Letter box

Number

Pull

Push

Sash pull

Square bolt

OPENERS, TRANSOM**PROPS, SASH****PULLEYS**

Axle

Awning

Ball bearing

Ceiling
 Clothes line
 Curtain
 Dumb-waiter
 End
 Frame
 Hot house
 Incased screw
 Milled axle
 Polished wheel
 Riveted axle
 Round corner
 Showcase
 Screw
 Side
 Square corner
 Swing
 Swivel
 Tackle
 Turned wheel and axle
 Upright
 Wagon brake
 Window frame
 Wrought axle
PULLS AND ESCUTCHEONS
 Barn door flush
 Bell
 Box
 Door
 Door on plates
 Drawer
 Druggist drawer
 Flush sliding door
 Mortise
 Sash
 Screen door
 Sliding door
 Slide bell
 Window
PUSH AND PULL PLATES
PUSH
 Bars
 Buttons, electric
 Buttons, electric and card plates
 Buttons for gas lighting
 Buttons for rotary stroke bell
 Plates
QUADRANTS
RACKS, TOWEL
RAIL, SLIDING DOOR
REVERSE BEVEL DOOR LOCKS
REVERSE BEVEL STRIKES
RIM
 Latches
 Locks
 Turnbuckles
RING
 Drop handles
 Handle knobs
RINGS
 Flush
 Hitching
 Locker
ROLLERS
 Sash
 Barn door
 Stay
ROSE AND ESCUTCHEONS, COMBINED
ROSES
 For glass knobs
 For knobs
ROSETTES
ROTARY STROKE BELLS
ROUND
 Cased chain bolts
 Cased foot bolts
RUBBER TIPPED DOOR STOPS
SAFETY STRIKES
SAFES, MATCH
SASH
 Balances
 Bolts
 Center

Cord
 Chains
 Ribbons
 Cord irons
 Fasteners
 Fasteners, side
 Greenhouse devices
 Knobs
 Sash operating
 Ventilator operating
 Lifts and locks
 Lifts, bar
 flush
 hook
 Locks
 mortise
 rim
 Openers
 window
SKYLIGHT
 Transom centers
 Props
 Pull plates
 Pull poles
 Pulls
 Rollers
 Sheaves
 Sockets
 Sockets and locks
 Ventilating bolts
SCREEN
 Door catches
 Corners
 Window
SCREW PULLEYS
SCREWLESS
 Knobs
 Spindles
SCREWS AND WASHERS, WINDOW AND DOOR STOP
SCREWS
 Hand rail
 Looking glass
 Shutter
 Side knob
SELF-LOCKING BOLTS
SETS
 Latch
 Lock
SHEAVES
 Elevator
 Sash
 Shutter
 Sliding door
SHELF
 Brackets
 Pins
 Supports
 Rests
SHUTTER
 Bars
 Bolts
 Butts
 Fasteners
 Handles
 Hinges
 Hooks
 Hooks, sliding
 Knobs
 Lifts
 Screws
 Sheaves
SIDE
 Bell cranks
 Pulleys
 Sash fasteners
SKYLIGHT
 Fasteners
 Lifters
SLIDING DOOR
 Hangers and tracks
 Latch sets
 Locks

Plates
 Pulls
 Rail
 Sheaves
 Stops
 Sash sheaves
 Shutter sheaves
SOCKETS AND LOCKS, SASH
SOCKETS
 Window spring
 Sash
SPECIAL DOOR HARDWARE
 Barn door
 Fire engine
 Garage
 Railroad engine house
 Cold storage
 Refrigerator
 Fire protection
 sliding
 swing
 folding
 coiling
SPIKES, HOUSE BELL
SPINDLES, KNOB
SPRING
 Attachment for lever handles and check,
 liquid door
 Hinges
SPRINGS
 Window
 Window bolt sockets
STAYS
 Transom
 Barn door
STOPS AND HOLDERS
STOP SCREWS AND WASHERS
STOPS, DOOR
STORE DOOR
 Handles
 Latch sets
 Lock sets
 Lock rim
 Top and bottom bolts
 Rack hooks
STRAP HINGES
STRIKES
 For marble
 Mortise lock
 Water-closet door
STUDS AND NAILS
SUPPORTS, SHELF
SURFACE BUTTS
SWITCH PLATES, ELECTRIC PUSH AND TURNS
TEE
 Handles
 Handles and knobs
 Hinges
THREAD ESCUTCHEONS
THUMB
 Knobs
 Knobs and escutcheons
 Latches
 Latches, barn door
 Latches, store door
TILL LOCKS
TOWEL RACKS
TRANSOM
 Adjuster
 Butts
 Catches
 Centers
 Chains
 Eyes
 Lifters
 Openers
 Plates
 Lifters, brackets
 Lifters, concealed
 Lifters, special
 Openers or sash centers
 Stays

TRAP-DOOR

Hinges
Rings

TURNBUCKLES, AND EXTENSION
BOLTS, MORTISE

Blind
Rim

TURNS

Bell
Cupboard

UNIT LOCKS

UPRIGHT PULLEYS

VENTILATING SASH LOCKS

VESTIBULE LATCHES

WASHERS, KNOB

WARDROBE

Hooks
Locks

WASH TRAY HINGES

WATER-CLOSET DOOR

Bolts
Bumpers
Corner braces
Hinges
Latches
Spring hinges
Strikes, for marble
Hooks for marble

WINDOW

Adjusters
Alarms, electric
Fasteners
Fasts
Frame pulleys
Pulls
Screen corners
Screen pulls
Spring bolt sockets
Spring bolts
Springs

WIRE

Ceiling hooks
Coat and hat hooks
Door pulls
Sash cord

WOOD

Door knobs
Door stops
Plate escutcheons

WEIGHTS, SASH

WINDOW AND DOOR STOP SCREWS
AND WASHERS

Springs

WRENCHES, OX-BALL

8-14. PAINTING AND FINISHING OF
WORK

(See 23-0. Interior Decorators' Work)

Work to be painted and finished
all exposed interior and exterior wood-
work, iron, metal work

painting of masonry work not included

INSPECTION OF WORK NOT IN-
CLUDED

Proper condition to receive painting and
finishing

Notifying architect of any faulty work
before starting

FINISH OF WORK

Cleaning before painting or finishing
Applying evenly and smoothly, free from
brush marks

Puttying and sand-papering

Allowing sufficient time between coats to
thoroughly dry

Finish panels before building in place

Covering knots, sap and pitchy places
with shellac or kill with lime

SAMPLES

Of each kind of finish specified

Finished work must conform to approved
samples

NUMBER OF COATS

Does not include any priming or paint-
ing at shop

WORKING IN FREEZING WEATHER,
ETC.

No work where temperature is below
46° Fahr.

GRADE OF WORK

Commercially usual, special or unusual

PROTECTION

Floors, woodwork, masonry, etc.

Leave clean and free from paint or oil
spots

SPONTANEOUS COMBUSTION

Premises free from oil rags, waste, etc.

Precaution to avoid spontaneous com-
bustion

WARRANTY

Term of years

MATERIALS

Quality and kinds specified or other ap-
proved equivalent

Delivering in original cans or packages
intact

Mixing at building

Using without thinning or additions

BILLS, ETC.

To prove purchase and receipt, charac-
ter, brand and quality of materials
used

ANALYSIS OF MATERIALS

TESTS OF MATERIALS

SUBSTITUTION OF MATERIALS

Cause for dismissal of painter

Condemnation of work done without
proper materials

WHITE LEAD

Kind

Brand

Composition

LINSEED OIL

Kind, brand

Composition, characteristics

OIL COLORS

Kind, brand

Composition, characteristics

ZINC WHITE

ENAMELS

DRY COLORS

DISTEMPERED COLORS

VARNISH

Kind, brand

for exterior work

for interior work

Composition, characteristics

Tests

flash—temperature

set to touch—time

condition to recoat—time

temperature for making tests

FILLER

Brand, make

SHELLAC

Brand, make

Composition

PUTTY

Composition

Coloring

FLOOR FINISH

STAINS

Interior finish

Shingles

PAINT REMOVERS

WATERPROOF PAINTS

SPECIAL PAINTS

Aluminum

Asphalt

Blackboard

Bronze

Damp-proof

Japan

Marine

Masonry

brick

concrete

stone

Metallic

Non-staining

Preservative

Protective

Ready mixed

Steel and iron

PRIMING

Before material leaves shop or exposed
to weather

Priming all exterior work

Work oiled and varnished

Painting work on back before erection

Priming all woodwork to be painted,
before leaving shop

Priming all woodwork to be "Hard-
wood" finish, with paint on back
and staining and filling exposed
surfaces

.1 FLOOR FINISH

Protecting floors

Filler

brand, make

Finish

wax

paraffin oil

finish for pine and maple floors

finish for masonry floors

.2 GILDED WORK

.3 HARD WOOD FINISH

Cleaning

Sand-papering

Painting back against masonry

(see Priming)

Puttying after first coat, coloring putty

Kinds of finish

materials, methods of application

finish required

exterior finish

.4 PAINTED WORK

Mixing—methods

revolving churn

hand mixing

First coat

composition, materials

Second coat

composition, materials

Last coat

composition, materials

Special finishes

Finish nail holes, cracks, openings, etc.,
after priming

Different shades for different coats

METAL—PAINTED WORK

Work not included

painting structural steel and iron

tin roofing, except last coat

ornamental iron work—shop coat

ornamental iron work—electroplated

Cleaning

Work included

structural and ornamental work

exterior, interior

exposed piping, metal ducts, pipe cov-
ers, etc.

elevator sheave beams, guides, etc.

fire escape, outside steps

elevator fronts, ornamental grilles, etc.

slop sink standards

other metal work against masonry
floors

Kinds of paint

lead and oil paints

waterproof paints

enamel paints

smoke resisting paints

water resisting paints

acid-proof paints

special paints

Number of coats
 Sheet metal
 cleaning—with benzine
 number of coats of paint
 oiling copper, etc.
 painting roof
 Bronzing radiators
 Painting canvass cover of piping
 Water tanks, etc.
 Smokestack, etc.

WOOD, ETC.—PAINTED WORK

Number of coats
 Painting exterior work
 Staining exterior work
 Painting interior work
 Special finishes
 Party colors
 Ivory whites
 Enamel whites

GRAINING

Work—coats
 Comb graining

PRIMING

(See Priming)

**LETTERING NAMES AND NUMBERS
COMPOSITION ORNAMENT****.5 STAINED WORK**

Shingles

.6 WALL FINISH**MASONRY WALLS, ETC.**

Cleaning
 Painting
 brand, make
 Kinds of finish
 lead and oil
 masonry coatings
 waterproof paint
 calcimine
 patented coatings

PLASTER WALLS

Stenciling walls
 Decorating walls
 Stipple finish
 Graining work to imitate wood

STUCCO WALLS

Waterproof paint

**9—0. PLUMBING CONTRACTOR'S
WORK**

(See 2—2. Schedule of Conditions of Contract)

(See 3—0. General Conditions)

(See 4—0. General Work)

Contemplated work

complete with perfect system of drainage, water supply, gas fitting

Obtaining permits—paying fees

Notices to proper authorities

Conform to local laws, rules and regulations

Notify architect of conflict between specifications, regulations, etc.

Take measurements at building to properly fit work

Turn on water and leave work in perfect working order

CUTTING AND PATCHING

Trades do cutting and patching for installation by other trades

Trades do cutting and patching of all work for installation of own work

Trades reimbursing each other for improper cutting and patching

PROTECTING WORK

Damage to building or contents, soiled walls

TESTING AND INSPECTION

Entire plumbing and drainage system

WATER TEST**AIR TEST****PEPPERMINT TEST****HYDRAULIC PUMPING TEST****WARRANTY**

Term of years

1. EXCAVATION

Trenches inside of building

(see 4—2. Excavation)

Excavate for sewer, water, gas connections with street mains

Other work not provided under 4—2. Excavation

Properly repairing street and other work affected

2. MATERIALS AND CONSTRUCTION

Galvanized wrought iron pipe

where used

Cast iron pipe

where used

Earthen ware pipe

where used

Lead pipe

where used

Brass pipe

where used

Nickel plated pipe

where used

Special finish pipes

where used

PIPE, BRASS

Annealed seamless drawn brass tube

Cast brass fittings and screw unions of standard iron pipe sizes

Diameter, thickness, weight in pounds per foot

Nipples

seamless drawn brass

sizes, weights

Ferrules

bell shaped, extra heavy cast brass

sizes, weights

Screw caps for cleanouts

weight, thickness

Connections between brass and iron piping

Red lead joints

Pipe hangers

Bending pipe to change direction

least radius

Exterior finish of pipe

PIPE, CAST IRON

Defects

Approval of manufacturer

Drainage system

sizes, weights

Water supply system

sizes, weights

Requirements to be fulfilled

standard of New England Water

Works Association

size, weight, mixer's name, cast on

each length of pipe

Joints

caulked—oakum, lead

Testing pipes

oil test

Coating pipes after testing

PIPE, EARTHEN WARE

Characteristics and make

Defects

Joints

Cleaning lengths after installation

PIPE, LEAD

Drainage system piping

sizes, weights

Water supply system piping

sizes, weights

Joints of piping

Connections between cast iron and lead piping

Connections between galvanized iron and lead piping

PIPE, LEAD ENCASED TIN**PIPE, LEAD LINED****PIPE, TIN LINED****PIPE, WROUGHT IRON**

Characteristics

Defects

Tests

Certificate of tests

Stamped with maker's name

Pipes lap welded

size, thickness, weight

Traps and fittings on drainage lines

recessed threaded fittings

smooth interior waterway

Pitch of threads

Galvanizing of piping and fittings

dipping in molten lead

not electroplating

Fittings on vent lines—cast iron or malleable

Screw joints

Reaming bur formed in cutting

VALVES

Construction

Brand, make

Exterior finish

Check valves

brand, make

Tags

to designate valves

Diagram of piping system in frame

9—1. DRAINAGE SYSTEM

Connecting all fixtures

Separate systems for excretal and storm water

GENERAL RULES

Vertical pipes plumb

Horizontal pipes, uniform fall

Horizontal vent pipes to drain to fixtures

Supports for pipes

adjustable hangers

brick piers

clamps

supports

Fittings

sizes, bends, branches

full size branches for future connection

reduced fittings

Protect pipes from siphonage or back pressure

Ventilating drainage system

Collars, etc.

through walls

tightly pack and seal

metal collars

Flashing

pipes through roofs

provision for expansion and contraction

Hoods for pipes through roof

Cleanouts

location

Unions

Old taps

drawing and plugging, at mains

1. DRAINAGE ARRANGEMENTS

Connect drainage system to main sewer

House trap

Fish trap

Back-water trap

Emergency-gate valve

Fresh air inlet

boxes and grating

return bend

automatic device

Steam blow-out connection

Cleanouts

base of all vertical lines

changes in direction

proper intervals on long straight runs

elsewhere required to properly clean

all parts of system

covers for cleanouts and traps under

floor

grease traps

Masonry

(see 5—8.1 Cesspools, etc.)
 catch basins
 manholes
 sumps
 cesspools
 drains
 pits

DRAINAGE LINES

Increasing size at connections
 Traps on drains immediately before connecting to house drain
 Outside leaders
 metal
 (see 5—16. Sheet Metal Work)
 Ornamental leaders
 Connecting leaders to roof boxes
 brass ferrules with thread joints
 lead tube turned over leader and inner roof box
 Traps between house drain and area or floor connections
 Strainer over area and floor connections
 Connections to
 drains, cesspools, ventilating machinery, refrigerator pan, gas engine
 Catch basins for sub-soil drains
 back water trap
 emergency gate valve
 Sizes of lines and branches
 Octopus fittings

FLOOR DRAINS

Where required
 Kinds and manufacture
 For waterproof floors
 Brass drains with water supply

REFRIGERATOR WASTE**TANK WASTES**

Overflow and emptying pipes
 for roof, suction tank, pan under roof tank
 valves on emptying pipes

TRAPS**9—2. WATER SUPPLY SYSTEM**

Diagram of water supply piping

GENERAL RULES

Erecting to completely drain
 Necessary drain cocks
 Securing in place to prevent sagging or bending
 Support vertical pipes at middle
 Horizontal pipes for hot water must not be confined at ends
 provision for expansion and contraction
 Method for supporting lead pipe
 Install pipe to give proper head room

1. COLD WATER SUPPLY

Tap in street main
 Water-tight sleeve where entering building
 Meter—type, make
 Gate valves each side of meter
 Special tap for fire purposes
 sealed valve
 Filter connections
 Pressure tank system
 Suction tank
 gate valve and copper floats on supply lines
 Roof tank
 gate valves and copper floats on supply lines
 Distributing drums
 for high and low pressure systems
 Connecting street main to building main around pumps
 Reduced pressure system
 Supply lines of proper size to all fixtures
 Plugged outlets for future fixtures
 Exposed lines in toilet rooms, etc.

List of separate lines and sizes**Lines to**

hose connection at sidewalk
 lock and shield valve
 non-freezing stop
 waste valve arrangement

Branch to

boilers
 to ejectors
 to feed water
 to damper regulator
 to hose tap

Auxiliary water heater

gas engine

Ventilating apparatus connections**Valves**

main supply, return lines
 other supply lines
 lock and shield valves on fire line
 drip valves on lines
 drip piping to cesspools, etc.
 valves to branches supplying each floor
 check valve to branch for each group of toilet fixtures

Flushing system with roof tank**Sizes of branches to fixtures**

(See 12—0. Drinking Water System)

.2 FIRE LINES.

From sidewalk through basement to roof

Roof tank

check and gate valves

Siamese connection at sidewalk

one-way

two-way

galvanized iron

polished brass

Set connection at least 18 inches above sidewalk and at angle of 45 degrees

Check valve inside building**Connect fire line to pump****Location of outlets****Type and make of hose supports**

hose rack

hose reel

Valve—type**Nozzle—type**

hand nozzles with cut-off

nozzles operated and controlled from street

turret nozzles

Outlet above roof

controlled by valve below roof

provision for drainage

Enclosing hose reel**Testing fire line valves, fittings, etc.**

Threads, sizes, patterns, etc., conform to standard of fire department

Perforated sprinkler pipes

Independent fire line systems for isolated buildings

.3 HOT WATER SUPPLY.

Hot water tank installed under heating contract

connections to hot water system

Auxiliary water heater, when boilers are out of service

Independent hot water heating system**Boiler connecting to range****Run piping to all fixtures**

Arrange piping to be used either with boilers or auxiliary heater

Valves to control lines**Drip valves and lines**

provision for expansion and contraction

provision for proper circulation

List of separate lines and sizes

BOILER

Range

Laundry

Special

TANK**WATER HEATER**

Automatic gas heater
 Gas heater
 Coal heater
 Garbage burner

9—3. FILTRATION APPARATUS.

(See 13—0. Filtration Apparatus)

9—4. WATER DISTILLING PLANT

Acceptance
 Connections
 Condensers
 Distilled-water tank
 Evaporators
 Foundations
 Guarantee
 Installation
 Painting
 Patents
 Pump
 Safes

WASTE-WATER TANK

(See Plumbing)

(See Piping)

(See Fittings)

(See Valves)

FILTRATION**COVERING****INSULATION**

(See Painting, Metal Work)

(See Painting)

(See Insulating and Sheathing)

DRINKING FOUNTAINS

Type

Construction

Material and finish

Style

Trade designation

Dimensions

Supports

Operation

(See Plumbing)

(See Valves)

(See Fittings and Miscellaneous)

(See Bibbs, Cocks, and Faucets)

Chains, plugs, stays, drinking cups

9—5. WATER SOFTENING APPARATUS

(See 14—0. Water Softening Apparatus)

9—6. PUMPING MACHINERY, ETC.**TYPES OF PUMPS**

Centrifugal

Duplex

Rotary

Screw

Single-action

Triplex

KIND OF POWER

Electric

Gas

Gasoline

Hand

Hot air

Steam

Water

WHERE REQUIRED

For water supply

For fire supply

For drainage system

WARRANTY

Term of years

.1 DRAINAGE PUMP**.2 EJECTOR****.3 FIRE AND HOUSE PUMP**

Kind of pump

Capacity of pump

gallons per hour

Height to be pumped

Detail of construction of pumps

Underwriters' standard pump

Detail of construction of motors

(see 10—7.2 Electric Motors)

ELECTRIC CONTROL

To operate either house or fire control

HOUSE CONTROL

Hand control

Ford control system

Pressure systems

Low water automatic systems

FIRE CONTROL

Push button starter

Hand starter

Water pressure starter

Low water automatic starter

GENERAL

Electric connections to apparatus

Relief valve on fire line

Automatic alarm for roof tank
operated by water level**.4 GAS ENGINE****.5 HYDRAULIC RAM****.6 WATER MOTOR****.7 WATER WHEEL****.8 WIND MILL****.9 SEWAGE PUMP**

Kind and make of pump

Capacity in gallons per minute

Height to pump

Iron sump

Automatic starter and control

9-7 PLUMBING FIXTURES

Provisional amount for plumbing fixtures

Protecting fixtures from injury

Cleaning fixtures at completion

Putting fixtures in perfect working order

Exposed work

finish

Setting fixtures true and plumb

Securely fastening fixtures into place

Filling openings behind fixtures with
plaster of paris or lithargeGrinding fixtures to make perfect fits
with walls and floorsMakes and types of fixtures specified
designation by trade number for type
designation by general description

Setting up samples at building

Warranty against cracking or crazing

Valvescut-off at each fixture, air chamber for
basin and sinkconcealed valves for basin back of
aprons

Schedule of fixtures

Flushing valves

type, make

warranty

term of years

.1 BATHS

Shower

Rain

Needle

Liver spray

Bidet spray

Mixers

.2 CLOSETS

Type or make

vitreous porcelain

range

flushometer

frost-proof

copper

wash-out

Kind of seat

Connection to soil line

Tanks

wood—copper lined

iron tanks

porcelain tanks

high tanks

low tanks

concealed tanks

type of automatic float and cut-off

finish of tanks

.3 DRINKING FOUNTAINS**.4 DRINKING SINKS****.5 LAUNDRY TUBS**

Porcelain tubs

Enameled iron tubs

.6 LAUNDRY STOVE**.7 LAVATORIES**

Free standing

Corner

Design or type

marble slabs with earthen-ware bowls

porcelain lavatories

enameled iron lavatories

Hot and cold water supplies

Waste—type

Faucets—type

hand closing

self closing

Traps

.8 RANGE

Portable range

Built-in range

Kitchener

.9 SINKS

Kitchen and pantry

Slop sink

Galvanized iron sink

Soapstone sinks

Slate sinks

Enameled iron sinks

Porcelain sinks

Special sinks

hospital

barber shop

Grease traps

Sink mats

.11 SINKS, WASH

Porcelain sinks

Soapstone sinks

Slate sinks

Enameled iron sinks

Galvanized iron sinks

.12 SITZ BATH**.13 TOILET ROOM ACCESSORIES**

Coat and hat hooks

Comb and brush holders

Grip bar or hand rail

Match and cigar holders

Medicine closets

Mirror frames

Mirrors

Paper holders

toilet

shaving

waste

Plate glass shelves

Scales

Seats

Shampoo attachment

Soap trays

Soiled towel baskets

Sponge trays

Tooth powder holders

Towel rack and shelves

Tumbler holders

Whisk broom holders

.14 TUBS

Enameled iron tubs

Porcelain tubs

Copper lined tubs

Portable tubs

.15 URINALS

Type and make

Imperial porcelain

With flushing valves

Trough type

Tank

wood—copper lined

iron tank

porcelain tank

high tank

low down tank

concealed tank

Type of float and cut-off

Disinfectors

Strainers

.16 WASH TUBS

Porcelain trays

Soapstone trays

Slate trays

9-8. MISCELLANEOUS PLUMBERS' WORK**.1 AUXILIARY FIRE EQUIPMENT**

(See 24-0. Auxiliary Fire Apparatus)

.2 ESCUTCHEONS

For floors, walls, partitions, etc.

Materials for

cast iron

brass

sheet metal

.3 GAS ENGINE BARREL**.4 GUTTERS**

Across sidewalk

.5 PAINTING**.6 PIPE COVERING**

What to be covered

Kind of covering

magnesia asbestos

air cell

hair felt

cork

Painting covering

Covering to prevent freezing of pipes

.7 SAFES**.8 SPEAKING TUBES****.9 TANK**

(See 8-11.28 Tanks)

.11 TRENCH COVERS

Under wood floors

Under masonry floors

.12 WATER CLOSETS (TEMPORARY)Enclosing, water supply, connection with
sewer**9-9. GAS FITTING**

Connection to street main

Valve near curb

Separate connection for gas engine

Protecting pipes from frost

Diagram of sizes and run of lines

Controlling valves

Outlets to conform to finished work

Outlets to gas stove

Outlets to auxiliary water heater

Material of piping

black wrought iron

galvanized wrought iron

Piping

size of piping

greatest length allowed

greatest number of burners

Installation

draining towards meter or rising lines

avoiding depressions to accumulate
moisturetake branches from top or sides of
mains

avoid springing or bending pipe

securely fasten pipes in place

projecting ends of pipes proper dis-
tance for fixtures

make drops plumb and cap openings

bring wall supplies up from floor

arrange piping for installation of elec-
tric conduit boxes

Arrangement to support fixtures

Valves

controlling each story, elsewhere re-
quired

location of valves

brass box in floor for valves

Tests

as soon as piping is installed
before last coat of plaster is put on
Certificate of authorities—charges for

.1 GAS LOG

.2 GAS LOG GRATE

.3 GAS RANGE

.4 GAS STOVE

9—11. GAS GENERATING APPARATUS

Observance of regulations
Connection with street main
Service cocks

GAS-MAKING FOR ILLUMINATION OR FUEL

Tanks or receivers
Gasometers
Foundations

METERS

METER-COCKS

METER BOXES

Pipes

kind, quality, minimum size
plain and beaded elbows
tees
crosses
y branches
couplings
reducers
unions
bends
nipples
burners

FIXTURE FITTINGS

EXTRA HEAVY, FOR MILLS AND FACTORIES

FIREPLACE

Accessories

Logs

(See Painting Metal Work)

(See Painting)

(See Heating and Ventilation; Fireplaces)

(See Electric Light and Power; General)

9—12. ACETYLENE GAS APPARATUS

SYSTEM

Feed

water
carbide
form

CAPACITY

GENERATOR TANK

CARBIDE HOLDER

GASOMETER

Bell

FILTER

BLOW-OFF PIPES

GASOMETER TRAP

WATER SEAL

NORMAL PRESSURE

VALVES AND SAFETIES

REGULATORS

CLEANING

RELIABILITY

EFFICIENCY

CONNECTIONS

Drainage

trap

catch basin

WATER

GAS SERVICE

BLOW-OFF

PIPING

(See plumbing)

Sizes

Material

Fittings

GAS HOLDER (PUBLIC WORKS)

FOUNDATION

EXCAVATION

Area and depth

MASONRY

Material

thickness at center
outside ring
width
thickness

HOLDER

(See SPECIAL TANKS)

Capacity

diameter

depth

STEEL TANK

Diameter

Bottom plates

thickness

SIDES

Courses

Height

Thickness

DECK

With

Hand rail

Guide plates

Resting blocks

Pier (center)

PIPES

Outlet

diameter

Inlet

diameter

Brace rods

Ladder

GROUND PRESSURE

When filled

CROWN SHEETS AND SIDES

Weight, sq. ft.

VERTICAL BARS

Number

Gusset plates

Guide carriages

rollers

standards

bottom shoes and rollers

Guide frame

standards

girders

braces

ladder

PAINTING

(See Painting Metal Work)

(See Painting)

Connections

Hydraulic main

Scrubber

Exhauster

Central seal

Pipe line

EXHAUSTER

Capacity

Pipes

Valves

Connections

PURIFIER

Dimensions

Support

Cups

Water seal

Tray ribs

LIME TRAYS

COVERS

TEST COCKS

HOISTING APPARATUS

LANTERN BOXES

10—0. HEATING AND VENTILATING CONTRACTOR'S WORK

(Steam or hot water system)

(See 2—2. Schedules of Conditions of Work)

(See 3—0. General Conditions)

(See 4—0. General Work)

CONTEMPLATED WORK

Low pressure steam heating system

Ventilating apparatus

High pressure plant and low pressure steam heating system

RUNNING APPARATUS

Fire up and running for specified time

Put everything in perfect working order, providing coal, etc., and paying all expenses incidental to running

Owners representative present during running

WARRANTY

Noiseless operation

Specific temperature in zero weather with stated steam

pressure at boiler

Perfect circulation of steam throughout apparatus

Specific temperature in zero weather with stated water

temperature at boiler

Heating surface shown to be minimum, contractor to increase if necessary to maintain warranty

Warranty for perfect operation for term of years

(see 10—7. Warranty for ventilating Apparatus)

.1 CUTTING AND PATCHING

Each trade to do all cutting and patching of own work for proper installation of work of other trades

Each trade to do all cutting and patching of all work for installation of own work

.2 DRAWINGS

Contractors

Shop and erection drawings

Submit to architect for approval

.3 TEMPORARY HEATING

Protection of work from frost and for drying of plaster, etc., while interior finish is being set and painted

Building contractor may use heating plant for temporary heating, but must supply fuel and attendance, make temporary connections, repair condition upon completion

Charge of heater to building contractor per day for use of plant assuming all radiators set temporary, amount deducted for any not so set

10—I. BOILER PLANT

Kind of boilers

sectional

tubular

Number of boilers in plant

Normal rating of each in horse power

Contractor's drawings showing construction details of boilers, setting, grates, connections to buildings

Arrangement to permit operation of boilers independently

CAPACITY

Average work, steam pressure in pounds per sq. in.

Evaporation, minimum in pounds of steam per hour, percentage contained of entrained water under ordinary working conditions with specified height of water column, and temperature of feed water

Amount of sq. ft. of direct fire heating service

total surface of water tubes

exposed sides of headers

lower arches of main drums

INSURANCE

- Boilers tested and insured by approved insurance company
- Amount of insurance
- Term of years of insurance
- Certificate from insurance company

TESTING BOILER CONSTRUCTION

- Hydrostatic pressure in pounds per sq. in.
- Testing in presence of architect
- Testing before enclosure in setting and connection to steam header
- Contractor to make hydrostatic test

TESTING BOILER EFFICIENCY AND CAPACITY

- Tests conducted at expense of contractor in presence of architect
- Period of test not less than 18 hours
- Coal during test, average quality with calorific value in B. T. U. per pound of coal
- Specimen samples of coal for approval before delivering at building, with sworn statement from coal contractor's statement of calorific value
- Required average evaporation of boiler in pounds of water for each rated horse power into dried steam at 212 degrees Fahr. at rate in pounds of water per pound combustible
- Required pressure during test in pounds per sq. in. above atmosphere, with stated draft in breaching between boiler and smoke header in height of water column
- Required percentage of entrained water contained in steam
- Deficiency of capacity, amount deducted per pound of unit requirement of evaporation for horse power
- Deficiency in economy, amount deducted per pound of requirement of evaporation per pound combustible
- Tests conducted under revised code adopted by Am. Soc. M. E.
- Testing instruments, making connections, etc., at expense of contractor

.1 BOILER CONSTRUCTION

- Materials
 - notify architect when plates ready for testing
 - tests made at mill at contractor's expense

CAST IRON

- Where used
- Composition, requirements

STEEL

- Where used
- Composition, requirements, characteristics
- Tests—mechanical, chemical

STAY BOATS

- Material
- Strength
- Testing

RIVETS

- Material
- Strength
- Testing

TUBES

- Material
- Strength
- Testing
- Size
- Thickness
- Defects

WORKMANSHIP**SHELLS**

- Material, maker's stamp

Size

- shells, heads, pump, and dome heads
- Number of courses of metal

RIVETING

- Type, pitch
- Size of rivets
- Method of driving—machine driven
- Size of rivet compared to hole
- Defective rivets—removing
- Drilling holes for perfect fitting

HEADS

- Defects of material
- Flange or turn to specified radius
- Bracing—kind, size
- Strength—equal to cylindrical portion
- Planing plate edges before painting

TUBES

- Spacing
- Amount projecting through heads and expanded
- Pitch of tubes

CAULKING

- Hydrostatic pressure in pounds per sq. in.

STEAM DOME

- Size, height
- Manhole
 - size, location
- Handhole
 - location
- Cutting perforations in steam boiler under steam dome
 - aggregate area of perforations

OUTLETS

- Size, location
- Reinforcing outlets with plates, flanges, etc.

FUSIBLE PLUG

- Massachusetts standard
- Location

.2 BOILER SETTING

- Facing—kind of brick
- Drawings showing boiler setting, etc., for general contractor

FOUNDATIONS

- Provided by whom
- Kind of foundation

WALLS, ETC.

- Sizes
- Kind of brick, mortar
- Provision for expansion and contraction
- Coping exterior walls
- Arrange setting for proper passage of products of combustion
- Lining parts where exposed to flames or products of combustion
 - material, mortar
 - method of laying
- Buttresses at buck-stays

ARCH FOR BOILER**PAVING**

- Location
- Materials, method of laying

BUCK-STAYS

- Number and sets
- Material
- Method of installation

LUGS ON BOILER

- Size and construction
- Expansion bearings

ARCH BARS**SHAKING GRATES**

- Effective area
- kind and construction

MECHANICAL STOKER**FRONT**

- Cast iron sectional
- Wrought iron
- Ornamental front
- Doors

CLEAN-OUT DOORS

- Construction, location

.3 CONNECTIONS (BOILER)

- Steam connections
- Water connections
- Blow off connections
- Vapor pipe

.4 FIXTURES (BOILER)

- Gauge barrel with water gauge
- Gauge cocks with brass chains
- Blow down connections, etc.
- Automatic alarm for water level
- Steam gauge
 - size
 - pounds registered
 - construction
- Automatic recording steam gauge
- Safety valve
- Automatic water feeder
- Blow off cock, asbestos packing
- Injector
- Piping, etc., for connections
 - polished brass
 - galvanized iron

.5 FLUE (BOILER)

- Material, construction, manner of supporting
- Provision for expansion
- Clean-out doors
- Pivoted damper
 - anti-friction bearing
- Provision for operation by damper regulator
- Hand damper

.6 TOOLS**FIRE TOOLS**

- Poker, hoe, splice bar, claw, shovels
- Sectional tube scraper, tube brush, steam flue cleaner

Rack for tools**Rubber steam hose****Rubber hose with connections complete****MISCELLANEOUS TOOLS**

- Cabinet for, finish
- 24 in., 12 in., 8 in. stilson wrench
- 24 in., 12 in., 8 in. monkey wrench
- Universal plyers
- 1½-pound mechanic's hammer
- Carpenter's hammer
- Cold chisels
- Cape chisels
- Screw drivers
- 6 in., 12 in., 24 in. screwdriver.
- Brass oiler set with tray, shelf and bracket for oil tanks with faucets
- Galvanized iron cans for oily wastes, with cover

10—2. STEAM POWER PLANT**ENGINES**

- Make
- Type
- Class
- Rating
- Steam supply
- Back pressure
- Cut-off
- Speed
- Capacity
- Weight of fly-wheel

JACKET**Material****METHOD OF BALANCE****MAKER'S SPECIFICATIONS**

- Type or designation
- Cylinder diameter
- Piston stroke
- Normal speed
- I. H. P. exact rating conditions
- Fly-wheel
 - type and weight
- Crank shaft
 - dimensions and weight
- Connecting rod
 - length and size

Piston rod
 diameter
 Crosshead
 type and bearing
 Exhaust and admission valves
 type and features
 Range of cut-off
 Maximum I. H. P. at full cut-off
 Percentage of clearance
 Percentage of friction
 Maximum speed variation
 Steam consumption (lbs.) per I. H. P.
 hour
 Guarantee
 performance
 economy
 repairs
 Pipes
 steam and exhaust
 diameter
 Governor
 type
 position
 automatic
 action
 varying limits
 Cylinder
 material
 dimensions
 construction
 cocks
 heads
 covers
 bolts
 Piston
 packing rings
 rod
 dimensions
 guides
 type
 construction
 Connecting rod and crank
 dimensions
 construction
 pins
 Crosshead
 Crank arm
 Shaft
 Valve gear
 Dash pots
 Links
 Eccentric
 rod
 Reversing
 gear
 Frame and bed plates
 Pulley
 Oil cups
 Oil tanks
 Oil strainer
 Oil hoods
 Setting
 bolts
 plates
 templates
 masonry
 (see Brick Work and Concrete)
 Sub-base
 material of
 design of
 setting
 anchoring
 MAIN BEARING
 OUTBOARD BEARING
 Design of
 Universal adjustment
 OIL GAUGE
 Cleaning device for
 Automatic, lubricating
 Protection from oil
 OILING SYSTEM
 FRICTION LOAD AND EFFICIENCY
 TESTS

THROTTLE-VALVE
 Adjustment
 STEAM AND EXHAUST CONNECTIONS
 GENERAL
 Attendant
 Incidental labor
 Additional labor
 Supplies
 Instructions
 General performance
 Regulation
 Noiselessness
 Friction
 Economy
 Acceptance
 qualified
 final
 CONDENSERS, AIR PUMPS, CIRCULATING PUMPS
 (See Plumbing, Pumps)
 Jet
 Surface
 Ejector
 tubes and plates
 capacity
 AIR PUMPS, TYPE
 CIRCULATING PUMPS, TYPE
 POWER TRANSMISSION
 SHAFTING
 Type
 Material
 Couplings
 Hangers and supports
 Bearings
 Pulleys
 Lubricating
 BELTING
 Type
 Material
 Splicing and lacing
 Idlers
 Dressings
 GEARING
 Type
 Material
 Efficiency
 HOISTING
 Ropes and cables
 Blocks
 Hooks
 Engines
 BELT CONVEYORS
 BUCKET CONVEYORS
 CRANES
 BALL BEARINGS
 FRICTION ROLLERS
 LUBRICATION
 GAS ENGINES
 Foundations
 (See Brick Work and Concrete)
 TYPE AND SYSTEM
 Dimensions, drawings
 Number, arrangement
 Rating
 capacity and limit
 speed
 speed variation
 FUEL CONSUMPTION
 Full and fractional loads
 Fuel
 Water
 Oil
 Supplies
 Guarantee
 Test
 EFFICIENCY
 On loads
 Guarantee
 Test
 REGULATION SYSTEM
 THROTTLE
 On mixture (quantity)

 On fuel (quality)
 On combination (of the two)
 DEGREE OF STEADINESS
 On loads
 Steady
 Varying
 Sudden
 PRESSURES
 Compression (max. and min.)
 Mean-effective pressure
 Maximum explosion pressure
 GOVERNOR
 Type and system
 Position
 Means of drive
 Varying limits
 Adjustment
 IGNITION
 System
 Timing
 Adjustment
 BATTERIES
 Primary and storage
 Igniters (number and type)
 Duplicate system
 FLY WHEEL
 Number and type
 Barring device
 POWER TRANSMISSION
 System
 CYLINDERS
 Number and type
 Position
 Single acting
 Double acting
 Bore and stroke
 PISTON
 Type
 Air cooled
 Water cooled
 Number of piston rings
 Lubrication of
 BEARINGS
 Design
 Size
 Number
 Boxes (material)
 Lubrication of
 Main and outer
 Adjustment of
 SUB-BASE
 Material
 Design
 Extension of
 Setting and anchoring
 CONNECTIONS AND MUFFLERS
 Size and location
 Material and type
 Gas or fuel
 Air (atmosphere)
 Exhaust
 Water
 Water drain
 Oil lubricating
 Compressed air
 Gaskets and joints
 Trenches
 Covers
 Hangers and supports
 Covering
 Valves
 Drain
 TOOLS
 Wrenches
 Special tools
 Tool racks
 Hand oilers
 GAUGES
 Gas and air
 Water
 Compressed air
 Pressure

Suction
Recording
METERS AND COUNTERS
Water
Gas
Revolution
Speed
EQUIPMENT
Bolts and plates
Templates
Oil filters and tanks
Oil cup rack
Crane or hoist
MATERIAL
Quality
Weight
Workmanship
Finish
OPERATION
Method
Economy
Continuance
Facilities
Supplies
STARTING METHOD
Starter
 type
Air compressor
Air storage tank
 size
 capacity
 make
 power
 gauges and valves
LUBRICATION
Oilers
Gravity
Force feed
Circulation
Pressure
Ring
Sight feed
Wiper
Central
MAINTENANCE
Adjustment
Renewal
Accessibility
GAS PRODUCERS
FOUNDATIONS
 (See Brick Work and Concrete)
 Material
TYPE AND SYSTEM
Make
Pressure
Suction
Combination
Dimensions, drawings
Number, arrangement, interconnection
Rating
Fuel, quality and size
Capacity, limits
 lbs. of fuel per hour and sq. ft. of producer section and sq. ft. of grate
 H. P. per hour and sq. ft. of producer section and sq. ft. of grate
 heat value (lower) of gas
FUEL CONSUMPTION
Full and fractional loads
Quantity (cu. ft.)
Water
Power
Supplies
Guaranty
Test of
EFFICIENCY
Full load
Fractional loads
CHARGING
Continuous
Intermittent
How often on full load
Apparatus, system

ASHES AND CLINKERS
Removal
Through ash door
Through water seal
GRATES
Type
Size
Operation
Bars
BLOWER
Mechanical
Jet
Starting
AIR
Superheater
Moistener
Regulator (automatic)
Damper
Connection
Size
WATER
Pressure
Connection
Consumption
Level regulator
Automatic feeder
Purifier
Filter
Meter
Gauge
Vaporizer
BOILER OR VAPORIZER
Type
Size
Material
SCRUBBER AND CLEANER
Number
Type and size
Operation
Grate and trays
Material
Coating
EXTRACTORS
Water
Tar
Dust
DRAINAGE
Sump (closed or open)
Connections
PIPES AND FLUES
Size and location
Material and kind
Flanged or screwed
Air (atmospheric)
Steam
Water
Water drain
Exhaust
Flue
Valves
Gaskets and joints
Drain
Trenches
Supports
Covering
LINING OF PRODUCER
Material
Size
Brick and clay
Insulation
WATER COOLED
GAS STORAGE
Gas holders
Pressure compensators
 size and capacity
 type
 material
Connections
TOOLS
Fire tools
Wrenches
Pokers, hoes
Racks

GAUGES
Water and steam
Pressure
Suction
Recording
Ornamental board
Connection
Location
EQUIPMENT
Extra parts
Charging platforms
Stairs and railings
MATERIAL
Quality
Weight
Workmanship
Finish
Paint
OPERATION
Method
Cost
Economy
Continuance
Facilities
Superintendence
MAINTENANCE
Adjustment
Renewal
Accessibility
Blowing engines
Steam
Gas
AIR COMPRESSORS
HOT AIR ENGINES
10-3. MISCELLANEOUS HEATING APPARATUS
.1 CLOCKS
.2 DAMPER REGULATOR
 Kind and construction, finish
 Location
 Boiler pressure to be maintained
 Working boiler pressure
 Desired connections
 Case for regulator
 Shelf for regulator
.3 ECONOMIZERS
.4 FEED WATER APPARATUS
 Heater, filter, injector
.5 GAUGES
 RECORDING GAUGE
 Make, construction, size
 Cards for dial, ink and filler
 Engine registers
 Crank index
 Engine indicators
 GAUGE BOARD
 Marble, wood
 PRESSURE GAUGE
 Make, construction, pressure recorded, location
 Vacuum gauge
 Thermostatic water back gauge
 Hydraulic or hydrolithic gauge
 Test gauges
 Mercury pressure gauges
 Pyrometric gauges
 Gauge testers
.6 GREASE SEPARATOR
.7 LUBRICATORS
.8 OIL FEEDERS
.9 MUD DRUM
.11 PUMPS
 Condensation
 Boiler feed
 Return water
 Vacuum
 Test
 Circulating
.12 SMOKE PROVISION
.13 STEAM TRAPS
.14 STEAM SEPARATOR
.15 TANKS

BLOW OFF TANK
 CONDENSATION RETURN TANK
 DRIP TANK
 EXPANSION TANK
 HOT WATER TANK
 Galvanized wrought iron tank
 Portable boiler
 Automatic gas heater
 MUFFLER TANK
 RETURN TANK
 SURGE TANK
 .16 THERMOMETERS
 .17 WATER ALARM
 .18 WHISTLE
 10-4. HEATING SYSTEM
 Types
 Kind of system
 hot water
 steam
 one pipe, two pipe
 vapor, vacuum
 Type of system used
 TESTING SYSTEM
 Contractor to make tests at his expense
 in presence of architect
 .1 PIPE AND FITTINGS
 Material and quality
 FITTINGS
 Material, quality
 UNIONS
 Material, size, quality
 BRASS PIPE
 Quality, finish, thickness
 GALVANIZED IRON PIPE
 Quality, thickness
 FLANGED JOINTS
 Make, quality
 .2 PIPING
 Method of installation and runs
 Pitch to completely drain drip lines to
 sealed returns
 Provision for draining boilers and entire
 system
 Size of mains and branches
 Location of expansion loops, expansion
 joints
 Radiator connections—size
 Joints, kinds
 Pipe supports
 provide for expansion and contraction
 adjustable clamps
 hangers
 sectional, beam clamp, adjustable,
 ball joint
 pipe rollers, saddles
 Flanges and sleeves to facilitate repairs
 AIR LINES AND VALVES
 For closed steam systems
 For hot water systems
 Kind of air valve
 handle, key, vacuum
 WATER PIPING
 To front of boiler for hose
 To boiler feeder
 To cooling coil in blow-off tank
 To water air pump of temperature regu-
 lating apparatus
 To damper regulator
 Elsewhere required
 .3 RADIATION
 Aggregate amount of heating surface in
 sq. ft.
 Distribution of heating surface
 schedule of
 Heating surface must heat to stated de-
 grees in zero weather with stated
 pressure or temperature of water
 at boiler
 Type and make of radiator
 cast iron
 pressed steel radiator
 pipe radiator

drum-pin radiator
 plate warmer
 foot warmer
 vent flue radiator
 wall radiator
 concealed radiator
 connections for valves
 Heights of radiators
 Metal radiator shields
 Coils
 size
 DIRECT-INDIRECT RADIATION
 Type and make of radiators
 Type of air inlet
 Construction and material of air inlet
 and outlet wall box
 INDIRECT RADIATION
 .4 VALVES
 Kind of valves
 automatic control
 check or back pressure
 gate, radiator, reduced pressure, relief,
 siphon
 Location of valves
 to radiating surface
 to hot water tank
 to supply and returns of first floor
 radiators
 to main supply and return connections
 at boilers
 to boiler trimmings
 to supply, return and drip connections
 in basement
 elsewhere necessary for proper control
 and operation
 Valves for ventilating apparatus
 to supply and return connections of
 main and each group of temper-
 ing coil
 Swinging check valve on main return at
 boiler
 Drip valves between valves on main
 steam connection of boiler
 Construction of valves
 Gate valves
 kind, make, construction
 VALVE RODS
 For operating inaccessible valves
 RADIATING SURFACE VALVES
 Kind of valves
 automatic control
 gauge
 open pipe systems
 vacuum systems
 Types of valves
 lock and shield
 rod handle, wheel handle
 brass disk
 quick opening
 angle, corner, 45 degrees or any arc,
 offset, return under radiator, two-
 way, universal
 VALVE CONNECTIONS
 Size, increasing size where serving two
 or more radiators
 TAGS
 To designate valves
 DIAGRAM
 Of heating system, showing lines, valves,
 etc.
 enclosing in metal frame
 10-5. TEMPERATURE REGULATING
 SYSTEM
 Parts of heating system to be automati-
 cally controlled
 WARRANTY
 Term of years
 Degree of regulation
 Perfect operation for term of years
 THERMOSTATS
 Kind and construction
 Design, finish

Number, location
 Heating sources controlled
 TEMPERATURE REGULATION FOR
 VENTILATING APPARATUS
 Fresh air supply
 Tempering coil control
 By-pass control
 Room control
 Control of damper
 Control of ceiling deflecting dampers
 COMPRESSORS
 Number, size, reserve
 Hydraulic air compressor
 Compressor air tank, gauges
 Air lines, valves, etc., to complete system
 Electric battery and low pressure alarm
 gauge
 alarm to ring when pressure below
 established pressure
 PIPING
 Concealed where possible
 Valves, drips, air cocks, where necessary
 VALVES ON TEMPERING COILS OF
 VENTILATING APPARATUS
 10-6. MISCELLANEOUS HEATERS
 WORK
 .1 COAL AND ASH HANDLING
 APPARATUS
 Hoists, conveyors, track and cars, gal-
 vanized iron ash cans
 Steel wagon with adjustable drop gates
 capacity of wagon
 style, make of wagon
 Wheelbarrows
 Wood slat barrel truck
 style and make
 .2 COLLARS, ETC.
 Around exposed rising lines at floor and
 ceiling
 Around pipes through floors, walls, par-
 titions or near woodwork
 Material of collars
 galvanized iron, cast iron, brass
 Sleeves around pipes through masonry
 walls
 3. COVERING, NON-CONDUCTING
 No covering installed until apparatus
 tested and approved
 Kind of covering and composition
 sectional, 85 per cent. sectional mag-
 nesia
 air cell, wool felt
 Canvas covering
 Banding covering, painting
 Block covering
 composition and method of installation
 Plastic covering
 where used, thickness, and method of
 installation
 .4 ESCUTCHEONS
 Where used, material, thickness
 .5 FIREPLACE ACCESSORIES
 Coal grates
 Gas grates
 Gas logs
 Gas log grate
 Andirons
 Fenders
 Fire sets
 Baskets
 Screens
 Spark guards
 Fireplace linings
 Summer fronts
 Registers
 .6 PAINTING
 Work to be painted
 all exposed iron work not bronzed or
 covered
 all exposed work of ventilating appar-
 atus, including fans, heating cas-
 ing, iron partitions, motor base
 and foundations

Painting work to be covered
 Painting galvanized iron ducts, flues, etc.
 Painting non-conducting covering
 Painting or bronzing radiating surfaces
 Painting exposed pipe, hanger, coils, etc.

.7 RADIATOR COVERS

Ornamental covers
 Galvanized shields

.8 TRENCH AND PIPE COVERS

Cast iron covers
 diamond treads, thickness of covers
 borders where required
 stiffeners for plates
 Grading over pipes
 Covers under wood floors
 kind and thickness
 Covers under masonry floors
 material, thickness

10-7. VENTILATING SYSTEM

Kinds of system
 exhaust only
 supply only
 supply exhaust
 air cooling
 humidifying
 purifying
 Number of cubic feet per minute of fresh air supplied
 Number of cubic feet per minute of vitiated air exhausted
 Number of revolutions per minute of fan
 Number of changes of air per hour
 Volume of air delivered ascertained by anemometer test
 Detailed drawing of fans motor base, etc., for approval
 Successfully operate apparatus, adjust all dampers, etc., upon completion
 Work furnished and placed by general contractor in connection with ventilating system, done under supervision of ventilating contractor

WARRANTY

Term of years
 For perfect operation of apparatus
 Of cubic feet of air supply and exhaust

1. FANS

Kind and make, size of parts, construction
 Balancing to obviate acceleration of speed of motor
 Noiseless operation and without vibration or rack to case

SHAFTS

Self adjusting, and self oil bearing boxes
 Material—turn steel, size

OIL CUPS

Adjustable self fed oil cups, in accessible locations
 Provide oil chamber of bearing box, with drip valve and connections for cleaning

COUPLINGS

Flexible approved coupling between motor and fan shaft
 Motors located outside of fans
 Belt driven fans

FOUNDATIONS

Metal or masonry
 For fans, heaters, motors

.2 ELECTRIC MOTOR

Source of current
 Kind of current
 Submit detailed drawing for approval
 Submit statement of guaranteed commercial efficiency of motor from no load to 25 per cent overload

TESTS

Guaranteed efficiencies, heating effect, insulated resistance, made at shop and again at building
 Architect may omit shop test or require written statement

WIRING

To successfully operate system
 Supply brought within 8 ft. of motor
 Switchboard for stating rheostat switches, safety devices, etc.

CONSTRUCTION OF MOTOR

Kind and make
 Type, maximum speed in horse power
 Conductivity of copper
 Kind of copper

ARMATURES

Construction
 Ventilating
 Oil throwing device on shafts
 Balancing—mechanical and electrical

FIELD COILS

Winding
 Arranged for ready removed without unwinding
 Projecting lugs through winding cover

BEARINGS

Material, construction
 Self aligning
 Pins to prevent oiling rings from leaving seats
 Design shafts to prevent oil reaching commutator or armature

OIL LEVEL SIGHT GLASSES ON BEARINGS**BRUSHES AND BRUSH HOLDERS**

Type and construction
 Staggering to wear evenly
 Current density allowed in brushes
 Align brush-holders on studs and seat brushes to commutator properly

COMMUTATOR

Construction, design
 Materials
 Insulation
 Free from sparking and flashing
 Construct to prevent radical motion of brushes

HEATING AND SPARKING

Maximum temperature allowable for various parts
 To run continuous without sparking or shifting of brushes

INSULATION

Insulate motor frame from foundations
 Insulation resistance allowable for various parts
 Dielectric strength allowable between winding and frame

ALIGNMENT

Motor with fans, flexible couplings

CONNECTIONS

Type, construction

CONTROL AND SPEED

Type of control, construction
 Method for effecting speed control
 Location of controller, protection

.3 FILTER CHAMBER, ETC.

Construction
 Air in-take
 construction
 screen
 regulating damper
 Thermometer
 location

FILTER

Cheese cloth screens
 Net area in sq. ft.
 Construction of filter
 Duplicate filter leaves

TEMPERING COILS

Material and construction
 Number and size of sections

Free area for delivery of air
 Connections
 steam and return, with vapor or vacuum valves
 trap on return near coil
 Reheating coils
 Automatic temperature regulation
 Casing
 material and construction
 Pan under tempering coil
 By-pass around tempering coil
AIR MOISTENING APPARATUS
 Type, construction

10-8. SUPPLY AND EXHAUST SYSTEMS

Separate system for fresh and foul air
 Location of ducts, detailed drawing for approval
 Size of register box
 Capping register box until radiators are set
 Construction of flues
 Stenciling names on flues
 Material, thickness, construction of flues
 Bracing flues
 Stiffening flues
 Method for suspending flues in place
 Construction of flue outlets to rooms
 Deflecting damper
 construction, method of erection

.1 REGISTERS.

Kinds and design
 solid bronze, cast iron, wrought iron, wire net registers, painted finish, enameled finish
 Register frames

.2 DEFLECTORS FOR REGISTERS

Material, construction
 Method of operation

.3 DISCHARGE OUTLET

Material, construction

10-31. HEATING CONTRACTORS' WORK (hot air system)

(See 2-2. Schedule of Conditions of Contract)

(See 3-0. General Conditions)

(See 4-0. General Work)

Contemplated Work

RUNNING APPARATUS

Time to put in perfect working order
 Contractor to pay expense for running

WARRANTY

Term of years
 Efficiency of apparatus
 For perfect operation of apparatus for term of years

.1 CUTTING AND PATCHING

Each trade to do cutting and patching for proper installation by all other trades

Each trade to do cutting and patching of all work for proper installation of their work

.2 DRAWINGS

Shop drawings
 Showing location of radiating surface, piping, etc., for approval

.3 TEMPORARY HEATING

(See 10-21.3 Temporary Heating)

10-32. FURNACES, ETC.**.1 FURNACES**

Kind and make of furnace, capacity
 Number of cubic feet of air per hour from zero to specified minimum without causing shell to become heated to visible color
 Material and construction of shell
 galvanized iron, brick casing
 portable type

Number of square feet of heating surface
 Number of square feet of grate surface
 Type of grate
 to permit easy removal
 extra set of grate bars
 Apparatus and fire tools
 Distance between top of furnace and ceiling
 Foundation for furnace
 Evaporating pan

.2 FLUE

Material, construction, size
 Damper
 Cleanout doors

10—33. FLUE SYSTEM

Run and size of flues, etc.
 Shop drawings for approval
 Construction of flues
 Material, bracing
 Securing in place
 Register boxes
 Revolving damper in flues with set screw

.1 COLD AIR BOX

Size, construction, material
 Pivoted damper
 Cleanout door
 Metal screen at outside end of flue

10—34. MISCELLANEOUS HEATING WORK

.1 COVERING, NON-CONDUCTING, ETC.

Work to be covered
 Kind of covering materials, installation
 (see 10—5.2 Non-conducting)
 Painting and finishing

.2 REGISTERS

Material and patterns
 Location

FINISH

(See 10—8.1 Registers)

11—0. ELECTRICAL CONTRACTOR'S WORK

(See 12—2. Schedule of Conditions of Work)

(See 3—0. General Condition)

(See 4—0. General Work)

Contemplated Work

electrical lighting system
 power wiring system
 miscellaneous wiring systems
 lightning conductors

"National Electric Code," provisions to be filled

Insurance authorities regulations to be observed

Laws, rules, regulations of state and municipal authorities

Permits, obtaining and paying fees for same

Approval by architect

conditional on work conforming to laws of underwriters and insurance authorities regulations

Symbols adopted for work

Circuit

meaning where used in connection with lighting and power wiring
 meaning where used in connection with other systems or wiring

CURRENT

For lighting

alternating—volts
 direct—volts

Power

direct—volts

Connecting service main to service switch

connection made by owner
 connections made by lighting company
 connections made by constructor

Connections from overhead service wires
 lightning arresters
 Connection under ground service wires
 Transformers

SAMPLES

Materials for which samples are desired

TESTS

Kinds of tests desired
 Requirements and accuracy of tests
 Instruments to be used for testing
 Expense of making tests and furnishing instruments, to be borne by
 Tests to be made by contractor in presence of architect
 Contractor to notify architect in ample time to permit his being present
 Loss or drop in potentials

WARRANTY

Term of years

.1 CUTTING AND PATCHING

Each trade to do all cutting and patching of own work for proper installation of other trades
 Each trade to do all cutting and patching of all work to properly install own work

.2 DRAWINGS

Contractor's erection drawings showing location and arrangement of all circuits, outlets, distributing boxes, switches, etc.
 service panels, front and rear elevation of switchboard, distributing boxes
 location of outlets shown on architect's drawings only approximate, specified distance movable without additional expenses
 Loss or drop in potentials assumed in calculating size of wire

.3 TEMPORARY LIGHTING

(See 4—0.6 Lighting—Temporary)

11—I. MATERIALS AND INSTALLATION

Types of installation
 iron armored conduit
 knob and tube construction
 porcelain cleat
 wooden moulding
 metal moulding

.1 CONDUIT.

Kind, size, thickness
 Conduits of sufficient size to permit easy insertion or withdrawal of wires without mechanical aid, unless weight of wires alone require such assistance
 Run conduits continuously from outlet to outlet, junction boxes, etc.
 Elbows or bends on runs not to exceed four quarter turns
 Elbows with smooth insides and free from kinks
 Bends not shorter than six inch radius
 Method of connecting joints of tubing
 Reaming out burrs formed in cutting smooth interior surface
 Bushings on end of conduit
 Protect conduit from mechanical injury and chemical action
 Terminate conduits inside outer boxes of distributing panels

FITTINGS

Fittings required
 Special couplings, elbows, joints
 Bending conduit to avoid use of elbows, not permitted

FASTENING CONDUIT

Approved fasteners, anchors, etc. to prevent displacement when pulling in wires

CONCEALED CONDUIT, ETC.

Conceal all conduits unless otherwise noted

EXPOSED CONDUIT

Run exposed conduit parallel to or at right angles to wall
 Type and make of fittings, junction boxes, etc.
 Painting

INSTALLATION

Horizontal or cross runs in partitions, not permitted
 Carry conduit under floors per beams, between wooden sleepers, without notching where possible
 Co-operate with other contractors to properly run conduit under floors
 Divide conduits too large to be concealed and run in additional sections
 Painting conduits
 Method of painting conduit

.2 WIRES

Size of wires used
 Kind and quality of wires
 Make or brand of wires
 Installing and taping ends of conduit after installation of wires
 Strand wires larger than No. 10 & B. & S. Gauge
 Wires smaller than No. 10 B. & S. gauge, not permitted
 Splices in wires not allowed between outlets or between distributing boxes and outlets
 Strand of wires must not be cut to permit connection to lug for smaller wires
 Installation resistance allowed for conduit
 Underground lead covered cables

11—2. CIRCUITS AND WIRING

Kinds of system
 three-wire—volts
 three-wire convertible—volts
 two-wire—volts
 service switch
 type, location
 Pull box
 construction, type, location
 Completely install conduit system before drawing wires
 Locate conduits so that fixtures will avoid ducts, pipes, etc.
 Outlets—Location
 shown approximately on drawings
 permanent locations given before installation
 discrepancy between location shown and work at building, notify architect

.1 CIRCUITS (FEEDER)

Main feeder from service switch to switchboard
 provision for additional stories, etc.
 Feeders from switchboard to distributing boxes
 Elevator feeders
 passenger elevators
 platform elevator
 Pump feeders
 Ventilating machinery feeders

.2 CIRCUIT (BRANCH)

Location
 From distributing boxes to outlets
 Elevator lighting
 Exterior lighting
 Signs
 Control of circuits
 switches, cut-outs
 Automatic controls for lighting
 Insulation resistance of circuit

.3 DISTRIBUTING BOX

Location
 Type, make, construction
 double type boxes
 wooden outer, slate inner box
 iron outer, slate inner
 single type boxes
 wood metal lined
 iron
 Construction and finish of boxes
 Equipment of boxes
 type, construction
 Marking circuits

4. OUTLETS

Kind of outlets
 ceiling
 side wall
 floor
 Terminate conduit in outlet boxes
 Kind and type of boxes
 Method of securing boxes in place
 Special support for fixtures at outlets

DROP LIGHTS

Location, construction and equipment

.5 SWITCHES

Types of switches
 single or double throw
 two or three pole
 flush push
 flush snap
 gang plate
 key snap
 lock push
 pendent
 plug
 push button
 rotary flush
 rotary standard
 service snap
 tandem push button
 Position, kind of switch and circuit controlled
 Height of switches above floor
 Switches for exposed work
 kind, type
 Common face piece for two or more switches together
 finish of face piece
 Location of switches only approximate
 Accurate location given before installation

.6 SWITCHBOARD

Location
 Construction of frame work
 Material for switch, thickness
 Method of fastening apparatus
 Apparatus on switchboard
 switches
 main lighting and power
 various floors or sections
 ventilating apparatus
 elevators
 pumps
 other mechanical apparatus
 currents recording gauge
 circuit breakers
 fuses, lugs and straps for connecting
 buss-bars, switches, watt meters,
 feeders
 bracket lights
 name plates to designate switches and meters
 Duplicate set of tested fuses
 Apparatus back connected
 Conductivity of contact parts in amperes per sq. in.
 Finish of exposed work
 Method of running, covering and securing wiring

GRILL

Under, around and back of switchboard
 Material and construction

Door for access to back of switchboard, lock

RAILING

Material, size, method of securing in place

RUBBER MAT**II-3. MISCELLANEOUS WIRING SYSTEMS**

Kinds of system
 burglar alarm
 call bells
 door openers
 fire alarm
 gas lighting
 telephone
 time clock regulating
 watchman's recorder

Systems contemplate conduit work only
 Apparatus installed only where specified
 Details of installation

requirements for conduits, outlets, etc., same as before specified for lighting and power wiring where applicable

Exposed conduit work

Separate systems run in independent circuits to distributing boxes, unless otherwise specified

Location of outlets**Types of boxes**

construction

face piece, finish

Distributing box

location, construction

size, method of securing

BATTERY AND GENERATING PLANT

For telephone talking circuit
 name and make

For telephone ringing circuit
 name and make

For clock dial and fire alarm circuit
 name and make

For call bells
 name and make

Location of batteries and installation

Motor generator set

type and make

horse power, voltage, etc.

construction

Switchboard

construction and installation

apparatus and finish

finish of switchboard

TESTS

Kind of test

Apparatus for testing

Expense of making tests

Tests made by contractor in architect's presence

.1 BURGLAR ALARM

Type and installation of system

.2 CALL BELLS

List of push buttons, buzzers, etc.

CONDUITS AND WIRING

Kind of conduit

Outlets, location

Method of wiring

Conduit for exterior outlets

Call bell connections in sub-junction boxes

Continuous wires between junction boxes

Numbering terminals of all wires, etc. to facilitate identification

Tagging cables to facilitate identification

Inter-connection strips

location and size

construction, material, size

stamping number of circuits to facilitate identification

BELLS

Kinds or types, construction, finish

ANNUNCIATORS

Kinds or makes, construction, finish
 Lettering outlets for identification

WIRING

Kinds or make
 Quality, finish

.3 DOOR OPENERS

Type and installation of system

.4 FIRE ALARM

Connected to city department
 Local fire alarm systems
 types and construction of systems
 Location of outlet stations
 Fire alarm gongs
 location
 type or make
 construction, finish

.5 GAS LIGHTING

Type and installation of system

.6 TELEPHONES

Exchange systems
 Inter-communicating systems
 Automatic exchange systems
 Details of construction and operation of system installed
 List of outlets
 Kind of telephone instruments
 automatic wall type
 dial switch type
 plug type
 flush type
 hand microphone type
 desk type
 Power for system
 generator plant
 batteries

WIRING

Method, materials

INSTALLATION**PUBLIC TELEPHONE SYSTEM**

Wiring building to designated outlets

.7 TIME CLOCK REGULATION**.8 WATCHMAN'S RECORDER****II-4. LIGHTNING CONDUCTORS****II-21. ELECTRIC POWER AND LIGHTING CONTRACTOR'S WORK****DYNAMOS, GENERATORS, MOTORS SPECIFICATIONS**

Make
 Type or designation
 Weight
 No of poles
 Diam of commutator
 Face of commutator
 Normal capacity (K. Ws.)
 Normal range (E. M. F.)
 Normal current
 capacity in amperes
 Maximum current
 capacity in amperes
 Guarantee
 commercial efficiency
 Armature
 core
 supports for windings

FOUNDATIONS

(See Concrete)

Brick Work

Commutator

Field-frame

Pole-pieces

number of

Field-coils

how wound

insulation

protection

Brush-holder

how supported

Brushes
 material
 operation
 rocker

TERMINALS
 Mechanical
 Electrical
 features
 Multiple running
 Armature reaction
 Construction
 Workmanship
 Finish
 Extra parts
 Connections
 adaptation to engines
 shafts
 outboard bearings
 Painting

ACCESSORIES
 Wrenches
 Bellows
 Covers
 Oil-cans

STORAGE BATTERIES AND ACCUMULATORS
 Location
 Description
 Ventilating ducts
 Cells
 number
 rating
 final potential
 capacity required
 charging rate
 discharging rate
 Containing vessel
 Insulation
 Connection
 Appliances
 Portable voltmeter
 Regulation
 Setting up
 Arrangement
 Elements
 Test
 Specifications
 Make
 Trade designation or number
 Space required
 Weight (charged)
 Rated capacity
 Charge and discharge
 normal rate
 maximum
 varying
 Capacity obtainable
 Elements
 amount and density
 E. M. F. and internal resistance
 range from charge to discharge

EFFICIENCY
 Ampere hours
 Watt hours

SPECIAL FEATURES AND ADVANTAGES

CONNECTIONS BETWEEN CELL
(See Painting Metal Work)
(See Painting)
(See Insulating and Sheathing)

WIRING: POWER AND LIGHTING
 Wires and cables
 Rules and regulations
 Manufacturers' certificate
 System of wiring
 Voltage
 Resistance
 Drop
 Sizes
 Stranded wires
 Samples
 Joints
 Switchboard

Panel boards, cut-outs
 Insulation
 Percentage
 Feeders
 Mains
 Branches
 Designations
 number or letter

CONDUIT SYSTEM
 Fittings
 Outlet boxes
 Floor boxes
 Protection and painting
(see Painting)
(see Insulating and Sheathing)
 Chases

DISTRIBUTING CENTERS
 Cut-out group
 designation

BRANCH CIRCUITS
 Schedule

STANDARD LAMP
 Candle power
 Current (amperes)
 Voltage
 Resistance
 Electrical energy consumed (watts)

METHOD OF WIRING
 Fish wires

OUTLETS
 Type

SWITCH BOXES

CUT-OUT BOXES
 Type

CUT-OUT CABINETS
 Location
 Construction
 Doors
 diagram frames

FUSES

FIXTURES
 Arc lamps
 Incandescent lamps
 Brackets
 Insulating joints
 Sockets
 Plugs
 Electric fans
(See Special Lighting)

GENERAL
 Service
 entrance
 Arrangement
 Motor wiring
 Night service
 Control points
 Fixture connections
 Defects
 Temporary light
 requirements
 service

SWITCHBOARD
 Service
 direct
 alternating
 Panels
 Face
 Fuse
 Dynamo
 Feeder
 Booster
 Exciter
 Rotary
 Motor
 Material
 size
 thickness
 supports and frame
 Border
 Legs
 Wall braces
 Location

Distance from walls
 Protection

CUTTING AND DRILLING

GRILLES AND GATES
(See Structural and Ornamental metal)
 Location
 Arrangement

SWITCHES
 Type
 poles
 throw
 Push-buttons
 Lock push
 Rotary flush
 Rotary standard
 Adapters
 Ammeter plug
 Rear connection
 Front connection
 Canopy
 Dynamo changing
 Field discharge
 Plug
 Plunger
 Two and three-point
 Two-way
 Tandem push-button flush
 Gang plate switches

INSTRUMENTS
 Type, pattern
 Switches, type and construction
 Main dynamo
 Storage battery
 Booster dynamo
 Booster motor
 Voltmeter multiple circuit
 Galvanometer multiple circuit
 Spare multiple circuit
 Ground detector multiple circuit
 Electro-magnetic multiple circuit
 Instrument switches
 Instrument lights
 Fuses
 Relays
 Lightning arresters
 choke coils
 Ampere hour meters
 Frequency meters
 Power factor meters
 Static ground detectors
 Synchrosopes
 Transformers
 Ammeters
 Voltmeters
 differential
 plug and receptacles
 swinging brackets
 Wattmeters
 single phase
 polyphase
 integrating
 Rheostats
 field
 round
 marble dial
 iron clad
 embedded
 grid
 face
 motor starting
 starting
 Pedestals
 Ground detector
 Lamp brackets and lamps
 Bus-bars
 brackets
 insulators
 terminals
 Bolts
 Lugs
 Leads
 Nuts
 Bars

Wire
Fuses
Circuit-breakers
 type
Sockets
Lamps
Fixtures
Supports
Resistances
 equalizer
 starting
Name plates
 material
 lettering

PAINTING AND FINISH

(See Painting)

SUPPORTS AND FRAME**BOLTS AND FASTENINGS****RUBBER MATS****ELECTRIC WIRING**

Type
Iron-armored cable
Knob and tube construction
Porcelain cleats
Wooden moulding
Metal moulding

CONDUITS

Type
Trade designation
Manufacturers' certificate
Elbows
Bushings
Couplings
Locknuts
Junction boxes
Fastening

OUTLET BOXES

Finish
Protection and painting
 (see painting)
 (see Insulating and Sheathing)

SERVICE

Two-wire
Three-wire
Two or three convertible

DISTRIBUTING CABINETS

Unlined
Lining
 asbestos
 metal
 slate

OUTLETS

Type
Special

DOORS, WOOD

(See Carpenter Work)

Plain
Panel
Glass panel
Diagram
Painting

(see Painting)

Iron

SWITCHES

Surface snap
Flush snap
Flush push
Pendant
Service
 control
 style
 single or gang
 finish of plates
Trade designation
Finish of plates

WIRING FOR LIGHTING**OUTLETS**

Ceiling
Wall
Base-board
Floor
Switches

Receptacles
Service entrance
 location

MAIN SWITCH

Capacity
Location

SIGNS**OUTSIDE LIGHTS****ELEVATOR LIGHTS****AUTOMATIC CONTROLS****PULL BOXES****PANEL BOARDS****WIRING FROM SERVICE ENTRANCE
TO METER-BOARDS****METER-BOARD**

Location

TOTAL NUMBER OF METERS**METER CONTROL****DISTRIBUTION FROM METER-BOARD
TO DISTRIBUTING CABINETS****DISTRIBUTING CABINETS**

Location

WALL OUTLETS

Height from floor

SWITCH OUTLETS

Height from floor

ANNUNCIATORS**BELLS****BELL WIRES****BUZZERS****DOOR OPENERS****LETTER-BOXES****PUSH BUTTONS****SPEAKING-TUBES****JOINTS****GENERAL****LAMPS AND FIXTURES**

Hanger stems
Hanger boards
Brackets
Insulating joints
Finish
Globes
 glass
 kind

Reflectors**Shades****Guards****Casing****Arms****Stems****Wiring****Sockets****Swing arms**

(See Special Lighting)

TIME SYSTEMS

System

Clocks**Control****Regulation****Stamps****Recording****Nurse registers****Tower clocks****BURGLAR ALARM****ELECTRIC GAS LIGHTING****BELLS**

Location

Operated from

SPEAKING-TUBES

Buttons

Mouthpieces

Combination push

Whistles

BATTERIES

Number

Type

Location

Box

TESTS AND INSPECTION**WIRING SYMBOLS****WATCHMAN'S DETECTOR SYSTEM**

System

Station boxes

Sub-station boxes

Register

TELEPHONE

Apartment house systems

Hotel systems

School system

Magneto call

Long distance

 exchange type

 bridging type

 tandem type

 special type

 portable type

 police patrol type

Intercommunicating

 switchless

 automatic wall type

 flush residence type

 dial switch type

 plug type

 return dial type

 metallic dial type

 desk type

 hand microphone type

Battery call

 railroad block house type

 armored interior type

 interior and short line type

 central energy type

 private line type

 portable home type

Battery and magneto call

 desk type

 hand microphone

Batteries

Buzzers

Cables

Annunciators

 wiring

 system

 joints

 method

Conduits

Interconnection boxes

 central

 nodal

 district

 sub-district

 elevator signal

Condenser

Connecting block

Extension bells

Magneto generators

Induction coil

Switches

Line equipment

Lightning arresters

Magneto bells

Circuit closing attachment

Operator's head receiver

Receivers

Repeating coil

Retardation coil

Ringers

Forks and hooks

Switchboard

 drops

 jack

 plug

 key

 relay

 central energy jacks

 ringing and listening key

 lamp jacks

 line jacks

Toll boards

Booths

Transmitters

Connection strips

Cut-outs

Diaphragms
Insulators

12—0. DRINKING WATER SYSTEM CONTRACTOR'S WORK

(See 2—2. Schedule and Condition of Contract)

(See 3—0. General Work)

(See 4—0. General Work)

Contemplated work
filtering, circulating, refrigerating system

Location of outlets

Provision in machinery for future additional capacity

CUTTING AND PATCHING

Trades to do cutting and patching of own work for proper installation of all trades

Trades to do cutting and patching of all work for proper installation of own work

TESTING SYSTEM

Tests required

Instruments for testing

Expense of making tests

Tests by contractor in presence of architect

WARRANTY

Term of years

Perfect operation of apparatus for term of years

.1 MATERIALS

(See 9—0.2 Materials and Construction)

12—I. WORKMANSHIP AND CONSTRUCTION

Size and location of pipe

Location of pressure relief valves to give desired pressure at faucets

Gate valves on pipes near fountain outlets

Croton connection to storage tank

Automatic control to maintain constant water level in storage tank

Connections and arrangements of piping

Arrangement for cooling water

Confining gas circuit of machinery to basement

Galvanizing pipes, tanks

12—2. PIPING

Location and arrangement of piping

Provision for circulating of water

Expansion joints

Arrange to cut either filter or cooler out of service without interrupting supply to fountain

Drain pipe for entire system

PAINTING

Work to be painted

kinds of paint

PIPE COVERING, ETC.

Work to be covered

Kinds of covering

Kinds or make of covering

Composition and materials of covering

12—3. DRINKING WATER APPARATUS .1 COMPRESSOR

Kind, make, construction

Work to be done by apparatus

ELECTRICAL MOTOR

Type, make

Construction, work to be performed

Detailed description of motor (see 1—6.2 Electric Motor)

.2 COOLER

Size, construction

Kind or type

.3 FOUNTAINS, ETC.

Kinds or type

Construction

Finish

Location

Kinds of faucets, finish

Kind of drinking cup, finish

.4 FILTER

Type or make

Construction

Work to be performed

.5 PUMPS

(See 9—6. Pumping Machinery, etc.)

Types or make

Size and construction

Work to be performed

.6 STORAGE TANK

Size, construction, finish

Detailed description of tanks (see 6—3.8 Tanks)

12—4. ELECTRICAL WORK

Detailed descriptions (see 11—0. Electrical Contractor's Work)

Work to be done, materials and installation

Switchboard

material and construction

apparatus on switchboard

13—0. FILTRATION APPARATUS CONTRACTOR'S WORK

FILTERS

Type

bibb and cock

CIRCULATING SYSTEM

Pressure filter

Coagulant feeder

Connections

Covering

(See Insulating and Sheathing)

SHELL

Material

Construction

Diameter

Height

Thickness

Heads

thickness

test

Capacity

Operation

SYSTEM

WASHING

STRAINERS

Equipment

Fittings

Openings

type

Construction

FILTRATION ELEMENTS

PAINTING AND INSULATION

(See Painting Metal Work)

(See Painting)

(See Insulating and Sheathing)

WEIGHT AND SPACE

FOUNDATION

Material

Construction

EFFICIENCY

ECONOMY

14—0. WATER SOFTENING APPARATUS CONTRACTOR'S WORK

HEATER

PUMP

PRECIPITATING TANK

FILTERS

GRAVITY APPARATUS

CAPACITY

OPERATION

EFFICIENCY

ECONOMY

15—0. REFRIGERATION PLANT CONTRACTOR'S WORK

REFRIGERATORS

Make or type

Material

Finish

interior

exterior

Dimensions

Ice chamber and delivery

Location

Waste and safe

Insulation

Construction

unit

built up

Capacity

Ventilation

Temperature range

Drainage

Doors

style

operation

(See Painting)

(See Insulating and Sheathing)

ICE WATER PLANTS

System

Ammonia compressors

Engines

Electric motors

Ammonia condensers

Storage tanks

expansion coil

Balancing tank

Pump

power

Connections

(see Plumbing)

Insulation

(see Insulating and Sheathing)

Receiving tanks

Ammonia storage

Oil interceptors

Fountains

(See Waterproofing and Damp-proofing)

(See Painting)

(See Insulating and Sheathing)

ICE-MAKING AND COLD STORAGE

ICE-MAKING MACHINERY

Ammonia or other vapor and brine circulating systems

Ammonia compressors

Condensers

type

Steam condensers

type

Brine coolers

piping

coils

freezing

cooling

Storage tank

Covers

Frame work

Cranes

Can hoists

Freezing cans

Reboilers

Tanks

Traps

Pans

Filters

Pumps

Supply and waste pipes

Fittings, valves

Insulation

(See Painting)

(See Insulating and Sheathing)

Water distribution

Temperature range

Ice saws

Trolley

Scales

Ammonia gauges

Ammonia strainers

Brine agitators

Soda fountains

Ice cream freezers

Ice cube cutters
Oil interceptors

16—0. AUTOMATIC SPRINKLER SYSTEM CONTRACTOR'S WORK

17—0. MECHANICAL CLEANING SYSTEM CONTRACTOR'S WORK

System
Capacity
Steam pressure
Electric motor
starting
control

DUST SEPARATORS

PIPING

Mains
Fittings
Exhaust
Vacuum
Muffler
Hose
cocks
couplings

CLEANING TOOLS

LOCATION OF OUTLETS

18—0. MECHANICAL CARRIER SYSTEM CONTRACTOR'S WORK

PNEUMATIC TUBE SYSTEM

Alterations in system
Automatic controlling device
Carriers
Central and out stations
Description
Compressor
Guarantee
Joints
Painting
Pressure regulations
Storage tank
Supply pipes
Terminals
Tests
Tubing
Walls and obstructions

19—0. VAULT CONTRACTOR'S WORK

Fireproof, burglar-proof
Burglar-proof chests
Car safes
Messenger boxes
Floors
Electric conduits and outlets
(See Electric Work)
Foundation plate for vestibules
Movable platforms
Bridge and pit work
Outside doors
Tiling
Vault lining
Vestibules
Time-locks and locking devices
Safes
Deposit boxes
(See Sheet Metal Work)
Trunk racks
Vault enclosure
gates
(see Equipment, Prison)
Malleable iron
Bases
Bolt work
Number plates
fastening
Shelves
Tin boxes
Wooden templates
Iron doors for vault
number
emergency

frames
jambs
sills
head-pieces
angle iron pieces
screws
hinges
swing
locks

For back of panel, buss bars and bolts
for connections, etc.

Finish of exposed work

21—0. ELEVATOR CONTRACTOR'S WORK (electrical)

(See 2—2. Schedule of Conditions of Contract)

(See 3—0. General Conditions)

(See 4—0. General Work)

Contemplated work
passenger elevators
freight elevators
lifts

Times for erection of work

Installation of work according to building laws, municipal rules and ordinances

Installation of work according to "National Electric Code"

Obtaining permits, paying for same
Approval by architect, contingent on approval of underwriters and fire insurance authorities

.1 CUTTING AND PATCHING

Each trade to do all cutting and patching for proper installation of work on other trades

Each trade to do all cutting and patching for proper installation of own work

.2 DRAWINGS

Shop drawings showing details of apparatus

Architect's approval before starting work

.3 TESTS

Tests required

Instruments for testing

Tests made by contractor in presence of architect

Expense of making tests borne by

Contractor to keep operator at building for specified days to keep apparatus in perfect condition and instruct owners' employees

.4 WARRANTY

Term of years

Contractor to repair all defects unless he proves that defects were such that he was not responsible

System kept in perfect operation for a specified term of years

Current consumed in starting machinery with maximum load

21—1. ELEVATOR MACHINERY

Character and reputation of manufacturer

Designating buildings where types of machines of equal magnitude have been installed

Contractors submit alternate proposals covering other types of apparatus, complete specifications and detailed drawings

Contractors' alternates must conform to general requirements of contract, varying only in specific details of construction

Contractor submit and have approved detailed drawings covering machine lay-out, safety devices, switchboard, etc. before starting work

.1 CONTROL, CAR

Full magnetic control

operated by car switch connected to controller magnates

intermediate mechanical devices to govern acceleration speed and direction of movement, not permitted

Automatic control

Controller's functions

make and break circuit and reverse motor

accelerate car speed independent of car operator, starting or stopping without shock or jar

lift main brake, cut out starting resistance and series field

allow operator to run slow speed with all loads, by increasing field magnetization of motor

must apply brake, cutting resistance, etc., in series with armatures, close variable resistance circuit not parallel to armature, resistance automatically adjusted to load

Construction and type of controller

Designing controller to operate at speed proportional to speed at which car starts

.2 MACHINES

Type of machine, construction, materials

Dimensions of various parts

Machines large enough for future additional car traveler

Maintaining practically standard car speed corresponding to points of controller under all conditions of load up or down

Maximum allowable speed variation

Types of bearings

Automatic lubricating devices, drip pans under bearings

Approved locking device for connections liable to loosen

SAFE LIFTING ELEVATOR

Adjustable back gear operated at will to reduce car speed and increase lifting capacity proportionately

Maximum load to be carried

Detailed drawings approved before construction

Special locking device operated by lever in car

FOUNDATIONS FOR MACHINES

MOTORS

Type, make, construction, requirements to be fulfilled

Detailed specification for motors (see 10-7.2 Electric Motors)

FINISH

Parts to be finished

Material and finish coat

.2 SAFETY DEVICES

Necessary for safe operation

BRAKE

Type, construction, work performed

CONTROLLER STOP

Type, construction, work performed

GUIDE GRIPS

Type, construction, work performed

Testing guide grips

LIMIT STOPS

Type, construction, work performed

POTENTIAL SWITCH

Type, construction, work performed

SLACK CABLE DEVICE

Type, construction, work performed

21—2. ELEVATOR MISCELLANEOUS WORK

.1 CABLES

Cable for car, cables for hoisting and for drum counterweights

- Number of cables—size, material, construction
- Method of connecting cables to car
- .2 CAR**
 - Types of car
 - passenger elevator
 - freight elevator
 - carriage, automobile elevator
 - Construction, design
 - Provisional amount for car
 - Gates for car
 - folding gates
 - automatic gates
 - self-closing gates
 - safety gates
 - locking device for gates
 - Grill work of cages
 - distance between bars, maximum allowed (New York law) an inch and a half
 - removable section in top of car
 - Floor covering
 - type or material
 - Lighting
 - kind of fixtures, switch
 - Lighting outlet on under-side of car
 - Lubricating devices
- .3 COUNTERBALANCE**
 - Type, construction, materials
 - compensating chains
 - Securing weights to prevent jarring on releasing by spreading of frame
- .4 GUIDES**
 - Car guides
 - Counterweight guides
 - Material and shape, finish
 - Erecting guides plumb and straight
- .5 PAINTING**
 - Materials, number of coats
- .6 SHEAVES**
 - Material, construction, size
 - Bearings
 - Automatic lubricators, pans under bearings
 - Method of supporting sheaves from structural work
 - Idlers or vibrating sheaves connected with machines
- .7 SIGNALS**
 - Types
 - flashlight
 - mechanical dial indicator
 - mechanical indicator—liquid
 - mechanical vertical pointers
 - car signals only
 - annunciator, car wired to "up and down" push button at landings
 - Batteries, wiring, etc.
- .8 TOOLS**
 - Sight feeds
 - Oil cups
 - Grease cups
 - Compression grease cups, other lubricating devices
 - Set of wrenches, other special tools
 - Hard-wood board rack for tools
- .9 SPRING BUFFERS**
 - Type, construction
- .11 WIRING, ETC.**
 - Connecting to power feeds, brought within 8 ft. of machines
 - Wiring connections for complete installation
 - Wiring, etc., to conform to requirement of 11-0. Electrical Contractor Work
- CONTROLLING PANEL**
 - Construction of panel
 - Construction of frame work for panel
 - Finish
 - Methods of installing apparatus
 - Wiring
 - Apparatus for panel

- electro-magnetic switches
- circuit breaker
- knife-switches
- 21—21. ELEVATOR CONTRACTORS' WORK**
 - (pneumatic plunger)
- 21—3. LIFTS**
 - Ash lift
 - Book lift
 - Carriage and automobile lift
 - Dumbwaiter
 - Freight lift
 - (hydraulic elevators)
 - Construction
 - Tests
 - High and low rise
 - Maximum load
 - Speed
 - Cylinder wells
 - process of drilling
 - tubing
 - thickness for service
 - high or low rise
 - test
 - construction
 - stuffing boxes
- PLUNGERS**
 - Material
 - Connection to platform
 - Test
 - Thickness for service
 - High or low rise
 - (street pressure)
 - System
 - horizontal cylinder
 - vertical cylinder
 - Material
 - Test
 - Connections
 - Head and base plates
 - stuffing boxes
 - plunger
- CONTROL**
 - Hand rope
 - Lever, wheel
 - Valves
- WATER PUMPS**
 - Type, number
- AIR PUMPS**
 - Type, number
- STEAM PIPING**
- WATER PIPING**
- AIR PIPING**
- DRIP PIPING**
- DRILLING**
- CASING**
 - Construction
 - Material
- PISTONS**
 - Material
 - Packing
 - Construction
 - glands
 - followers
 - Rods
 - material
 - working pressure
- HYDRAULIC ENGINE GEAR**
 - Ratio of travel
 - Piston to car
- TRAVELING SHEAVES AND STRAPS**
 - Material
 - Dimensions of grooves
 - Construction of straps
 - Bushing and pins
 - Auxiliary sheaves
 - bushing
- MAIN SHEAVES**
 - Diameter
 - Shafts
 - bearings
 - Supporting beams

- COUNTERBALANCES**
 - Guides
 - type
 - construction
- ROPES AND CABLES**
 - Material
 - Test
- AUTOMATIC STOPS**
 - Device
 - Location
 - Operation
 - Tests
- EMERGENCY STOP**
 - Device
 - Location
 - Operation
 - Tests
 - Speed governor
 - Safety appliances
 - Locking device
- HYDRAULIC ENGINES**
 - Type
- PIPING**
 - Connections
 - Valves
 - Tests
- TANKS**
 - (See Special Tanks)
 - System
 - Number and location
 - Capacity
 - Pressure
 - Discharge
 - Material
 - Construction
 - Dimensions
 - heads
 - shells
 - Manhole
 - Nozzles
 - Test
 - Drip pans
- GRATING**
- ANNUNCIATOR**
- SIGNALS**
- PAINTING**
- GUARANTEE**
 - (See Painting Metal Work)
 - (See Painting)
 - (See Insulating and Sheathing)
- CARS**
 - Material
 - Platform and floor
 - (See Structural and Ornamental Metal and Wire Work)
 - (See Bronze and Brass Work)
 - (See Hardware)
 - Location of doors
 - Construction
 - sides
 - Panels
 - grilles
 - cornice
 - curb and grille at ceiling
 - finish
 - ornament
 - models
 - Carrying capacity
- GENERAL**
 - Storage
 - Erection
 - Completion
 - Trial run
 - Tests
 - Defects
 - Acceptance
 - Inspection
 - Workmanship
 - Materials
 - Changes
 - Certificates
 - liability
 - other

Patents
Equipments

22—0. LIGHTING FIXTURE CONTRACTOR'S WORK

(See 2—2. Schedule of Conditions of Contract)

(See 3—0. General Conditions)

(See 4—0. General Work)

Contemplated work

Contractor to comply with building laws, municipal rules and ordinances

Requirements of fire insurance authorities and "National Electric Code"

Obtaining permits, paying for same

Approval of architect conditional on approval by underwriters and insurance authorities

CUTTING AND PATCHING

Trades to do all cutting and patching for proper installation of all work for other trades

Trades to do all cutting and patching for proper installation of own work

DESIGNS, ETC.

Designating types of fixtures by reference to numbers in trade catalogues

Designating types of fixtures by general description

Designating type of fixtures by sketches or drawings

Contractor's sketches submitted with proposals

22—1. WORKMANSHIP AND CONSTRUCTION

Material, thickness

Cast work

material, thickness

Spun work

material, gauge

Bent tubing

material, gauge

Size and thickness of various parts of fixtures

Bent work, true, regular and free from kinks and bruises

Brazing joints where practical

Fixtures controlled by two switches to have four wires down stem instead of two

Controlling lights on fixtures in series

Sockets on fixtures

kind, make

Sizes of wires allowable

kind or make of wires

Test fixtures for contracts, short circuits or grounds before installation

Insulating joints

type or make

Fixture supports

types

Canopies—telescope, insulation

FINISH OF FIXTURES

Kinds of finish desired

SHADES

Types, design, color

FIXTURE HEIGHTS

Schedule of heights

22—1. LIGHTING FIXTURES

Installing complete excepting incandescent lamps

Canopies for outlets where fixtures not installed

Types of fixtures

description of types, if such method desired

Special lighting

armories

art galleries

auditoriums

blue printing

bowling alleys

card rooms

churches

commercial buildings

gymnasiums

manufacturing buildings

pool and billiard rooms

professional lighting

public entrances

residential

billiard room

bedroom

dining room

halls and vestibule

kitchen and servants' quarters

library

living room

parlor

play room

servants' room

serving room

store room

toilet

school

show windows

signs

special

adjustable

concealed

portable

squash courts

store fronts

theatre

window

22—2. SCHEDULE OF FIXTURES

Fixtures required

location

number of outlets

Electric

Gas

Types of fixture

designate by comprehensive method

23—0. INTERIOR DECORATION CONTRACTOR'S WORK

(NOTE) In many cases, especially for residential work, the interior finish and decoration is not included with the general contract for the structural work, but is let as a separate contract after the structural work has been completed. A schedule of such work similar to the following is a convenient means of summarizing the finish of the various rooms. (See schedule at bottom of page.)*

* SCHEDULE OF INTERIOR FINISH AND DECORATION

ROOMS	WAINSCOT		TRIM		BASE	WALLS		FLOORS	CEILING	DECORATION
	Material	Finish	Material	Finish		Material	Finish			
Bedroom			white wood	painted cream	white wood	plaster		maple	plaster	painted
Billiard	mahogany	natural	mahogany	natural	mahogany	plaster		oak	plaster	stippled
Dining room			oak	golden	oak	plaster		oak	wood panels	silk
Halls	oak	fumed	oak	fumed	oak	wood paneled	fumed	oak	plaster	covered
Vestibule	marble		marble		marble	marble		mosaic	wood paneled	
Kitchen	Keene's cement	enamel	cement		tile	Keene's cement		tile	ornamental plaster	enamel paint
Servants			pine		pine	plaster	natural	pine	plaster	
Library	oak	fumed	oak	fumed	oak	wood paneled	fumed	oak	wood	
Living	oak	natural	oak	natural	oak	plaster		oak	paneled	painted
Parlor	white wood	ivory	white wood	ivory	white wood	plaster		oak	wood panels	silk
Play			pine	natural	pine	plaster		pine	ornamental plaster	covered
Serving			pine		pine				plaster	painted
Store			pine	natural	pine	plaster		pine	plaster	decorated
Toilet	tile		tile	natural	tile	plaster		tile	plaster	cornice
						Keene's cement			plaster	painted

KINDS OF DECORATION

Fixed

face brick work (*see* 5—9.)
 cut stone work (*see* 5—12.)
 ornamental terra cotta work (*see* 5—13.)
 ornamental sheet metal work (*see* 5—17.)
 plaster work (*see* 5—21.)
 artificial marble (*see* 5—23.)
 artificial stone (*see* 5—24.)
 interior marble (*see* 5—26.)
 tile and mosaic work (*see* 5—27.)
 ornamental iron work (*see* 6—2.)
 bronze and brass work (*see* 6—2.)
 interior wood work (*see* 8—8.)
 furniture and equipment (*see* Part II)

Applied

painting and decoration
 textile and fabric

24—0. AUXILIARY FIRE APPARATUS CONTRACTOR'S WORK

Automatic sprinklers
 (*see* 16—0. Automatic Sprinklers)
 Fire line standpipes
 (*see* 9—2.2 Fire Line)
 Fire alarm system
 (*see* 11—3.4 Fire Alarm)
 Auxiliary fire equipment
 axes and pole brackets
 axes
 benzine cans
 cart jacks
 crowbars
 engines
 chemical
 combination
 hand
 steam
 extinguishers
 fire bucket tanks
 fire buckets
 fire pails
 fireman's helmets
 fireman's trumpets
 gasoline cans
 goggles
 hammer head pick axes
 hand grenades
 hand lanterns
 hose and couplings
 hose ladder straps
 hose cart
 ladders
 extension
 roof
 scaling
 straight
 ladder bracing
 lamp guards

leather buckets
 nozzles
 oil cans
 poles and hooks
 portable fire escapes
 respirators
 rubbish and waste cans
 truck
 wrenches
 combination spanner and wrench
 hose spanner wrench
 hydrant spanner wrench

25—0. ROADS AND PAVEMENTS CONTRACTOR'S WORK

26—0. SEWERAGE DISPOSAL CONTRACTOR'S WORK

27—0. GARBAGE DISPOSAL CONTRACTOR'S WORK

Type of plant
 residence and municipal
 Operation
 Fuel
 Tests
 Classes of refuse
 Construction
 Furnace
 grate
 chambers
 destruction
 combustion
 lining
 Charging floor
 material
 construction
 Doors
 frames
 Exterior fittings
 material
 fastenings
 Arrangement
 Efficiency
 Economy
 Durability
 Sanitation
 Draft
 Reduced refuse
 description

28—0. LANDSCAPE ARCHITECTURE AND GARDENING CONTRACTOR'S WORK

Grading
 (*see* 4—3.1 Grading)
 Sodding
 (*see* 4—3.2 Sodding, etc.)
 Changing course of streams of water
 Roads and paths
 (*see* 25—0. Roads and Pavements)

Fences and gates
 brick
 common (*see* 5—8.4 Fences)
 face (*see* 5—9.1 Fences)
 bronze (*see* 7—0.15 Fences)
 concrete (*see* 5—4.1 Fences)
 iron (*see* 6—2.35 Fences)
 stone
 cut (*see* 5—12.3 Fences)
 rubble (*see* 5—11.3 Fences)
 terra cotta (*see* 5—13.3 Fences)
 wood (*see* 8—11.7 Fences)

Entrance gates

iron
 bronze
 wood

Planting

flowers
 shrubs
 hedges
 trees

Pruning and trimming old trees, etc.

Protecting trees, etc. on property (*see* 4—0. Protection of Work)

Garden accessories

material
 cement or concrete
 cut—cast
 stone—cut
 wood
 arbors
 balustrades
 benches
 flag staff
 flower boxes, etc.
 flower pots
 gazing globes
 guards
 flower bed
 trees
 hitching post
 jardinières
 lamp standards
 lanterns
 lawn sprinklers
 pergolas
 pottery
 rustic wood work
 seats
 statuary
 stepping stones
 summer houses
 sun dials
 swings
 tables
 trellis
 urns
 vases
 weather vanes
 well curbs

Bridges

Clothes posts
 Outbuildings

PART II

SPECIAL TYPES OF BUILDINGS AND EQUIPMENT

A list of various types of special buildings is given herewith. This list has been used as a basis for the sub-division of the work relating to special types of buildings and equipment. Only the matter for a few of the various types has been developed tentatively. This list has followed the one given by Mr. Sidney F. Kimball in the Brickbuilder for April, 1908, for use in filing magazine plates, and it is believed will serve equally well for the present purpose.

There are numerous buildings devoted to special purposes which require special features, not only in their planning and equipment, but also in the material used in their construction. The general requirements for building construction are not dependent upon the type of building, but only on the class of construction, and therefore the scope of Part I of this checking list is general and of almost universal application. As the work of the individual architect relates to special types of buildings as well as to the matters of general construction, it has been thought advisable to make a beginning in the development of information pertinent to some of these types.

1. ADMINISTRATIVE, GOVERNMENTAL, ETC.:

- 1.1 CAPITOLS, HOUSES OF PARLIAMENT, LEGISLATIVE BUILDINGS
- 1.2 MINISTRIES OF WAR, STATE, ETC., GOVERNMENT DEPARTMENTS AND OFFICE BUILDINGS
- 1.3 CITY AND TOWN HALLS
- 1.4 COURT HOUSES, EXCISE OFFICES
- 1.5 COURT HOUSES
- 1.6 POST OFFICES
- 1.7 ENGINE HOUSES, FIRE ALARM STATIONS
- 1.8 MILITARY, PROTECTIVE AND CORRECTIVE PRISONS
- 1.9 HOSPITALS AND ASYLUMS

2. MONUMENTS:

- 2.1 COMMEMORATIVE
- 2.2 FUNERARY

3. ECCLESIASTICAL AND RELIGIOUS:

- 3.1 CHAPELS, SMALL
- 3.2 PARISH CHURCHES
- 3.3 CATHEDRALS
- 3.4 SYNAGOGUES
- 3.5 PARISH HOUSES, SUNDAY SCHOOL BUILDINGS

4. EDUCATIONAL AND SCIENTIFIC

- 4.1 DAY SCHOOLS
- 4.2 BOARDING SCHOOLS
- 4.3 COLLEGES, UNIVERSITIES
- 4.4 PROFESSIONAL AND TECHNICAL SCHOOLS NOT CONNECTED WITH THE UNIVERSITY
- 4.5 INDEPENDENT SCIENTIFIC INSTITUTIONS, LABORATORIES, OBSERVATORIES
- 4.6 SCIENTIFIC MUSEUMS, MENAGERIES
- 4.7 ART MUSEUMS, GALLERIES
- 4.8 LIBRARIES
- 4.9 LEARNED SOCIETIES (see also 5.11 City Clubs, non residential)

5. SOCIETY BUILDINGS:

- 5.1 CITY CLUBS
- 5.2 SUBURBAN CLUBS
- 5.3 COUNTRY CLUBS
- 5.4 SECRET SOCIETIES, MASONIC TEMPLES

6. RESIDENTIAL:

- 6.1 HOTELS, ETC.
- 6.2 APARTMENTS, TENEMENTS (see also 8.3 Mixed Store, Office and Apartment Buildings)
- 6.3 PALACES AND PALATIAL PRIVATE HOUSES
- 6.4 CITY HOUSES IN BLOCK (anything with one party wall or more)
- 6.5 CITY HOUSES NOT IN BLOCK
- 6.6 SUBURBAN HOUSES, VILLAGE HOUSES
- 6.7 COUNTRY HOUSES
- 6.8 COTTAGES, BUNGALOWS
- 6.9 OUTBUILDINGS, DEPENDENCIES

7. RECREATION AND AMUSEMENT:

- 7.1 THEATRE, OPERA HOUSES, PUBLIC ASSEMBLY HALLS
- 7.2 RINKS, AMPHITHEATRES, RIDING HALLS AND THEATRES
- 7.3 BILLIARD AND POOL ROOMS, BOWLING ALLEYS
- 7.4 GYMNASIA, TURN-HALLS, BASEBALL CAGES, TENNIS AND SQUASH COURTS, ETC. (see also 5.1 and 5.2 Y. M. C. A.)
- 7.5 BATHS, SWIMMING AND OTHERWISE, LOCKER BUILDINGS
- 7.6 BUILDINGS FOR WATERING PLACES, BEACH BATH HOUSES
- 7.7 BUILDING FOR PARKS
- 7.8 BOAT HOUSES
- 7.9 STADIUMS, OTHERS

8. BUSINESS AND COMMERCIAL:

- 8.1 MARKET
- 8.2 STORES, WHOLESALE AND RETAIL
- 8.3 MIXED STORE, OFFICE AND APARTMENT BUILDINGS
- 8.4 OFFICE BUILDINGS
- 8.5 BANKS, TRUST COMPANIES, SAFE DEPOSIT VAULTS
- 8.6 EXCHANGES, BOARDS OF TRADE, CLEARING HOUSES

9. TRANSPORTATION AND STORAGE:

- 9.1 RAILWAY PASSENGER STATIONS
- 9.2 STREET RAILWAY STATIONS
- 9.3 WHARF AND DOCK BUILDINGS
- 9.4 RAILWAY FREIGHT HOUSES
- 9.5 WAREHOUSES—BONDED STORAGE, ETC., COLD STORAGE
- 9.6 GRAIN ELEVATORS, COAL AND ORE DOCKS
- 9.7 RAILWAY ROUNDHOUSES, CAR-BARNs, ETC.
- 9.8 SIGNAL TOWERS, ETC.
- 9.9 OTHERS.

10. FACTORIES, ETC.:

- 10.1 LOFT BUILDING TYPE—for whatever use
- 10.2 OPEN MILL TYPE—for whatever use
- 10.3 FOUNDRY TYPE—for whatever use
- 10.4 POWER STATIONS
- 10.5 ABATTOIRS
- 10.6 LAUNDRIES

11. BRIDGES:

- 11.1 WOOD
- 11.2 MASONRY (stone, brick, concrete, etc.)
- 11.3 STEEL AND IRON

12. OTHER BUILDINGS:

- FURNITURE
- BUILDERS' EQUIPMENT

1. ADMINISTRATIVE, GOVERNMENTAL, ETC.**1.1 CAPITOLS, HOUSES OF PARLIAMENT, LEGISLATIVE BUILDINGS****1.2 MINISTRIES OF WAR, STATE, ETC., GOVERNMENT DEPARTMENTS AND OFFICE BUILDINGS****1.3 CITY AND TOWN HALLS****1.4 COURT HOUSES, EXCISE OFFICES****1.5 COURT HOUSES**

Registries of deeds, archive buildings

1.6 POST OFFICES

Post office and custom house combined

Post office and court house combined

Post office, custom house and court house combined

1.7 ENGINE HOUSES, FIRE ALARM STATIONS.**1.8 MILITARY, PROTECTIVE AND CORRECTIVE**Barracks, military post buildings, armories. (*See also 7—3. Riding Halls*)

Arsenals

Police stations

Prisons, penitentiaries, jails

Reformatories for adults

Reform schools

PRISONS**CELLS**

Lattice

Bar

flat

round

Balcony floor hangers

Walls

Floors

Ceilings

Fronts

plates

peep holes

Track box

sliding doors

mouldings

door stops

door guides

DOORS

Frame

Jambs

Lattice

Bar

flat

round

Solid

Counterlocking bars

Trolley track

End wall of cell locks

Plumbing holes

PARTITIONS**BALCONY****BATH AND WASH ROOMS**

Stalls

Shelves

TABLES

Material

Hinged to wall

Clothes hooks

Drinking cup

fastening

Wash basin

BUNKS

Frame

Bottom

BEDSTEADS**GRATINGS****STAIRCASE****LOCKING DEVICE**

Lever bar

Lock

COMMODOES

Soil buckets

Ventilation

HAND CUFFS**LEG IRONS****LOCKERS****SLATE AND MARBLE**

Floors and wainscots

Balconies

Stair treads

Landings

Cupboards

WINDOWS

Guards

DUMB-WAITER**KITCHEN AND PANTRY EQUIPMENT**

Baskets

Food door

LAUNDRY EQUIPMENT**PLUMBING FIXTURES****1.9 HOSPITALS, ASYLUMS**

Sick and wounded, incurable, etc.

Sanitaria

Insane, feeble-minded, inebriates

Blind, deaf and dumb (*see also 4.17 Day*)

School for Defectives)

Alms houses

Aged, convents, etc.

Soldiers' homes

Orphans, children, foundlings

HOSPITALS**FURNITURE**

Material

Construction

Finish

Tables

Lockers

Chairs

Cabinets

medicine

instrument

Stretchers

Ward carriages

Food carriages

Invalid chairs

Wash stands

Screens

Dressers

Settees

Bedsteads

Mattresses

Pillows

Operating tables

lighting

(*See Furniture*)(*See Water distilling*)(*See Water Softening*)(*See Water Filtration*)(*See Fire Protection*)**STERILIZERS**

Water

Dressings

Instruments

Laundry

DISINFECTORS

Type

Operation

Efficiency

DRYING ROOMS**KITCHEN AND PANTRY EQUIPMENT****COMPOSITION FLOORS****2. MONUMENTS****2.1 COMMEMORATIVE****2.2 FUNERARY**

Monuments proper

Tombs, mausoleums

Receiving vaults

3. ECCLESIASTICAL AND RELIGIOUS**3.1 CHAPELS, SMALL****3.2 PARISH CHURCHES****CHURCH EQUIPMENT**

Alms basins

Alms plates and chests

Altars

Altar cross

Altar desks

Altar rail

Bells

chime

church

peal

Candle sticks

Candelabra

Chairs

Chancel rail

Choir and clergy stall

bishop's sedilium

Communion table

rails

Confessional

Credence table

shelf

Cross

Crucifix

Fonts

cover

ewer

Hymn boards

Lecturns

Litany desk

Memorial tables

Memorials

mausoleum

monuments

sarcophagi

windows

Organ

Pews

Pulpit

sounding board

Rood screen

Seats

Sedilia

Tower clocks

Vases

CLERGY ROOMS

Altars

Chairs

Vestment closet

Vesting table

ORGANS

Plan and disposition

Access

Tuning

Regulating

Repairing

Dimensions

Location

Casing

construction

material

exposed

front

ends

Stage

Overhang

Wind-chest

construction

Material

Finish

Stop compartments

pipe ducts

valves

operation

Console

design

material

location

knobs
 material
 engraving
 Organist's seat
 position
 Bellows
 type
 compound
 single
 location
 operation
 power
 source
 construction
 material
 feeders
 operation
 wind delivery
 pipe dimensions
 pressure
 springs
 type
 Organ action
 attack
 repetition
 guarantee
 Keys
 action
 tube connections
 protection
 Stops
 voicing
 regulation
 pipes
 length
 materials
 wood
 tin
 lead alloys
 zinc
 finish
 samples
 Schemes
 tonal
 mechanical
 Pedal organ
 Auxiliary pedal organ
 First organ
 Second organ
 Divisions
 expressive
 unexpressive
 lower clavier
 upper clavier
 Compass
 Swell boxes
 construction
 material
 shades
 construction
 Couplers
 type
 Combination action
 type
 operation
 control
 Foot levers
 type
 location
 operation
 Accessories
 crescendo indicator
 wind indicator
 power control
 Plank walks
 cleaning
 tuning

3-3 CATHEDRALS

3-4 SYNAGOGUES

3-5 PARISH HOUSES, SUNDAY SCHOOL BUILDINGS

4. EDUCATIONAL AND SCIENTIFIC

4.1 DAY SCHOOLS

Kindergartens
 Primary schools
 Grammar schools
 High schools
 Normal schools
 Manual training schools
 Schools for defectives (*see also* 1.94
 Asylums for the Blind, Deaf and Dumb)

SCHOOL EQUIPMENT

Bookcases
 Tables
 Seats
 Showcases
 minerals
 insects
 specimen
 table
 wall
 Lockers
 Picture rods
 Desks
 Window shades
 darkening
 Laboratory tables
 stone and other tops
 Sinks
 Towel racks
 Reagent shelves
 Hoods
 ventilation
 closed and open
 Spring roller frames
 Lantern screens
 Blackboards
 sliding
 revolving
 stationary
 Chalk trough
 cleaning
 Chart rods
 operation
 Lecture tables
 Lantern stands
 File benches
 Table and printing press
 Shaft, countershaft
 hangers and pulleys
 Racks
 Skylights
 Water aquaria
 Tanks
 Bulletin boards
 Hose
 Nozzles
 Drawing tables
 Demonstration tables
 Dias and platform
 Railing
 rods
 sockets
 connections
 Ladders
 Work benches
 Tool cases
 Vise benches
 Instrument cases
 Motors
 Slide rails
 Starters (electric)
 Lathes
 Anvils and vises
 Drill presses
 Milling machines
 Saws
 Plating baths
 Emery wheels
 Enameling ovens

Blower fans
 Forges
 Wood working machinery
 Glue heaters
 Soldering irons
 heaters
 Translucent screens
 Lanterns and boxes
 Stools
 Umbrella racks
 Cabinets
 atlas
 dictionary
 Kitchen and pantry equipment
 Blue-printing
 Mechanical cleaning
 Glass racks
 Electrolytic tanks
 Gasometers and bases
 Balances and shelves
 Steam baths
 Drying closets
 Furnaces
 melting
 assay
 oven
 Cupboards
 Engines
 Condensers
 Pumps
 Turbines
 Hydraulic rams
 Dynamos
 Motors
 Switchboards
 instruments
 Moulding benches
 Tool trays
 Sand boxes
 Coke ovens
 Steam hammers
 Grindstones
 Screw racks
 Shapers
 Grinders
 Centering machines
 Cranes
 Planers
 Cutters
 Taps
 Dies
 Nippers
 Pliers
 Tongs
 Chisels
 Hammers
 Punches
 Calipers
 Dividers
 Hack saws
 Thread gauge
 Metal gauge
 Wire gauge
 Squares
 Partitions
 glazed
 rolling
 coiling
 (*See Furniture*)

4.2 BOARDING SCHOOLS

4.3 COLLEGES, UNIVERSITIES

4.4 PROFESSIONAL AND TECHNICAL SCHOOLS NOT CONNECTED WITH THE UNIVERSITY

Theology
 Law
 Medicine
 Scientific engineering
 Art
 Music

4.5 INDEPENDENT SCIENTIFIC INSTITUTIONS, LABORATORIES, OBSERVATORIES

4.6 SCIENTIFIC MUSEUMS, MENAGERIES

4.7 ART MUSEUMS, GALLERIES

4.8 LIBRARIES

LIBRARY EQUIPMENT

Bookcases
Book lift
Book stacks
Book truck
Bulletin boards
Cabinets
atlas
books, large
dictionary
drawings
folio
map
Catalogue cabinets
cupboards
shelves
trays
Cataloguer's desk
Chairs
Chart holders
Delivery desk
cupboards
drawers
screen
shelves
Desks
Gates
Partitions
Picture rods
Reading tables
Roller cases
Rolling ladders
Seats
Showcases
Spring rollers
Stack tables
Stools
Umbrella racks
Writing ledges

4.9 LEARNED SOCIETIES (see also 5.11 City Clubs, non residential)

5. SOCIETY BUILDINGS

5.1 CITY CLUBS

Non-residential (see also 4.9 Learned Societies)

Y. M. C. A.

Residential

Y. M. C. A.

5.2 SUBURBAN CLUBS

Y. M. C. A.

5.3 COUNTRY CLUBS

5.4 SECRET SOCIETIES, MASONIC TEMPLES

6. RESIDENTIAL

6.1 HOTELS, ETC.

City hotels
Country hotels
Restaurants, cafés, saloons, bars
Rathskellers
Barber shops
Kitchens, pantries

PANTRY EQUIPMENT

Cabinets
Dressers
pivoted bins
Dumbwaiter

Hooks for dishes
Plate warmers
Revolving serving table
Revolving window
Sink
drainboard

BAR EQUIPMENT

Bar
arm rail
counter
drain and mixing board
drainers
drip board
foot rail
gutters
light outlets
rails
workboard
Backbar
cabinets
bottle
display
coil boxes
drip pans
mirrors
refrigerator
shelving
tanks
Bar screen
Buffet
Coolers
Display cases
humidifiers
Floor slats
Lunch counter
ice boxes
steam pans
trays
Partitions
office
wine room
Refrigerator
Settees
Sideboard
Summer doors
Tables
Window screens
Wine room
bottle shelves

BARBER SHOP EQUIPMENT

Barber poles
Bootblack stands
Bottle mats
Bottle tubes
Bottles
Bowls
Chairs, barber
Chair mats
Child's chair
Coat and hat hooks
Compressed air apparatus
Curling iron heaters
Display cabinet
drawers
razor slides
shelf
towel closets
work stand
Display cases
Foot rests
Lavatories
Lockers
Massage outfits
Mirrors
Mug cases
Paper holders
Settees
Shampoo sprinkler
Signs
Sterilizers
Strop holders
Tables

Towel urns
Vibrators
Wardrobes
Waste baskets
Water heaters

KITCHEN EQUIPMENT

Bain-maire boxes
Baker troughs
Bake ovens
brick
Broilers
coal
gas
Butter stamping machines
Butter cutters
Cake boxes
Coffee urns
Cook's table
Cup heaters
Dish heaters
Dish washers
Dish warmers
Dressers
Drip pans
Dumbwaiter
Egg boilers
Filters
Garbage receptacles
Griddles
Heating-tables
Hoods
ovens
tables
Ice cream machines
Ice crushers
Kneading machines
Knife cleaners
Meat carriers
frames
hooks
track
Meat cutters
choppers
shavers
Mixing machines
Plate warmers
Ranges
coal
steam
Refrigerators
food
oyster and fish
Roll warmers
Sauce-pan racks
Service tables
Silver buffers
Sinks
Steam closets
Steam cooker
Steam jacket kettles
Steam kettles
Steam roasters
Steam tables
Stock and vegetable boilers
Tea urns
Vegetable steamer
Warming tables
Wire guards

6.2 APARTMENTS, TENEMENTS (see also 8.3 Mixed Store, Office and Apartment Buildings)

6.3 PALACES AND PALATIAL PRIVATE HOUSES

Embassies, etc. (detached)

6.4 CITY HOUSES IN BLOCK (anything with one party wall or more)

6.5 CITY HOUSES NOT IN BLOCK

6.6 SUBURBAN HOUSES, VILLAGE HOUSES

6.7 COUNTRY HOUSES

Farm houses

6.8 COTTAGES, BUNGALOWS**6.9 OUTBUILDINGS, DEPENDENCIES**

City

city stables, private
garages

Country farm buildings

gate and porter's lodges

kitchens, laundries, dairies, etc.

stables, kennels, etc.

carriage houses, garages

barns, graineries, ice houses

silos, etc.

conservatories, greenhouses

wind-mills, water towers

STABLE EQUIPMENT

Blanket and rope poles

Blanket dryers

Brackets

blanket

crab

harness

hose

pole

saddle

yoke

Carriage elevator

Chamois ring

Chains

Feed boxes

cut-off

Feed chutes

Feed measures

Feeding ducts

automatic

Fenders

Grain

chutes

tubes

cut-off

Gutters and cesspools

Hardware

Hay forks

Hay rakes

Hitching devices

Hoisting beams and tackle

Hooks

bridle

carriage pole

harness

saddle

Lockers

Mangers

Manure chutes

Manure pits and cover

Oat cleaners

Post caps

Rings

Ropes

Sinks

harness

Soap dish

Sponge rack

Stalls

floors

guards

gutters, drains

mangers

padded

posts

Straps

Ventilators

Washing apparatus

overhead

Washing sink

Watering troughs

Wheel guards

Whip racks

Window guards

GARAGE EQUIPMENT

Auxiliary fire apparatus

(see 24-0. Auxiliary Fire Appara-
tus)

Charging apparatus

Drip pans

Gasoline storage

Hoisting apparatus

cranes

portable

stationary

traveling

Lamps

brackets

guards

Lifts

Lubricant storage

Storage batteries

Tanks

Transfer cars

Turntables

Washing apparatus

overhead

Waste cans

REPAIR DEPARTMENT

Power plant

electric

steam

Power transmission

belting and shafting

Boring mills

Cabinets for repair parts

Drills

hand

power

Furnaces

Grinders

Laths

Machines

brazing

burnishing

welding

Repair benches

Repair pit

Repair tools

Screw machine

Tool racks

Vulcanizers

Waste cans

Work benches

**7. RECREATION AND AMUSE-
MENT****7.1 THEATRE, OPERA HOUSES, PUB-
LIC ASSEMBLY HALLS**

Concert halls, lecture halls

SEATS**DECORATION**

Painting

Plastering

piercing for ventilation

TAPESTRY**UPHOLSTERING**

(See Sheet Metal)

LIGHTING

Exterior

signs and display

Interior

general

footlights

control

Trough and hood

Border lights

Bunch lights

Spot lights

Dimmers

Strip lights

Exits

Proscenium lights

HEATING AND VENTILATION**EXITS**

Doors

type and operation

FIRE CURTAIN

Material

Operation

WATER CURTAIN

Control

FIRE ALARM**STAND PIPES****SPRINKLERS****STAGE SKYLIGHT**

Operation

Control

STAGE

Trap doors

Lifting and lowering devices

Carpet devices

Bridges

Arbors

Scenery

Drops

operation

braces

FLY GALLERIES

Pin rails

Pins

PAINT BRIDGE

Pin rails

Pins

Gridiron

Material

Construction

Support

(See Fire Protection)

IRON AND STEEL WORK**FIREPROOFING****INSULATING AND SHEATHING****COMPOSITION FLOORS****7.2 RINKS, AMPHITHEATRES, RIDING
HALLS AND SCHOOLS**

(see also 1.8 Armories)

**7.3 BILLIARD AND POOL ROOMS,
BOWLING ALLEYS****BOWLING ALLEY EQUIPMENT**

Alley

material and construction

approach

foul line

gutter

newel posts

pin stops

pits

return chute

swing cushion

Balls

bags

Brushes

Crayons

Erasers

Foot and hand dampers

Foot and hand chalkers

Lockers

Mats

Pins

Scoring system

boards

sheets

slates

Sponge cups

Sponges

BILLIARD AND POOL EQUIPMENT

Ball racks

Balls

Balkline markers

Bottles

Bridges

Brushes

Carom blocks

Chalk

Chalk cups

Cues
bags
cabinet
racks
Lockers
Mantel stands
Markers
hook
stretchers
wire
Pockets
Pool pins
Rubber table covers
Sand paper
Tables
billiard
pool
ball gutters
Tacks
Tally balls
Time stamps
Tip files
Tips
Triangles

7.4 GYMNASIA, TURN-HALLS, BASE-BALL CAGES, TENNIS AND SQUASH COURTS, ETC. (see also 5.1 and 5.2 Y. M. C. A.)

GYMNASIA EQUIPMENT

Anthropometric apparatus
caliper for breadths
caliper for depths
dynamometer
tests
extensors
flexors
arms, back, legs
Gymnastic apparatus
balance boards
bar bells
basket ball goals
chest machines
climbing poles
climbing ropes
double booms
dumb-bells
finger machines
flying rings
general exercisers and ladders
head and shoulder lifts
horizontal bars
horizontal ladders
Indian clubs
jumping standards
leg machines
lunge belts
mats
neck machines
parallel bars
peak ladders
peg poles
rowing machines
sculls
sweeps
rowing weights
runways
saddles
scales
springboard
standards
jumping
vaulting
trapeze
traveling rings
truck for mats
vaulting bucks
vaulting horses
vaulting poles
wands
wrist roll weights
Running track

7.5 BATHS, SWIMMING AND OTHERWISE, LOCKER BUILDINGS

SWIMMING POOL EQUIPMENT

Water supply—filtration
chutes
mats
rail
ropes and rings
springboards
stairs
swinging arm
trapeze
Locker room
curtains
lockers
all metal
wood
mats
seats
shelves
ventilation

7.6 BUILDINGS FOR WATERING PLACES, BEACH BATH HOUSES

7.7 BUILDING FOR PARKS

7.8 BOAT HOUSES

7.9 STADIUMS, OTHERS

8. BUSINESS AND COMMERCIAL

8.1 MARKET

8.2 STORES, WHOLESALE AND RETAIL

8.3 MIXED STORE, OFFICE AND APARTMENT BUILDINGS

Stores and offices
Stores and flats
Offices and flats
Including hall

8.4 OFFICE BUILDINGS

Low
High, steel construction

OFFICE BUILDING EQUIPMENT

Office building directories
Clocks
Telephone booths
Cigar stands
show cases
counters
Mail chutes
type
preparatory work
patents
government authorization
supports
mail box
material
Lockers
Time table racks
Bulletin boards
Rosters
(See Special Lighting)
Composition Floors
Structural and Ornamental Metal
Tiling
Cut Stone
Plastering
Furniture

OFFICE EQUIPMENT

Material
metal
wood
Bins for rolled drawings
Blank drawers
Bond files
Bookcases
Book roller files
Book stacks
Bulletin boards

Card indexes
Chairs
Check sorters
Closets
Counters
Delivery counters
Desks
Display racks
Document files
Drawing files
Drawing tables
Letter files
Lockers
Map files
Mathematical machines
seats
stands
Partitions
Pigeon holes
Railings
Report files
Revolving bookcases
Rolling ladders
Routing cases
Safes
Sliding shelves
Stamps
Stationery closet
Stools
Tables
Telephone booths
Telephone and ticker
Transfer and storage files
Typewriters
cabinets
stands
Umbrella racks
Vaults
Voucher files
Wall cases
Wardrobes

8.5 BANKS, TRUST COMPANIES, SAFE DEPOSIT VAULTS

Bank and office

8.6 EXCHANGES, BOARDS OF TRADE, CLEARING HOUSES

9. TRANSPORTATION AND STORAGE

9.1 RAILWAY PASSENGER STATIONS

Way stations
city
country
Terminal stations

9.2 STREET RAILWAY STATIONS

Surface stations
Elevated stations
Subway stations

9.3 WHARF AND DOCK BUILDINGS

Ferry houses, buildings for passengers, emigrant stations
Dock buildings for freight, etc.

9.4 RAILWAY FREIGHT HOUSES

9.5 WAREHOUSE—BONDED, STORAGE, ETC., COLD STORAGE

9.6 GRAIN ELEVATORS, COAL AND ORE DOCKS

9.7 RAILWAY ROUNDHOUSES, CAR-BARNs, ETC.

Roundhouses
Car barns

9.8 SIGNAL TOWERS, ETC.

9.9 OTHERS.

10. FACTORIES, ETC.**10.1 LOFT BUILDING TYPE**—for whatever use**10.2 OPEN MILL TYPE**—for whatever use**10.3 FOUNDRY TYPE**—for whatever use**10.4 POWER STATIONS****10.5 ABATTOIRS****10.6 LAUNDRIES****LAUNDRY EQUIPMENT**

Power plant

boilers

blowers

Power transmission to machinery

belts and shafting

electric motors

Water softening and purifying apparatus

Disinfecting chambers

Washing apparatus

extractors

hangers

waist

shirt

kettles

starch

soap

mangles

apron attachment

pressers

bosom

coat

negligee

neck

waist band

yoke

Ranges and stoves

coal

steam

Soap kettles

Soap tubs

Starch cooper

Starch dipper

Starch kettle

Starch pail

Starch table

Starchers

collar and cuff

waist band

Sterilizers

Tanks

Tubs

truck

wash

Tumblers

Wash boilers

coal

steam

Wash tubs or trays

Washers

hand

mechanical

Washing machinery

Wringers

hand

mechanical

DRYING APPARATUS

Closed drying rooms

heating

coils

temperature control

Open air dryers

balcony

lawn

revolving racks

baskets

clothes racks

truck conveyors

IRONING AND FINISHING APPARATUS

Collar and cuff shaper

Collar folder

Eyelet puncher

Finishing—edge

Iron heaters

coal

electric

gas

steam tables

Ironers—hand, mechanical

body

sleeve

collar and cuff

neck and waist band

yoke

Ironing tables

boards

horses

Irons

fluters

puff irons

Polishing machinery

Smoothing machinery

MISCELLANEOUS APPARATUS

Overhead conveyor

Trucks, hand

Baskets

11. BRIDGES**11.1 WOOD****11.2 MASONRY** (stone, brick, concrete, etc.)**11.3 STEEL AND IRON**

Simple truss

Cantilever

Arch

Suspension

12. OTHER BUILDINGS**FURNITURE**

(See Theatre)

(See Hospital)

(See Church)

(See Trays)

(See Drawers)

Drawers

Check files

racks

Combination files

cafe

billiard and pool

bowling alley

hotel

club

Book cases

Buffets

Check sorters

Chiffoniers

Desks

Drawing tables

Dressers

Judges' benches

Jury boxes

Document files

Drawing files

Map files

Letter files

flat and vertical

Wall cases

Tubes

Omnibuses

rubber tired castors

Pigeon holes

Report files

Routing cases

Sliding shelves

Stools

Chairs

Tables

Telephone booths

Umbrella racks

Wardrobes

Witness stands

Bins for rolled drawings

Blank drawers

Bond files

Book roller files

Card indexes

Steel curtains

Transfer and storage files

Voucher files

Ship bunks

Cabinet work

counters

counter screens

wickets and guards

doors

grilles

partitions

wire cages

Bulletin boards

Delivery counters

Display racks

Rolling ladders

Parcel and cash carriers

Pneumatic tubes

Closets

Toilet cases

Trucks

Typewriters

cabinets

stands

Newspaper racks

Revolving book cases

Book stacks

Vaults

Safes

Stamps

Mathematical machines

stands

seats

Telephones and tickers

Trading posts

Blackboards

Partitions

Lockers

rolling

coiling

Curtain cases

Blue-printing machines

Lockers

RESIDENCE FURNITURE

Hall

seats

chairs

glass

Living room

suites

cabinets

chairs

desks

tables

Library

tables

chairs

bookcases

desks

Dining room

sideboards

tables

cabinets

plate racks

Bedroom

beds

bureau

wash stands

chiffoniers

wardrobe

toilet tables

chevals

glass

Pianos

Clocks

(See Time Systems)

BUILDERS' EQUIPMENT

(*See Concrete Reinforcement*)
 (*See Damp-proofing and Waterproofing*)
 (*See Equipment, Kitchen, Laundry, Special*)
 Foundation work
 Garbage disposal
 Glass
 Hardware
 Heating
 Insulating and Sheathing
 Lime and Cement substitutes
 Marble
 Mechanical cleaning
 Metal lath
 Metal work
 Bronze
 cast and wrought
 sheet
 structural
 Pneumatic tubes
 Power transmission
 Sewage disposal
 Skylights and ventilators
 Stable equipment
 Steam specialties
 Stone (all classes)
 Air compressors
 (*See Heating and Power*)
 Air lift pumps
 (*See Plumbing*)
 Alarms
 (*See Electric*)
 Asbestos and magnesia
 (*See Insulating and Sheathing*)
 Bells
 (*See Equipment (Church)*)
 Blinds
 (*See Carpenter*)
 Blocks and trolleys
 (*See Refrigeration*)
 Blowers and Fans
 (*See Ventilation*)
 Blue-printing machines
 Boilers
 (*See Heating and Power*)
 Brick-making machines
 Brick and tile
 (*See Brick and Tiling*)
 Building papers
 (*See Insulating and Sheathing*)
 Cabinet and mill work
 (*See Carpenter*)
 Cables and ropes
 (*See Elevator, Power Transmission*)
 Cane cars
 Cars
 Carts
 Cement
 (*See Cement, Portland and Rosendale*)
 Cement testing machines
 (*See Cement*)
 Chimneys
 brick
 concrete
 metal
 stone
 (*See Heating and Power*)
 Cleaning apparatus
 (*See Mechanical Cleaning*)
 Clocks
 (*See Electric Work*)
 Clothes dryers
 (*See Equipment, Laundry*)
 Composition ornament
 (*See Carpenter*)
 Concrete block machines
 (*See Concrete Block Work*)

Concrete heaters
 (*See Concrete*)
 Conveyors
 (*See Heating and Power, Power Transmission*)
 Cord (sash)
 (*See Hardware*)
 Corner beads
 (*See Metal Lath*)
 Crushers
 Cupolas
 (*See Equipment, College and School*)
 Damper regulators
 (*See Heating and Power*)
 Decorations
 (*See Interior Decoration*)
 (*See Composition Ornament, Carpenter*)
 Directories
 (*See Equipment (Commercial Buildings)*)
 Drag scrapers
 Dredging machinery
 (*See Foundation work*)
 Dumb-waiters
 (*See Elevators*)
 Dump buckets
 Dump carts
 Dump trucks
 Dump wagons
 Earth scoops
 Electric machinery
 (*See Power and Lighting*)
 Ejectors
 (*See Plumbing*)
 Electric time systems
 (*See Electric Work*)
 Elevator indicators
 (*See Elevator Work*)
 Engineering instruments
 Engines
 (*See Power and Lighting*)
 Elevator Signals
 (*See Elevators*)
 Excavating Machinery
 Expanded metal
 (*See Reinforced Concrete and Metal Lath*)
 Expansion Bolts
 (*See Steel and Iron*)
 Express and baggage trucks
 Faience
 (*See Terra Cotta and Faience*)
 Feed Water Heaters
 (*See Plumbing and Heating*)
 Filters
 (*See Filtration*)
 Fire Brick
 (*See Brick*)
 Fire Doors and Windows
 (*See Fire Protection*)
 Fire-escapes
 (*See Steel and Iron*)
 Fire Extinguishers
 (*See Fire Protection*)
 Fireplaces and Mantels
 (*See Heating and Ventilating and Carpenter*)
 Fixtures and Furniture
 (*See Furniture*)
 Flagpoles
 Floors
 (*See Carpenter*)
 Flue Lining
 (*See Vitrified Tile*)
 Fuel Economizers
 (*See Heating and Power*)
 Gas Generators
 (*See Gas Fitting and Lighting*)
 Grates
 (*See Heating and Ventilation*)
 Hand Trucks

Hods
 Hoisting engines and derricks
 (*See Power Transmission and Elevators*)
 Hoisting Equipment
 (*See Elevators*)
 Hose
 (*See Fire Protection*)
 Hose Racks
 (*See Fire Protection*)
 Hydrants
 (*See Plumbing*)
 Hydraulic machinery
 Industrial Cars
 (*See Heating and Power*)
 Injectors
 (*See Heating*)
 Kalsomine and Water Paints
 (*See Painting and Interior Decoration*)
 Ladders
 Lighting
 (*See Special Lighting*)
 Lighting Fixtures
 (*See Gas and Electric*)
 Lightning Conductors
 (*See Roofing Accessories*)
 Locomotive and Vertical Boilers
 Lubricators
 (*See Power and Lighting*)
 Lumber and Timber
 (*See Carpenter*)
 Mail Chutes
 (*See Equipment—Office Building*)
 Marble Dust
 (*See Lime and Cement Mortar*)
 Metal Wall Plugs
 (*See Steel and Iron*)
 Meters
 (*See Plumbing, Gas and Electric*)
 Mine Cars and Ore Buckets
 Mine skips
 Mortar and Concrete Mixers
 (*See Concrete*)
 Mortar Stains
 (*See Mortar*)
 Municipal Castings
 (*See Plumbing*)
 Narrow Gauge Railroad Cars
 (*See Heating and Power*)
 Organs
 (*See Organs*)
 Ornamental Metal Work
 (*See Metal Work*)
 Ox Shovels
 Paints and stains
 (*See Painting and Painting Metal Work*)
 Parcel carriers
 (*See Furniture*)
 Parquet Flooring
 (*See Carpenter*)
 Paving Machinery
 Piling and pile driving
 concrete
 metal
 special
 wood
 (*See Foundation Work*)
 Pipe
 (*See Plumbing and Heating*)
 Pipe and fittings
 (*See Heating and Plumbing*)
 Pipe cutters
 (*See Plumbing and Heating*)
 Plantation cars
 Plows
 (*See Preliminary Work*)
 Poles
 cross arms
 cross ties
 Pneumatic Tools
 Portable houses

Powder
 Pulleys
 Pumping engines, Pumps—*see* Plumbing
 (*see* Heating and Power)
 Pulverizers
 Quarrying machinery
 Railroad cars
 (*see* Heating and Power)
 Range boilers
 (*see* Plumbing, Fixtures)
 Railroad equipment
 compressed air
 electric
 oil
 steam
 (*see* Heating and Power)
 Reaming machines
 (*see* Plumbing and Heating)
 Reflectors
 (*see* Special Lighting)
 Refrigerating machinery
 (*see* Refrigeration)
 Revolving doors
 (*see* Carpenter)
 Road rollers
 Rock drills
 (*see* Foundation Work)
 Rollers
 asphalt
 combination
 golf
 macadam
 tandem
 Rolling Partitions and Shutters
 (*see* Carpenter and Fire Protection)
 Roofing (all classes)
 (*see* Roofing)
 Safes and vaults
 (*see* Steel and Iron)
 Sand blast machinery
 Scaffolding
 Scarifiers
 Scrapers, Road
 Sidewalk lights
 (*see* Steel and Iron and Concrete Reinforcement)
 Signs
 (*see* Steel and Iron, Electric and Painting)

Skips
 Slate (all classes)
 (*see* Cut Stone and Roofing)
 Sluice Gates
 Snow guards
 (*see* Roofing Accessories)
 Speaking tubes
 (*see* Electric)
 Sprinklers
 (*see* Fire Protection)
 Stair treads
 (*see* Steel and Iron)
 Stand pipes
 (*see* Plumbing and Fire Protection and Special Tanks)
 Steam shovels
 Steel and wood moulds
 (*see* Concrete Block Work)
 Steel barrels and pans
 Steel mining cars
 Steel rolling doors and shutters
 (*see* Fire Protection)
 Stokers
 (*see* Heating and Power)
 Stone bunkers
 Store fronts
 (*see* Steel and Iron)
 Street sprinklers
 Street sweepers
 Stump pullers
 (*see* Preliminary Work)
 Sugar cane cars
 (*see* Heating and Power)
 Superheaters
 (*see* Heating and Power)
 Tanks
 (*see* Steel and Iron and Special Tanks)
 Tanks and Towers
 (*see* Plumbing, Special Tanks and Gas Holder)
 Telephones
 (*see* Electric)
 Temperature regulators
 (*see* Heating)
 Terra Cotta
 (*see* Terra Cotta—Architectural)
 Test boring drills
 fireproofing

 vitrified tile
 (*see* Preliminary Work)
 Tin. *See* Roofing (Tin)
 Tool boxes
 Tools
 Tote boxes
 Trucks
 Turntables
 (*see* Heating and Power)
 Valves
 (*see* Plumbing and Heating)
 Wall ties and hangers
 (*see* Steel and Iron)
 Water heaters
 (*see* Plumbing and Heating)
 Water meters
 (*see* Plumbing)
 Water softening
 (*see* Plumbing and Equipment (Laundry))
 Water supply
 (*see* Plumbing)
 Water works equipment
 (*see* Plumbing)
 Weather strips
 (*see* Carpenter)
 Wedges
 Well drilling
 (*see* Plumbing)
 Wheelbarrows
 canal
 railroad
 steel and tubular
 steel tray
 wood
 Whistles
 (*see* Steam Specialties)
 Wind Mills
 (*see* Plumbing)
 Window screens
 (*see* Carpenter)
 Wire and Brass Work
 (*see* Ornamental Metal)
 Wood fire-proofing
 (*see* Carpenter and Painting)
 Wood paving blocks
 (*see* Carpenter)
 Wood preservatives
 (*see* Painting)



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